
**THE POTENTIAL OF A STRATIFIED ONTOLOGY FOR
DEVELOPING MATERIALS IN COMMUNITY-BASED COASTAL
MARINE ENVIRONMENTAL EDUCATION PROCESSES**

THESIS

Submitted in fulfilment of the requirements for the degree of
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SUPERVISORS

Professor H.B. Lotz-Sisitka

Professor R. O'Donoghue

by

Siân May Davies

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DECLARATION

I, the undersigned, hereby declare that the full-thesis entitled: *The potential of a stratified ontology for developing materials in community-based coastal marine environmental educational processes*, submitted for the degree of Masters of Education (Environmental Education), is my original work, except where otherwise acknowledged, and has not in its entirety or in part been submitted to any other university or institution for a higher degree.

Siân May Davies

Date

ABSTRACT

This study set out to explore the possibilities that the Critical Realist concept of a stratified ontology might have for environmental learning and materials development processes. This involved processes of ongoing contextual profiling; the use of picture-based resources and storytelling to support the engagement with the marine harvesting contexts of the villages of Hamburg and Ngqinisa, in the former Ciskei.

At the heart of the study was the process of uncovering the empirical, the actual and the real in the context of a community of coastal marine harvesters whose lives and livelihoods are affected by poverty and a history of inequality, and more recently by issues such as HIV/AIDS. Their stories of existing practice changed as we engaged with picture-based narratives, gaining depth and focus in relation to sustainability issues. The learning processes associated with and emerging out of the research processes were enhanced through abductive use of metaphors and graphic illustrations, and through intra- and inter-community exchanges, again using picture based narratives.

As the study unfolded, the development of environmental education materials receded. Focus turned to how conceptual abstraction processes (of abduction (metaphor) and retroduction) and the stratified ontological framework allowed for learning across epistemological divides.

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This study is dedicated to my family and friends, for their unwavering support and encouragement – and occasional hard words – during the *extended* writing process, in the light of the loss of two lap-top computers; bag of books, notes, a research journal; and a tape-recorder to indignant thieves.

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Special gratitude is also offered to the participants of this learning journey – the groups from Hamburg and Ngqinisa, and in particular my field assistants, Noseti and Mr. Jinja. You have all taught me so much and will be in my memories always. *Enkosi Kakhulu!*

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LIST OF ABBREVIATIONS

AIDS	- Acquired Immunodeficiency Syndrome
ANC	- African National Congress
ART	- Anti Retroviral Treatment
ARV	- Anti-retroviral drug
CBD	- Convention on Biodiversity Diversity
CBNRM	- Community-Based Natural Resource Management
DEAET	- Provincial Department of Economic Affairs, Environment and Tourism
DEAT	- Department of Environmental Affairs and Tourism
EC	- Eastern Cape
EE	- Environmental Education
EEASA	- Environmental Education Association of Southern Africa
EESU	- Environmental Education and Sustainability Unit
EKZN - Wildlife	- Ezemvelo KwaZulu-Natal Wildlife
HIV	- Human Immunodeficiency Virus
IDP	- Integrated Development Plan
KZN	- KwaZulu-Natal
LED	- Local Economic Development
LMP	- Local Management Plan
LSC	- Local Subsistence Committee
MCM	- Marine and Coastal Management
MLRA	- Marine Living Resources Act
MRP	- Mussel Rehabilitation Project
NEEP	- National Environmental Education Programme
NEMA	- National Environmental Management Act
NPA	- National Ports Authority
NPB	- Natal Parks Board
OBE	- Outcomes Based Education
PRA	- Participatory Rural Appraisal
SADC REEP	- Southern African Development Community Regional Environmental Education Programme

SAIAB	- South African Institute of Aquatic Biodiversity
SANBI	- South African National Biodiversity Institute
SANCOR	- South African National Committee for Oceanographic Research
SCD	- Sustainable Coastal Development
SFMU	- Subsistence Fisheries Management Unit
SFTG	- Subsistence Fisheries Task Group
TAC	- Total Allowable Catch
TB	- Tuberculosis
TURF's	- Terrestrial User Rights
UNAIDS	- United Nations Joint Programme on HIV/AIDS
UNICEF	- United Nations Children's Fund
USAID	- United States Agency for International Development
WESSA	- Wildlife and Environmental Society of South Africa
WWF - SA	- Worldwide Fund for Nature – South Africa

CHAPTER ONE

Introduction

1.1 Background

In 2001, the National Ports Authority (NPA) was looking for a project to sponsor that incorporated both environmental concerns and social upliftment along the Eastern Cape coast of South Africa. At the time, the Zoology Department at Rhodes University had developed a research proposal entitled '*Sustainable Utilization of Coastal Living Resources*' that suited this profile. A five year research programme was accepted in Sept 2001, by the NPA. In February 2002, the programme was initiated in the Eastern Cape with part funding from the S.A National Ports Authority (NPA) and the Coastal Research Group. The first three years of the programme involved ecological research on the status of the coastal marine resources, as well as a socio-economic study conducted by a MA student from the Anthropology Department at Rhodes University (Kaehler, 2003). Its purpose was to gain a better understanding of the rural marine harvesters. This focus was to extend to a concern for education.

At the beginning of the project, the ecological research focused specifically on the coastal communities of Port Alfred, Hamburg and Ngqinisa in the former Ciskei region. Although the ecological study area was extended in 2004, west to Cannon Rocks and east to East London, recommendations were made that the original study sites be targeted for two separate Environmental Education research projects for 2005/6. A major component of these research projects was to be the development of environmental education resource materials within school and community contexts.

During the six years prior to undertaking this research, I had been involved in running coastal marine environmental education programmes within the Tsitsikamma Marine Protected Area and the open-access areas outside the park. Although a large part of my experience involved fieldwork and environmental awareness programmes with school learners, the prospect of working with adults in a community setting appealed to me. I was awarded the NPA bursary to undertake environmental education research focusing on learning and the development of marine education materials for use in coastal rural community contexts.

I considered the original study sites on the Eastern Cape coast. Each of the proposed study areas differed with regards to the type and degree of marine resource use, socio-economic status and human population demographics. As I was interested in the rural community context and subsistence use of marine resources, I elected to focus the study on the villages of Ngqinisa and Hamburg, avoiding the urban context and predominantly recreational resource use in the Port Alfred area.

1.2 Selecting the context of the study

Rural coastal inhabitants of the Eastern Cape, South Africa have used marine organisms for subsistence for centuries. Today these inhabitants have to contend with high levels of poverty and unemployment, which have led to the reliance by rural households on livelihood strategies which depend on the harvesting of coastal marine resources, particularly rock mussel (*Perna perna*), alikreukel (*Turbo sarmaticus*), oyster (*Striostrea margaritaceae*) and abalone (*Haliotis midae*), for food security and as a source of income. With high collector densities and exploitation pressure, many of the target species populations have become depleted and rocky shore ecosystems degraded. Scientists have researched this degradation of the coastal ecosystem, and based on their findings, have made recommendations for resource management, utilization regulation, legislation and policy. However, in addition to these institutional 'solutions', it is believed that the rural harvesters need education so that they are made aware of the ecological facts and harvesting practices associated with the decline of valued resources and degradation of the integrity, functioning and long-term productivity of the marine ecosystem as a whole. With this scientific understanding, it is assumed that rural communities will come to understand the necessity of harvesting less and in more sustainable ways.

Although I had little experience of environmental education processes in rural community contexts, I had begun to question this conventional wisdom that law enforcement based on ecological processes and related awareness programmes was an adequate approach to social change. I thus started to critically review the 'conventional wisdom' of awareness creation for environmental education in general, and community-based marine education in particular. It soon became clear that there is often an underlying assumption that rural communities over-utilize their natural resources due to 'unawareness': a lack of awareness of the ecology of the resources that they utilise and a lack of understanding of the reasoning behind the regulations

imposed on them. Thus, many environmental initiatives are seen as ways to create or 'raise' this awareness, and in doing so, foster a change in the behaviour and practices of the harvesters. Environmental education is seen to be something that is brought to rural communities for their benefit, as well as that of the natural resources.

It became evident to me that a regulation orientated and awareness creation approach would not be adequate for the proposed education programme and materials development. Paralleled with my initial review of marine education and case studies of resource co-management (reflected in Chapter two), and after a brief visit to the Hamburg village with an Ichthyology researcher, I began a tentative journey through educational theory. I was soon stuck with the implications of meaning-making and knowledge production being socially and culturally constructed. To me this meant that I was confronted by two seemingly oppositional 'worlds of understanding', that of the scientists and that of the rural resource harvesters. Through this research I hoped to enable closer 'dialogue' with the seemingly opposing worlds of rural community resource harvesting and conservation management.

Interactions with Critical Realism began to provide me with a research framework and tools to engage the situated construction of meaning and experience. The Critical Realist framework of a stratified ontology proposed analysing three layers or domains of what makes up reality: the EMPIRICAL (people's experiences), the ACTUAL (the events that shape and influence experience) and the REAL (the mechanisms or structures within society, that influence events and generate experiences). This framework was put into motion in two parallel streams. The first was to develop an in-depth understanding of the *real* and *actual* dimensions of the context (Chapters two and four), while at the same time working with the harvesters in Hamburg and Ngqinisa, supporting them in researching and reflecting on their marine harvesting practice and experience, the *empirical* dimension (Chapter five).

This set the scene for the beginning of a situated engagement where the research participants were given the opportunity to represent and narrate their experiences, knowledge practices and realities of resource use, by taking photographs and telling stories. This allowed us to navigate the conscious and unconscious (habituated dimensions or *habitus* (Jenkins, 1992)) of their knowledge and practices, as well as how these were represented and narrated.

In essence, the study developed as two streams, contextual profiling and a detailed engagement with harvesting practices. This allowed me to work through the contextual detail and the

complexities of the marine harvesting issues, and through this in-depth understanding, learn what possibilities exist for educational processes *with* the marine harvesters.

1.3 Research question and goals

From the reviews and uncertainties mentioned above, a rationale and framework emerged which structured the study, the starting point of which was the following research question:

How can a stratified ontology be explored and mobilized to inform the development of environmental education materials in community-based coastal marine environmental educational processes?

The broad goals of the study included:

- An investigation and documentation of the domains of the REAL and ACTUAL by means of an in-depth contextual profile;
- Development of case story narratives with resource harvesters of Hamburg and Ngqinisa (investigation and documentation of the domain of the EMPIRICAL).
- Drawing on the relationships between the above to open up learning opportunities that inform the development of environmental education materials.

1.4 Study structure and content

In the following chapter, I present an overview of the current challenges facing rural communities in South Africa (with particular reference to the Eastern Cape Province), as well as the overarching status of coastal marine research, policy and management (with particular reference to the subsistence fishery). Within this, I review the concept of co-management, with reference to two case studies of co-management initiatives in South Africa. This serves as an introduction to the contextual profile of the study discussed further in Chapter four.

An overview of adult education in Natural Resource Management in community contexts are provided, and trends are traced. I then present a brief overview of the use of picture-based materials in adult environmental education, and in drawing on the review of two existing pictures based materials, I scope the implications for materials development for this study.

In *Chapter Three* I describe and discuss the overall design of the study, its methodological approaches and methods of data generation and analysis, within the framework of a critical realist stratified ontology. In keeping with the parallel streams mentioned above, this chapter explains how and why the methods chosen helped to achieved this. The Critical Realist analytical tools of Analytical Dualism and Retroduction are presented, with an explanation on how and why I intended to use them to observe the relationships between the ontological domains in my analysis of the data. Issues of ethics, validity and trustworthiness are also considered in the light of conducting community-based research.

In *Chapter Four* the contextual profile started in Chapter Two is continued to provide a more detailed socio-historical, -cultural, -economic, -political and -ecological narrative of the Ciskei region, and specifically that of the Hamburg and Ngqinisa contexts. In keeping with the ontological framework in this study, this forms the continuation of the review of the *real* and *actual* domains.

In *Chapter Five*, I present and interpret case story narrations of the Hamburg and Ngqinisa harvesters, as well as my observations during this phase of the research, within the critical realist framework of a stratified ontology. The interpretation is divided into three layers, correlating with the domains of empirical, actual and real. In each case (Hamburg and Ngqinisa), the harvester's reliance of the marine resources is described, with regards to food security, health and income; relationships that influence their resource use are highlighted; and changing practices, perspectives and understandings are traced. This reflects the empirical domain. In the second layer of interpretation (the actual) links are made between the empirical narratives and contextual and historical dimensions, such as the legal framework, educational background, socio-economic situation, resource depletion and history. In the third layer of interpretation, relationships are traced to the mechanisms and structures of society (the real), which include systems of culture and power relations, and the ecology of the marine environment.

Chapter Six I describe how the concept of a stratified ontology informed the emergence of a research strategy and learning process in the context of marine coastal utilization in rural communities. This leads to a description of the four main developments in the emergent learning process and discussion on the possible implications this phased process has for the development of environmental education materials. Finally I provide a reflective critique of the research process and consider possible recommendations for further research.

CHAPTER TWO

Orientation to the broad context of the study

2.1 Introduction

This chapter provides an overview of the current challenges facing rural communities in South Africa (with particular reference to the Eastern Cape province), a brief introduction to subsistence marine utilization in the context of this study, followed by a review of the overarching status of coastal marine research, policy and management. This serves as an introduction to the contextual profile of the study discussed further in chapter four.

An overview of adult education and specifically the approaches used in marine education and awareness within rural communities are traced. I then review the main trends in adult education with reference to examples of rural community-based environmental education programmes and processes. The use of picture-based materials in adult education is considered by way of a brief review of two existing picture-based resources, with the chapter culminating in a discussion of key aspects for consideration in the development of materials within this study.

2.2 Overview of the Eastern Cape context in South Africa

Life in South Africa is currently characterised by broad and rapid socio-political, economic and biophysical change, with large sectors of society affected by high levels of risk and vulnerability (Lotz-Sisitka, 2004). Roughly 57% of South Africans live below the poverty line (Schwabe, 2004). Malnutrition and food insecurity are critical problems associated with poverty, particularly in rural areas, placing pressure on the country's natural resources (IFAD, 2002). The population of South Africa continues to grow, increasing from 40.5 million in 1996, to 44.8 million in 2001 and to 48.5 million in 2007 (Statistical release, Community Survey, 2007).

The Eastern Cape is considered to be the country's poorest province, with a population of approximately 6.52 million in mid 2007, representing 14.4% of the total South African population. A large proportion of the population resides in rural areas, mainly on white-owned commercial farms and in the former Ciskei and Transkei homelands. The metropolitan economies of Port Elizabeth and East London are based primarily on the automotive industry (Statistical release, Mid-year population estimates, 2007).

The Eastern Cape is located on the South Eastern seaboard of South Africa and is the second largest province with an area of approximately 170 600 square kilometres, which represents 14% of South Africa's land surface. The Eastern Cape coastline is over 800km in length and is influenced by both the warm Agulhas and cool Benguela Currents. The effects of these two currents, coupled with a diversity of habitats (e.g. estuaries, sandy beaches, rocky shores and offshore reefs), accounts for the high biodiversity along this stretch of coastline. Consequently, a wide range of migratory and sedentary living marine resources are exploited by humans for either pleasure (recreational fishers), financial gain (commercial fishers) or as a source of food for own consumption (subsistence fishers) (Booth & Hecht, 2000). As the majority of people live in the rural areas of the former Transkei and Ciskei, many utilize the marine resources as a food source, although the value of certain resources for financial gain is fast being recognised.

2.2.1 Socio-political transformation in South African

After winning the national elections in 1994, which saw the dismantling of the Apartheid era and the first steps towards Democracy, the African National Congress (ANC) was confronted with many challenges. Economic sanctions applied by the international community had severely weakened the economy, making it difficult for the new government to effectively address unemployment and racial disparities in spending on education and public health (Giliomee & Mbenga, 2007).

Early in the new century, overwhelming majorities of both blacks and whites declared that they were proud to be South African, this with a relief over the achievement in negotiating a generally accepted constitution without foreign assistance (*ibid.*). The past, however, still bears heavily on the present, as South Africa remains faced with perplexing and bewildering challenges, a number of which are outlined below.

2.2.1.1 Poverty in post-Apartheid South Africa

In South Africa, there is continuing debate between government and other important actors as to the extent and increasing levels of poverty. This lack of consensus on the definition and measurement of poverty has considerable political implications, for at the present time the government faces claims that there has been an increase in poverty since 1994 (Magasela, 2006). The report *Earning and spending in South Africa: Selected findings and comparisons*

from the income and expenditure surveys of October 1995 and October 2000 (Stats SA 2002) is widely taken to have provided evidence of increases in poverty between 1995 and 2000. Although the majority of research on the poverty issue is still in the formative stages, many researchers have corroborated the findings of the report (Magasela, 2006). Meth and Dias (2004, cited in Magasela, 2006) conclude that while the intensity of poverty has decreased for many of the poor, because of the provision of the social wage, overall poverty nonetheless increased from 1999 to 2001. Magasela (2006) contends that the way forward for the current contestation in poverty research and policy development should include indicators of multiple deprivations. These should capture the multidimensional nature of poverty far better than absolute and minimalist income-based poverty lines, and be closely aligned with constitutional imperatives.

2.2.1.2 High unemployment rate

The official definition of an unemployed person is if he/she did not work in the previous week, wants to work, is available to begin work within a week and has taken active steps to look for employment or self-employment in the previous four weeks (Perold & Jooste, 2004). With the number of work seekers increasing and the employment growth less than the population growth rate, the official unemployment rate almost doubled between 1995 and 2002, rising from 15.9% to 30.5% (Perold & Jooste, 2004). As of March 2005, there were 4.3 million unemployed people actively seeking work in South Africa. This number rises to 8.1 million if we include in the definition of unemployed those who say they want work but are not actively seeking it (Nattrass, 2007).

Unemployment is particularly significant for those of 30 years and younger since 1995 and has been rising steadily. More than half the unemployed are under the age of 30. This concentration among the youth means that the unemployed have had rising education levels, although not experience (Perold & Jooste, 2004). A particular concern has been the rapid increase in unemployment levels in people with tertiary qualifications, especially diplomas. Unemployment still has the greatest impact on African people (unemployment rates higher than any other race), especially those in rural areas and African women (*ibid.*). Unemployment is now the major driver of poverty and inequality (Seekings & Nattrass, 2005, cited in Nattrass, 2007), a situation exacerbated for many by the AIDS epidemic (Nattrass, 2004, cited in Nattrass, 2007).

2.2.1.3 Political legacy in education

With an apartheid legacy of massive inequality in education, coupled with the nakedly political struggle that critically undermined administrative authority in most black schools; as well as the realities of black schools having large numbers of under-qualified teachers, high pupil-teacher ratios and poor infrastructure; the new democracy inherited a very uncertain framework of discipline and respect for education (Giliomee & Mbenga, 2007). Despite this, the government committed itself constitutionally to 'education for all'. The major challenge perceived by the new government, however, was that of racial inequality of provision and outcomes. Like politicians with revolutionary idealism the world over, but very understandably after apartheid, their reaction was to bulldoze the old structure. The restructuring of the education system was tackled with zeal, but was unfortunately coupled with a readiness to reject the advice of experienced educators. With this came the makings of new failures (*ibid.*), one of which was the introduction of the admission age and age-by-grade regulations of 2000, as well as placing limits on repetition. As a consequence, enrolment in lower and higher grades dropped as under and over aged children were excluded from the system. Despite these strict regulations flow-through remains a problem and primary schools were still over-enrolled and secondary schools under-enrolled relative to appropriate age proportions. Of great concern, particularly in poorer rural communities, is the high dropout rates among boys in secondary grades, the result of which is a growing number of redundant and unemployed youths, with painfully predictable consequences (*ibid.*).

Despite the fact that the Eastern Cape Province has a relatively youthful population, there are high incidences of illiteracy and a dire lack of skills (Williams, 1995). In 1996, the Eastern Cape had a 59% literacy rate and in 2001, almost 23% of its residents aged 20 and older had had no schooling (Health Systems Trust, 2006).

2.2.1.4 HIV/AIDS

South Africa has one of the highest rates of HIV infection in the world (Nattrass, 2007). Evidence of the epidemic of heterosexually transmitted HIV/AIDS only surfaced by the end of 1980's. Among patients attending public antenatal clinics (largely less affluent, black women) the 1990 prevalence of heterosexually transmitted HIV/AIDS was 0.7%. By 1994 this had risen to 7.6%, and by 2005 to 30.2%, with an estimated 5.5 million of South African's 47 million people

infected. An estimated 1000 new HIV infections and 900 AIDS deaths occurred each day (Giliomee & Mbenga, 2007). In the mid-year 2007 population survey the estimated overall HIV-prevalence rate was approximately 11%. The HIV positive population is estimated at approximately 5.3 million.

A recent study by UNAIDS/UNICEF/USAID estimated that in South Africa in 2004, out of a total of 17 million children between zero and 17 years, the number of orphans due to AIDS is approximately 1.1 million (Adato *et al.*, 2005). This places pressure on family members, with grandparents, aunts and even older siblings having to support large numbers of children. At the end of 2004, despite 129 state health facilities providing therapy, only half the targeted number of people living with HIV/AIDS was receiving anti-retroviral treatment (ART) (Hemson & O'Donovan, 2006).

In the Eastern Cape, the HIV/AIDS incidence rate has been reported at being 7-10%, translating into over 650 000 people, and most researchers admit that actual numbers are likely to be much higher (Kelly, 2005). This statistic hints at the devastating economic and social repercussions of the disease. The majority of people infected with HIV/AIDS are in the 15-49 year age range and therefore would normally be a potentially vital part of the informal and formal economies. The loss of these potential workers (who are also parents) is taking a toll on the economic and social vitality of the province and the country as a whole (*ibid.*).

2.2.1.5 Reliance on disability and welfare grants

Unlike developed countries, developing countries do not have comprehensive welfare nets, and rely on people being able to earn an income through employment (whether in the formal or informal economy, or in the agrarian sector) and being supported by their kin (Seekings, 2005b cited in Nattrass, 2007). South Africa's welfare system is exceptional among middle-income and developing countries (Seekings, 2005a, cited in Nattrass, 2007). Despite this relatively generous level of social assistance, pressure on the welfare system continues to grow – most notably on disability grants which rose from 600 000 in 2000 to almost 1.3 million in 2004 (Nattrass, 2006, cited in Nattrass, 2007). This is in part a consequence of the HIV/AIDS epidemic, and in part as a form of poverty relief, as a consequence of South Africa's high unemployment rate and the absence of any social security for the unemployed (Nattrass, 2007). Given that the disability grant is the only social grant available to adults of working age, it is not unsurprising that South

Africa's dual crisis of unemployment and AIDS is resulting in a sharp increase in the number of disability grants allocated (Nattrass, 2007). Nattrass (2007) argues that there is growing evidence that current disability policy is creating incentives for people to become and/or remain ill, and that this could be exacerbating the HIV/AIDS epidemic and undermining disease management programmes (such as that for Tuberculosis - TB) and the anti-retroviral (ARV) treatment roll-out. At a recent AIDS Consortium meeting, the poverty-alleviating aspect of the disability grant was highlighted and it was reported that people were indeed refusing to adhere to ARV therapy 'because they are scared that their CD4 count¹ will improve and they will lose the grant' (AIDS Consortium Press Release, 15 August 2005, cited in Nattrass, 2007).

The same can be said about the child support grant system, in that young unemployed women are becoming pregnant in order to receive the child support grant. This impacts on their education as many of them drop out of school in order to care for their children, which in turn influences their chances of finding employment. Almost 11.2 million people in South Africa were receiving social grants in 2007, 64% of which were child support grants and 21.2% being old age pensions (Statistical release, Community Survey, 2007).

2.3 Marine utilization in the Eastern Cape

Coastal inhabitants of the Eastern Cape, South Africa have used marine organisms for subsistence for centuries. Lasiak (1993) noted that indigenous coastal people of the Transkei supplemented their predominantly maize-based diet with shellfish as their major source of protein. Although these communities were predominantly pastoralists, they reserved the meat of livestock for ritual and ceremonial occasions, as cattle and goats hold high socio-cultural and economic value (Fatman 2003a). According to Bigalke (1973) the meat from shellfish was the only source of animal protein available in quantity and therefore formed an integral part in the diet of coastal communities on the east coast of South Africa. However, as contact with white communities increased, the coastal communities became aware of the value of shellfish in expanding markets, notably those in high demand internationally (Fatman, Timmermans & Palmer, 2003b). Research has shown that there has been a dramatic escalation in the rates of

¹ CD4 count refers to the number of "helper" CD4 T-lymphocytes (white blood cells) in a cubic millimeter of blood. With HIV, the absolute CD4 count declines as the infection progresses. The absolute CD4 count is frequently used to monitor the extent of immune suppression in persons with HIV. Also called a T4 count.

shellfish utilization along the coast of the former Ciskei, in recent times (Kaehler, 2000). The impact of human population expansion, technological innovation and the widespread decline of agricultural production in rural areas have led to the current pressure on coastal marine resources (Fatman *et al.* 2003b). Marine resource utilization is categorised into three categories: subsistence, commercial and recreational use (Kaehler, 2003). According to Siegfried, Hocky and Crowe (1985:77, cited in Fatman *et al.* 2003b), it is commercialisation that has caused the degradation of coastal marine ecosystems and the virtual elimination of target species.

2.3.1 Sustainable utilization of coastal marine living resources project

As mentioned in Chapter one, during February 2002, a research programme entitled '*Sustainable Utilization of Coastal Living Resources*' was initiated in the Eastern Cape, funded by the South African National Ports Authority (NPA) and the Coastal Research Group.

At the beginning of the project, the research focused on the coastal communities of Port Alfred, Hamburg and Ngqinisa. Although the study area was extended in 2004, west to Cannon Rocks and east to East London, there were recommendations made that the original study sites be targeted for two separate Environmental Education research projects at Masters level for 2005/6 (S. Kaehler, personal communication, March, 2005). A major component of these research projects was to be the development of environmental education resource materials within school and community contexts. My proposed research was to focus on the community context.

Each of the three communities differs with regard to type and degree of marine resource utilization, socio-economic status and human population demographics. Ngqinisa is a small rural village east of Hamburg where the majority of harvesting is used for subsistence. Harvesting in Hamburg, a larger rural community, is both for subsistence and financial gain. According to research, local shores are depleted of living resources and collection now occurs further afield along the coast, affecting the neighbouring village of Ngqinisa. Port Alfred is an urban settlement, where high levels of marine resource exploitation are primarily due to recreational use and to a lesser degree, subsistence use (Kaehler, 2005). As collector density and exploitation pressure vary greatly along the coast, human demographics were analysed in a Geographic Information System (GIS), to understand the variability. In general, the former homeland of the Ciskei (between the Great Fish and Chalumna Rivers) is demographically different from the rest of the study area, in that the inhabitants contend with high levels of

poverty and unemployment, and are concentrated into a number of small, densely populated settlements. These circumstances have led to the reliance by rural households on livelihood strategies which depend on the exploitation of (particularly) abalone (*Haliotis midae*), alikreukel (*Turbo sarmaticus*), rock mussel (*Perna perna*) and oyster (*Striostrea margaritaceae*), for subsistence and increasingly, commercial harvesting. It is in the vicinity of Hamburg in particular, that high collector densities and exploitation pressure have at times come close to those observed in the severely over-exploited Transkei (Kaehler, *ibid.*).

2.4 Ecological knowledge and management

2.4.1 Status of scientific knowledge of rocky shore ecosystem functioning

The state of knowledge of rocky shore community structure is well advanced within the southern hemisphere, stemming from pioneer studies of vertical zonation and biogeographical distribution patterns by Stephenson (1948 cited in Griffiths, McQuaid, Harris & Dye, 2000) revised by Emanuel *et al.* (1992 cited in Griffiths *et al.*, 2000); studies on biogeographical and exposure-related variations in species richness, biomass and trophic structure by McQuaid & Branch (1984; 1985 cited in Griffiths *et al.*, 2000) and Bustamente *et al.* (1995 cited in Griffiths *et al.*, 2000). The analysis of functional relationships (processes) is still lacking. Although many attempts have been made to draw up energy flow diagrams for South African shores (Field & Griffiths, 1991 cited in Griffiths *et al.*, 2000), the principal shortcoming in these has been the critical role that water movement in rapidly transporting phytoplankton, detritus etc. in and out of the system. Thus, although it is possible to calculate metabolic energy requirements of filter feeders and grazers, it is extremely difficult to apportion these amongst the various possible sources of food. Moving to higher trophic levels, rocky shores abound with intra- and interspecific competitive interactions and predator-prey relationships, which have been the subject of a great many studies. Despite this, there is yet only a partial understanding of, for example, the implications of exploitation of key species on species richness, community structure, ecosystem functioning, especially stocks of other exploited or exploitable species. In addition to this, one of the numerous gaps that exist in ecosystem knowledge includes the limited ability to generalise from the particular to the general. Most ecosystem studies are short-term and restricted to a single site, making it difficult to extend conclusions to different circumstances over space and time. Therefore, what was needed was a longer-term study

undertaken simultaneously at a variety of sites (Griffiths *et al.*, 2000). In a sense this is what the five-year project, Sustainable Utilization of Coastal Living Resources, has tried to achieve.

2.4.2 Threats to ecosystem functioning

The South African coastline suffers from an unusual combination of first and third world threats, including: excessive and increasing exploitation of keystone species by both sophisticated industrial, illegal, recreational and subsistence users, resulting in radical and perhaps irreversible changes in community structure (e.g. mussel removal in the former Transkei creating a coralline-dominated shore and reducing parent stock to the point where recruitment fails (Foster, 1997). A lack of un-impacted benchmark sites reduces awareness of threats to marine ecosystems. These threats include the long term degradation due to compounded human impacts including pollution, coastal development, introduction of alien species (e.g. the Mediterranean mussel) and catastrophic disturbances, like oil spills and black tides (Griffiths *et al.*, 2000).

2.4.3 Link between ecosystem functioning and management

According to Griffiths *et al.* (2000) there is a need to develop management policies that are predictive of an ecosystem, rather than at species level. For example, what will the effects be of various mussel-harvesting strategies on species richness, limpet and alikreukel biomass, exploitable seaweed stocks, and so on? It is clear from case studies, such as the overexploitation in the former Transkei, that ecosystem impacts are profound, but few predictive experiments have been carried out. There is a wealth of circumstantial data available to suggest possible outcomes, but this is spread amongst numerous papers in primary literature and is relatively inaccessible to the average manager or community co-management committee. Thus there is a pressing need for much of the existing scientific data to be synthesized and phrased in terms meaningful to those who utilize these marine resources, as well as those who wish to manage them (*ibid.*). Various marine awareness programmes have been developed for and implemented in the rural marine harvesting context, but as argued in 2.8.1, few have focused on the specific context or social epistemologies of those who are targeted.

Griffiths *et al.* (2000) further contend that another management concern is the paucity of long-term monitoring studies to determine the scale of natural spatial and temporal variability. Without

such an appreciation for the ranges of natural variation, it is extremely difficult to evaluate the impacts of exploitation and make recommendations for future management.

2.4.4 Status of subsistence fishery

The history of subsistence fishing dates back to the coastal indigenous *strandloper* people of South Africa (Isaacs, 2006). For hundreds of years rural communities along the South Eastern coast of South Africa have practiced the tradition of harvesting resources from the rocky shore to supplement their predominantly maize-based diets. Yet since the 1930's, many of these subsistence harvesters have been harassed. During the apartheid period (prior to the establishment of a democratic government in 1994), subsistence harvesting was not legally recognised, and in many places harvesters were denied access to the natural resources. The creation of coastal parks and other natural preserves further limited access by indigenous people (Altman, 2005). Provincial legislation was introduced and actively enforced in the 1980's, requiring the purchase of a recreational harvesting permit, tool specification, and limitation on amount harvested. As many who depend on coastal resources for food security cannot afford to buy the annual harvesting permit and are limited to small number of specimens per catch per day, subsistence harvesters have turned to covert activity, often harvesting under the cover of night. There has long been a history of conflict between harvesters and law enforcement officials (*ibid.*). Today, subsistence fishers operate along the entire South African coastline, utilising resources predominantly from intertidal and estuarine environments (Booth & Hecht, 2000). Possibly the most difficult group to define and quantify, subsistence fishers are defined as fishers that must consume at least part of their catch for sustenance, but are allowed to sell the rest of their catch locally (Booth & Hecht, 2000). Anderson and Griffiths (1997) broadly define subsistence use as exploitation for own consumption, where the resource is necessary for the survival or health of the human community. (Booth & Hecht, 2000) explain that the number of subsistence marine living resource users is growing in the Eastern Cape, as more and more people have come to rely on these resources as a source of food and income. As much as a strategy is needed to manage and protect their rights, Booth and Hecht (*ibid.*) argue that it is first necessary that the demographics, socio-economic profile and resource utilization of these fishers be thoroughly understood.

In 1998, the Marine Living Resources Act (MLRA) formally recognised subsistence fishers in South Africa as a unique sector. The MLRA defines a subsistence fisher as 'a natural person

who regularly catches fish for personal consumption or for the consumption of his or her dependants, including one who engages from time to time in the sale or barter of excess catch, but does not include a person who engages on a substantial scale in the sale of fish on a commercial basis. Due to the government's lack of experience in dealing with subsistence fisheries, a Subsistence Fisheries Task Group (SFTG) was appointed in 1999 to advise on the future management of this new sector (Hauck & Sowman, 2005). The SFTG presented recommendations in 2000, many of which were based on the principles of co-management, for example, the establishment of local co-management structures as a means of effectively managing subsistence fisheries.

By definition, co-management is a partnership arrangement primarily between government and resource users, but may also include other stakeholders, to share the responsibility and authority for managing resources (Hauck & Sowman, 2005) (see sections 2.4.5 & 2.6).

The recommendations of the SFTG were accepted and endorsed by the Minister of Environmental Affairs and Tourism (DEAT) in 2000, and adopted by the national authority for fisheries management, Marine and Coastal Management (specifically the Subsistence Fisheries Management Unit – SFMU) as a guide to implementing co-management and managing subsistence fisheries. Among the recommendations was a revised definition for subsistence fishers: “people who personally harvest marine resources as a source of food or sell their harvest to end users locally to meet their basic needs; they operate near to the shore or in estuaries, live in close proximity to the resource, use low-technology gear (often as part of a long-standing community-based or cultural practice), and the kinds of resources they harvest generate only sufficient returns to meet basic needs or food security” (DEAT, 2006).

Therefore, although there is no formal policy in place to implement subsistence fisheries co-management in South Africa, the SFTG recommendations are being used in the interim by MCM to initiate and implement co-management arrangements.

2.4.5 Potential threats to the subsistence fishery

With South Africa's high population growth rate, coupled with increasing poverty levels, food insecurity, unemployment and the ravages of HIV/AIDS, there is no doubt that there are additional pressures being placed on its marine living resources. Conflicts over access rights,

increased levels of poaching and over-fishing have become inevitable. Added to this has been the impact of the increasing recognition of the commercial value of many of the coastal resources, with the resultant fast cash out-competing many long-term development initiatives.

Over-fishing is the most obvious threat, and with current fisheries resources mostly fully utilised, any increase in fishing effort must be viewed with caution. In light of this, it is important to point out that there has been a shift away from the conventional, centralised, top-down and resource-orientated management approaches because of their apparent inability to deal with these critical issues (Hauck & Sowman, 2005). This worldwide shift has been towards a more holistic, ecosystems and people-centred approach to managing natural resources, with a focus on the necessity of greater participation of resource users in management activities and decision making. Governments often do not have the resources, capacity and local knowledge to manage resources that are dispersed over large distances.

Since 1994, South Africa's MCM has been experimenting with various frameworks to introduce a social policy to address the problems facing the coastal poor, including fisheries co-management, sustainable coastal livelihoods and poverty alleviation. However, the science-heavy institution lacks a deep understanding of development, meaning that there is insufficient capacity and common purpose within MCM to carry through its social objectives once current donor support comes to an end (Isaacs, 2006). While coastal communities and resource user groups seldom have the resources and institutional setup and capacity to deal with complex management issues alone, they can, together with other stakeholders, jointly tackle these complex issues and make decisions that benefit both the resource (and the coastal ecosystem) and the resource users (see section 2.6).

2.4.6 Enforcement of marine legislation

Enforcement of legislation aimed at regulating marine utilization in South Africa is poor, and although efforts have been made to increase presence of compliance personnel along the Eastern Cape coast, (instead of restricting it primarily to the large economically important industrial fisheries off the Western Cape, as was the case in the recent past), is far from sufficient. Despite the paradigm shift to people-centred and development-focused approaches to coastal resource management, MCM has been unable to shift from its focus on science-based natural resource management and regulation to fit into the broader government priority of

reducing poverty. As long as this is the case, the credibility and legitimacy of South Africa's coastal management as a developmental intervention in a democratic dispensation is at stake (Isaacs, 2006).

2.4.7 Importance of fisheries development

Independent research has shown that small-scale fisheries and their associated industries, such as the line fishery, contribute significantly to the economic welfare of many towns and cities along the South African coastline. Resource sustainability is, however, the critical link in the chain. If there is over-fishing, there will be no incentive to fish commercially or recreationally and this will have serious economic impacts. The development of educational campaigns and the review of resource-ownership issues, coupled with proactive monitoring and effective policing, is therefore imperative (Booth & Hecht, 2000).

2.5 International and national policies concerning marine and coastal biodiversity

2.5.1 International policies

Mounting concern about the impacts of human activities on marine and coastal biodiversity is reflected in numerous international, regional and national policies. The past twenty years in particular have seen a rapid increase in the number of international instruments aimed at addressing the threats to marine and coastal biodiversity, and protecting, understanding and using marine resources sustainability (Wynberg, 2000). The most comprehensive and significant of these is the legally binding United Nations Convention on Biological Diversity (CBD). Signed at the United Nations Conference on Environment and Development in 1992, this treaty came into effect in December 1993 and has 175 member countries as parties (as of 15/1/99), including South Africa (*ibid.*). Its three objectives, all of which have relevance to marine and coastal biodiversity, are:

- the conservation of biological diversity;
- the sustainable use of its components; and
- the fair and equitable sharing of benefits arising from the use of genetic resources.

These objectives are to be met through the enactment of a number of measures at both international and national level. These include:

- the development of national strategies;
- the integration of biodiversity considerations into sectoral and cross sectoral plans;
- the establishment of monitoring programmes;
- extensive measure for *in-situ* and *ex-situ* conservation (e.g. establishing protected area, controlling alien organisms, restoring degraded ecosystems);
- the adoption of incentive measures;
- the establishment of research and training programmes;
- public education and awareness raising activities; and
- the introduction of measures to facilitate access to genetic resources and benefit sharing.

The Convention advocates an ecosystem approach in fulfilling these measures. This is especially pertinent to the marine context, and the Convention explicitly provides for implementation to be consistent with the Law of the Sea. A noteworthy development is the adoption in 1995 by the second Conference of Parties to the CBD of “The Jakarta Mandate on Marine and Coastal Biodiversity”, which articulates an action programme for implementing the CBD by providing an overarching political and scientific framework within which it can address concerns relating to marine and coastal biodiversity.

2.5.2 National policies

At the national level, policies to conserve biodiversity have historically focussed on the terrestrial environment, relatively neglecting marine and coastal biodiversity (Wynberg, 2000). Although a substantial body of law exists which has application to marine conservation, its efficacy is hindered by a number of factors. Chief amongst these is fragmentation, resulting from legislation being spread across many different government departments, at both provincial and national levels (*ibid.*). Additionally, the enforcement of legislation has been rendered ineffectual by inappropriate penalties, the lack of an appropriate incentive system to reward good practice, and insufficient capacity within the government agencies to monitor infringements. These concerns are well recognised and over the years have lead to the development of an impressive array of new policies and laws to develop an integrated framework for management of environment in general, and for marine resources in particular (*ibid.*).

The transition to a participatory democracy in South Africa in 1994 has been integral to the development of many of these new policies and laws relevant to natural resource management. Influenced by global debates and trends, these policies and laws support the principles of:

- equity,
- social justice,
- participation,
- environmental sustainability,
- accountability, and
- transparency.

(Hauck & Sowman, 2005)

The overarching legislation relevant to the marine environment is the South African Constitution (adopted in 1996), which provides for environmental protection and conservation within the Bill of Rights (Sections 24 and 25) and, importantly, allocates marine resources as an exclusive national competence (Schedule 4) (Wynberg, 2000). Principles embraced include:

- equitable access to natural resources,
- sustainable use of natural resources,
- access to information, and
- involvement of the public in decisions and management, (Hauck & Sowman, 2005)

These principles are enshrined in many new policies and legislation relevant to natural resource management, including the:

- White Paper on Marine Fisheries Policy for South Africa of 1997,
- White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity of 1997,
- Marine Living Resources Act of 1998,
- National Water Act of 1998,
- National Environmental Management Act of 1998, and the
- White Paper on Sustainable Coastal Development in South Africa of 2000.

(Hauck & Sowman, 2005)

In 1996, the National Environmental Management Act (NEMA) came into effect, which creates the fundamental legal framework that ensures the concretisation of the environment rights guaranteed in section 24 of the Constitution of South Africa. Its core environmental principle is the promotion of ecological sustainable development (last amended 2004) (Van der Linde,

2006). The National Environmental Management: Biodiversity Act 10 of 2004, provides for the management and protection of the countries' biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems, sustainable use of indigenous biological resources, equity in bio-prospecting and the establishment of a regulatory body on biodiversity, the South African National Biodiversity Institute (SANBI) (*ibid.*).

Democratic South Africa has seen the introduction of a model constitution and supporting legislation aimed at promoting social equity, justice, equal opportunity and economic development. While Government's development vision for a new South Africa is impressive, delivery on many policy goals have been lacking due to a lack of capacity. Prior to the 1994 democratic elections, the South Africa's fishery management was top-down and resource-focused. The Sea Fisheries Directorate (now Marine and Coastal Management – MCM) performed research, set total allowable catches (TACs) and was responsible for compliance within the industrial and recreational sectors (Booth & Hecht, 2000), overlooking the socio-economic status and rights of subsistence fishers. After the elections, an extensive participatory process amongst stakeholders resulted in the drafting of new legislation, the Marine Living Resources Act of 1998 (MLRA). This Act (last amended in 2000) contains an implicit 'development' mandate encapsulated in the Act's three guiding principles, namely equity, sustainability and stability. It thus broadened the focus of the management of marine resources, to include the promotion of the socio-economic benefit for coastal communities and a greater emphasis on inshore and coastal resources, as opposed to the traditional emphasis on the offshore industrial fisheries (*ibid.*). It introduces regulating measures for the conservation of the marine ecosystem, the long-term sustainable utilization of marine living resources and access to exploitation, utilisation and protection of certain marine living resources (Van der Linde, 2006). The MLRA defines the management of fisheries and aquaculture as a national function to be administered by MCM, however it lacked a detailed policy on how to actually manage the various fisheries to achieve its goals (Booth & Hecht, 2000) (see section 2.4.4). MCM is now tasked with the pressures of self-regulation together with having to implement the Act (Booth & Hecht, 2000).

A second piece of legislation is the White Paper for Sustainable Coastal Development in South Africa, which seeks to promote an integrated "people centred" approach to coastal development (Booth & Hecht, 2000), highlighting the importance of improved access to coastal resources and community involvement in management of coastal resources (Hauck & Sowman, 2005). This approach emphasises the contribution that can be made to socio-economic development

through facilitating sustainable coastal development (Booth & Hecht, 2000) through maintenance of the health, diversity and productivity of coastal ecosystems (Wynberg, 2000). This farsighted policy provides a methodology and strategies for implementation, and outlines the importance of recognising the value of the coast. In the past, coastal management efforts were fragmented and uncoordinated, and were largely undertaken on a sectoral basis. The policy supports a holistic way of thinking by promoting co-ordinated and integrated coastal management (Booth & Hecht, 2000).

A key goal of the White Paper is the promotion of partnerships between government, the private sector and civil society. It recognises the need to adopt management approaches that are participatory and co-operative (Hauck & Sowman, 2005). Responsibility of implementation of the MLRA and the Coastal Policy also rests with the Department of Environmental Affairs and Tourism's (DEAT) Directorate of Marine and Coastal Management (MCM). The move from a "resource-centred" to a "people-centred" approach has had huge implications in terms of institutional capacity to implement policy. MCM has traditionally been staffed with resource scientists, managers and administrators, and thus staff with "people" development skills (anthropologists etc.) were, and still are, lacking. The introduction of the MLRA effectively precipitated an institutional crisis within MCM, and their attempt to restructure the fishing industry was disastrous (Booth & Hecht, 2000). Initially, implementation of the Act by MCM focused largely on "command and control" style of redistribution of access rights, and on resource management issues. This "transformation" process lacked:

- economic analyses and scenario planning;
- user participation in reconstructing the various fishing sectors; and
- capacity building and support of new entrants into the industry.

The restructuring processes resulted in administrative malfunction, industry instability, an inequitable and sometimes arbitrary process of access rights redistribution (*ibid.*). It became painfully obvious that the implementation of the policy was not working after several court cases challenging rights allocations were instituted against the Minister. Thus, at the end of 1999, the new Minister (Vali Moosa) attempted to rectify the situation by appointing new senior staff up to Deputy General level within MCM and the policy process was revisited. During 2000 a "Discussion Document for the Fisheries Management Plan to Improve the Process of Allocating Rights" was issued acknowledging the problems and outlining a strategy for rectifying the situation. This included a one year moratorium on the issuing of new fishing rights and industry participation in devising a workable rights allocation system. In November 2000, President

Thabo Mbeki signed an amendment to the MLRA and during 2001 MCM facilitated a participative process with fishing industry stakeholders to develop “rulebooks” for each fishery (*ibid.*).

A second policy document was released in February 2000 entitled “Stability, Transformation and Growth”, which spelled out proposed policy around participation and broadening of access in the fishing industry, access rights, rights allocation processes and proposed restructuring of institutional management structures. What is pertinent to the Eastern Cape is that the document acknowledges the need for geographic bias, which was absent from the previous policy (Booth & Hecht, 2000).

In 2001 and again in 2003, the community of Hamburg in the former Ciskei and the Cebe community of the former Transkei (in 2003), were selected by MCM as a pilot sites for an experimental exemption fishery where the community was given medium-term territorial user rights (TURFs) for abalone. However, despite the revised Act and right allocation strategy, this distribution of abalone permits in the Hamburg and Transkei was a failure, which consequently exacerbated the abalone poaching problem (Godfrey, Raemaekers, Britz, 2005) (refer to section 4.3.4.1).

It was hoped that the crises that emerged in particular fisheries, for example abalone and subsistence fishing, as a result of a lack of policy, would start to be addressed in consultation with stakeholders. However, the crises in the abalone fishery deepened to the point that the recreational fishery was closed by the DEAT in 2003/2004, and the commercial fishery closed end January this year, while the nation still awaits a specific policy for the subsistence fishery.

Between the years 2000 to 2006, subsistence fisheries were managed by way of annual exemptions, as there was no policy in place that set clear management protocols for the sector (DEAT, 2006). These draft policies for the allocation and management of medium-term subsistence fishing rights and small-scale commercial fishing rights were first gazetted on the 17th of November 2006, but due to the need for more extensive deliberation, the deadline was extended to the 12th March 2007. The policy objectives are to grant four-year rights to persons who can demonstrate their historic and cultural dependency on marine living resources, ensure orderly sustainable development of fisheries and environmental sustainability. The allocation of the medium-term rights in the subsistence fishing sector is intended to allow coastal

communities formal access to harvest marine living resources for food security, basic needs and livelihoods and to alleviate poverty (DEAT, 2006).

Projects linked to marine resource utilization have been few, probably due to a focus on industrial projects, a lack of specialist knowledge about the economic potential of marine resources and poor institutional coordination. If the “people-centred” marine resource policies outlined above are to be realised, closer linking with provincial development and delivery initiatives targeting coastal communities will be required (Booth & Hecht, 2000). Although mentioned in the White Paper for Sustainable Coastal Development, there is a need to stress the need for capacity building and empowerment of all stakeholders (including both user groups and government agencies), as is the need to delegate and devolve management responsibility to lower spheres of government, and to other stakeholders (where appropriate) in order to achieve effective and sustainable coastal management (Hauck & Sowman, 2005). A National Coastal Management Bill is being drafted, and its promulgation will give legal effect to these progressive policies. The Bill should contribute to encouraging the planning and implementation of coastal co-management (*ibid.*).

2.6 Co-management

With the political changes in South Africa in 1994 and the subsequent increased demands for access to marine resources and the re-assessment of policies for their management, the South African National Committee for Oceanographic Research (SANCOR), Sea and Coast Programme was set up (Anderson & Griffiths, 1997). One of its aims was to support research that would improve the management of South African marine resources. Five ‘thrusts’ were developed, and funding of projects began in 1995. Thrust A, dealing with ‘Communities and Living Marine Resources’, included 14 projects of a variety of subjects, all linked by the theme of co-management (involving coastal communities in working with scientists to develop better ways of managing resources) (*ibid.*).

Although the MLRA of 1998 provides the legal framework for fisheries management in South Africa;

- promoting equitable access to marine living resources;
- supporting the transformation of the fishing industry in order to address historical imbalances; and

- encouraging broad and accountable participation in decision-making processes; it does not explicitly endorse co-management (Hauck & Sowman, 2005). However, during the policy formulation process (which led to the White Paper for a Marine Fisheries Policy in South Africa in 1997), the importance of involving resource users in management was recognised and the implementation of co-management in experiential areas was encouraged by a policy task team (the Access Rights Technical Committee 1998)(*ibid.*).

According to Hauck and Sowman (2005), one of the key aspects and most difficult tasks in establishing co-management arrangements is the delegation and/or devolution of management authority from central government to a level that is closer to the people and local organisations. In South Africa, the state has ultimate authority for resource management decisions. As mentioned above, the Constitution of South Africa clearly stipulates that marine resources are a national competence (Section 4), but it also states that national government may assign any power or function to provincial or municipal authorities through a relevant agreement (Section 99). This is further emphasised through the MLRA, which explicitly states that the Minister of DEAT may assign powers outlined in the Act to a provincial authority (Section 78) and may delegate powers to both provincial and local spheres (Section 79). The only example in South Africa at present where national government has delegated certain fisheries management responsibilities to provincial government is the case of the Natal Parks Board (NPB), now called Ezemvelo KwaZulu-Natal Wildlife (EKZN-Wildlife). This transfer of power has allowed the province to develop a subsistence fisheries management policy and implementation plans, execute monitoring and enforcement of activities, and develop and conduct awareness-raising activities that are appropriate to the provincial context (see section 2.6.1.1 below).

In other coastal provinces, co-management arrangements are still in their infancy, as most initiatives are in their planning and developmental stages, no co-management policies have been established (Hauck, 2005).

Hauck and Sowman (2005) emphasise that co-management is a long-term *process* (not a once-off intervention), requiring long-term commitment and significant resources before management decisions can be negotiated. In many cases, co-management arrangements are established over a five to seven year period, particularly in circumstances where local organisations need to be developed and empowered. They (*ibid.*) go on to argue that empowerment is critical to the establishment of co-management. Especially when one considers that fishers, who have never interacted with government agencies except as suspects of law-breaking, will require some

years of reorientation and capacity building to settle into a new role as co-managers of a resource. On the other hand, government officials, accustomed to viewing fishers as criminals, will need some time to see fishers as equal partners in co-managing resources.

The draft policy for the allocation and management of medium-term subsistence fishing rights (gazetted 17 November 2006) intends to introduce and encourage co-management of subsistence fisheries through the establishment of Local Co-management Committees (LCCs) in all areas where subsistence fisheries are defined (identification of fishers based on cultural and historical involvement) (DEAT, 2006).

2.6.1 Examples of co-management and resource rehabilitation initiatives

2.6.1.1 Sokhulu mussel co-management project

In the early 1990's, rock stripping of mussels (with bush-knives) was reported along the shores of the Maphelane Nature Reserve in KwaZulu-Natal (KZN). At the time, harvesting of mussels by subsistence gathers was illegal and their ongoing attempts to harvest were dealt with through active law enforcement by the provincial conservation authority, the then Natal Parks Board (NPB). Law enforcement on its own tended to exacerbate the unsustainable nature of harvesting, as illegal gathers resorted to destructive methods to collect as much as possible as quickly as possible to avoid arrest (Harris, 1997a). This resulted in violent clashes and conflict between law enforcement staff and the illegal subsistence harvesters (Hauck & Sowman, 2005).

To address these problems, the NPB, now EKZN-Wildlife, initiated a co-management project with the Sokhulu community in June 1995. The Sokhulu project, funded by The Green Trust, WWF-SA (Worldwide Fund for Nature, South Africa) and supported by the Mazda Wildlife Fund for a period of five years, focused in the area between Maphelane Nature Reserve and Richards Bay. It aimed to provide the Sokhulu community alongside the Maphelane Nature Reserve with legal access to mussels on a sustainable basis and actively involve the community in resource management (Harris, 1997a). A Joint Co-management Committee was set up with participation of the provincial conservation authority (EKZN-Wildlife), subsistence mussel harvesters and external researchers (from the University of Cape Town) (Hauck & Sowman, 2005). After numerous workshops and interviews, as well as a survey of mussel stocks with the community, it was agreed to zone the coast into different types of mussel use to ensure resource sharing

between subsistence and recreational users and to reduce conflict (*ibid.*). The first zone would be a non-utilized or reserve zone, which would serve as a scientific reference, and more importantly, would provide a source of seed (spat²) for recolonisation of exploited areas (Anderson & Griffiths, 1997). The second zone would permit only subsistence use of the mussel resource. With the support of the Zululand Fishing Forum (established to facilitate participation in the development in a new National Fishing Policy) a two kilometre stretch of coast was set aside in 1996 for exclusive use by Sokhulu subsistence collectors. The Joint Committee managed collection in this zone under a special permit, which received legal backing through endorsement by the Fisheries Licensing Board (all recreational licences included a clause disallowing recreational collection within this zone) (Harris, 1997a). The third zone would be an 'open access' area, in that harvesting would be controlled by appropriate measures such as bag limits, size limits and closed seasons, as determined by the then Sea Fisheries (now MCM) or NPB (now EKZN-Wildlife) (Anderson & Griffiths, 1997). In all the above zones, the aim of management would be to keep the total take of mussels from any area to a sustainable level (*ibid.*). A key feature of the Sokhulu project has been the involvement of the community in determining and monitoring that level, especially since the harvesters were initially unhappy about the size of the area and the size of the daily personal quota (Altman, 2005). The community participated in a number of experiments to determine the most effective harvesting tool (a screw driver versus a bush-knife) and what off-take amounts were sustainable (the two kilometre stretch was divided into colour-coded subzones, each with different levels of off-take to observe impact) (Harris, 1997a). Through their observations and information they had personally obtained, the harvesters asked for the most intensely harvested areas to be closed to allow recovery (Altman, 2005). Also, four mussel monitors were hired from Sokhulu to patrol the subsistence harvesting area, helping to safeguard the catch and stock, and provide an avenue for direct communication with the rest of the community about the state of the fishery (*ibid.*).

Difficulties abounded in getting the project off the ground: the natural (but unknown) limitations of the mussel resource; lack of viable alternatives for many Sokhulu residents; and the lack of trust and a history of conflict between harvesters and authorities (Altman, 2005), and subsistence harvesters and recreational collectors (Harris, 1997a). Illiteracy and language barriers were further complicated by gender issues: the harvesters were virtually all female, whereas the management officials were all male (Altman, 2005). All Sokhulu committee representatives, with

² Spat refers to the larval stage of an oyster or similar bivalve mollusc, especially when it settles to the bottom and begins to develop a shell.

one exception, have been women, and an issue has been their shyness to talk at meetings and to assume a leadership role. A great deal of effort was thus put into facilitating discussions and co-operation, and meaningful participation by communities in research, management and decision-making. Literacy training and basic environmental education was given to provide the information, skills and confidence that the community needed to voice their needs, challenge proposals and address problems (Harris, 1997a). It is important to point out that, as the underlying theme of the project was to involve the community in all research and monitoring activities to form a pool of common knowledge shared by all participants, emphasis was placed on finding out what the community's own story and knowledge was from the outset.

Some of the first activities were aimed at sharing information and generating an understanding between the EKZN Wildlife staff and the Sokhulu harvesters, including a Participatory Rural Appraisal workshop (Fielding, 2005) and door-to-door surveys were designed to provide insights into the dependence of the community on mussel harvesting, patterns of collecting activities, population demographics, and community knowledge of resource management and mussel ecology (Altman, 2005).

One of the spin-offs of the mussel co-management project is that the community is now participating in a mussel-reseeding project. This involves retaining the undersized mussels that would otherwise have been discarded, and 'planting' them on the shore beneath sleeves of plastic mesh that are attached to the rocks with screws. The mussels soon re-attach themselves to the rock face and the sleeve can then be removed, leaving the mussels to continue growing to a size at which they can be harvested. There are two potential benefits from this activity: 1) enhancement of yield in that small mussels are saved for later use, and 2) rehabilitation of over-harvested areas by deployment of mussels on which settlement can occur, given that recruitment is largely onto mussels themselves (Fielding, 2005).

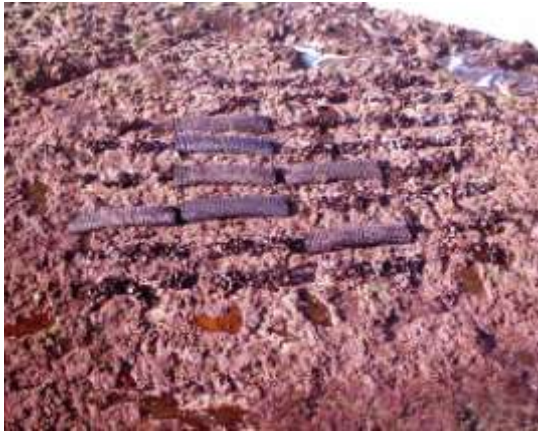


Figure 2.1 Plastic sleeves at Nqutheni, KZN, September, 2003



Figure 2.2 Attached mussels, Nqutheni, KZN, October, 2003

Source: Professor Calvo-Ugarteburu, Walter Sisulu University

This approach paved the way for another pilot project – the Kosi intertidal co-management project in Maputaland (Altman, 2005). Also funded by The Green Trust, and supplemented by the Pew Fellowship awarded to Jean Harris of EKZN-Wildlife, this project allowed the Sokhulu model to be applied and tested at another site, enabling a useful exchange between the two communities (Sokhulu and Enkovekeni) (*ibid.*).

The model developed at Sokhulu and the lessons learned have been applied in the provincial rollout of subsistence fisheries co-management systems in KZN. Funded by NORSA and in partnership with MCM, EKZN-Wildlife established a provincial Subsistence Fisheries Implementation Unit with a field extension team, and established 44 local subsistence fisheries co-management committees in 19 communities. EKZN-Wildlife has applied for a further five year period of funding from NORSA, to consolidate implementation systems for subsistence fisheries in KwaZulu-Natal, develop a long-term Strategic Plan and evaluate the success of the overall programme, as well as of local co-management as a management model (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004). This work has also fed into a national process to legalise subsistence fisheries. Jean Harris chaired the national SFTG (see 2.4.4), which conducted a nationwide survey of harvesters (including their perceptions and socio-economic circumstances) and resources (Altman, 2005). Since then, the insights gained from the Sokhulu project and subsequent Maputaland project continue to impact the bigger picture of coastal resource management in South Africa.

2.6.1.2 Coffee Bay – Hole in the Wall mussel rehabilitation project

Unlike in KwaZulu-Natal where significant exploitable stocks of mussel are still present (largely due to effective management from the days of the NPB), massive exploitation in the former Transkei has already left most shores devoid of mussels, and considerable recovery or rehabilitation would have to precede any attempt to manage mussel resources sustainably (Anderson & Griffiths, 1997). In November 2000 a project was started in the Lower Nenga area (Coffee Bay) in the adjacent east coast province of the Eastern Cape to rehabilitate (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004) and repopulate the mussel colonies along a 20-kilometer stretch of denuded rocks between Coffee Bay and Hole-in-the-Wall using community support (Stent, 2006). The project was led by zoology Professor Gugu Calvo-Ugarteburu, of the Walter Sisulu University and funded by MCM (DEAT) for a period of 3 years, with the aim of establishing a community-based co-management plan for the sustainable rehabilitation of mussel stocks (*ibid.*).

At the beginning of the project, the project manager, accompanied by a small number of community harvesters from Coffee Bay, visited the two similar co-management projects run by EKZN Wildlife in KwaZulu-Natal (Sokhulu and Enkovekeni). The objective of this visit was to learn lessons from these two projects and apply them to the Coffee Bay project where relevant (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004).



Figure 2.3 & 2.4 Coffee Bay harvesters learning from harvesters from Sokhulu, KZN

Source: Professor Calvo-Ugarteburu, Walter Sisulu University

Stent (2006) quoting Professor Calvo-Ugarteburu, explains that the outcomes of the project were unexpected, yet the lessons learnt, invaluable. The mussel colonies were re-establishing and beginning to thrive by the end of November 2004, not to mention the successful project

incorporating a food garden scheme. The villagers had claimed ownership and closed the colonies off to recover. They were monitoring the rocks, identifying poachers and fining them: 'You steal our mussels, we'll steal your vegetables'.



Figure 2.5 Coffee Bay harvesters attaching plastic sleeves to rocks
Source: Professor Calvo-Ugarteburu, Walter Sisulu University. Taken by Thomas P. Peschak.



Figure 2.6 Re-established mussel bed
Source: Professor Calvo-Ugarteburu, Walter Sisulu University

Unfortunately, by the end of January 2005 however, the Coffee Bay rocks were bare once more. Although both the Eastern Cape and KZN communities are subsistence mussel harvesters, there are some key differences between the provinces, particularly with respect to infrastructure and institutional support. Law enforcement and monitoring in the Eastern Cape is difficult due to the inaccessibility of terrain, lack of capacity of the provincial and national departments for coastal management, and low compliance levels due to high levels of poverty and thus dependency on the resources (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004). The degradation of the rocks within this short space of time was also attributed to an underestimation of the pressure of the holiday season, both from tourists and returning family members (Stent, 2006).



Figure 2.7 Coffee Bay harvesters clearing rocks

Source: Professor Calvo-Ugarteburu,
Walter Sisulu University



Figure 2.8 Harvesters in crash zone

Source: Professor Calvo-Ugarteburu, Walter
Sisulu University. Taken by Thomas P.
Peschak

The Coffee Bay project started by trying to follow the Sokhulu model, creating a community committee for the management of the mussel stocks, but due to the limited capacity of the Provincial Department of Economic Affairs, Environment and Tourism (DEAET) this committee was never fully integrated within the department (*ibid.*).

During the first year of the Mussel Rehabilitation Project (MRP), the focus was shifted from trying to manage the resource (which required a huge institutional commitment not available at the time), to trying to gain a better understanding of the livelihoods of the community and identify the root causes for the over-exploitation of the mussel resource (*ibid.*). Results of a Household Livelihoods Security Assessment done in Lower Nenga showed that one of the challenges in achieving the aim of the project was the high level of dependency on the natural resources. Over 25% of the households did not have any stable source of income, depending on piece jobs and natural resources, and another 30% depended solely on a state pension or equivalent social grant (approximately R600 a month, supporting an average household of 6 – 10 people) (*ibid.*).

In June 2003, the “*Integration of mussel rehabilitation with agriculture and other income generating activities*” project was started, with the aim of creating alternative livelihood opportunities for mussel dependent communities, in an attempt to relieve some of the pressure of the resources and achieve more sustainable harvesting of mussels. This project ended in May 2004 (*ibid.*). According to Professor Calvo-Ugarteburu, quoted in Stent (2006), some of the achievements and lessons learnt through the project include that they have perfected the mussel

rehabilitation technique, and shown that it is possible to train people to do it (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004). They have raised environmental awareness in the local community by linking with and supporting the Wildlife and Environmental Society of South Africa (WESSA/WWF-SA) Eco-School and Adopt-a-Beach activities in and around Coffee Bay. The Coffee Bay Eco-School node has a specific curriculum focus on the marine environment, and sustainable coastal resource management in particular (Coffee Bay Mussel Rehabilitation Project Progress Report, November 2005 – April 2006). The establishment and training of a local co-management structure has been achieved, with appropriate representation of fishers and management authorities and other relevant stakeholders, aligning the work of Sustainable Coastal Development (SCD – MCM) and that of the resource management committee established by the MRP (*ibid.*). The project has also been integrated into the municipal IDP (Coffee Bay Mussel Fisheries Management, WWF-SA Project Funding Application Pack, 2004).

The case of the Sokhulu project reinforces the importance of developing a successful local management model from which lessons can be learnt, and that can be used as an example and replicated in other areas. A successful co-management initiative in the Eastern Cape, properly integrated and aligned with the existing legislation, and actively involving the key provincial and national authorities could be the catalyst needed for coastal management in the province. There is value in aligning and connecting subsistence fisheries implementation efforts in the adjacent provinces of KwaZulu-Natal and Eastern Cape, with regards to resource management, as well as institutional support.

With the shifting politics of community-based natural resource management from being resource-centred to one that is people-centred, and the subsequent drive towards co-engagement and co-management, community-based environmental education practices have sought to structure participation as a means for adult-learner emancipation and empowerment. This participatory discourse in adult education is discussed below.

2.7 Overview of adult education

Authors who have written about adult education appear to base their exploration on three main assumptions. First they agree that ideas of and approaches to adult education vary so widely that announcing “adult” education as a unique and distinct category has become dubious. There

is no 'best' approach or theory, just as there is no 'ideal' learner. Second, that the context of a person's life, with its unique cultural, political, physical and social dynamics, influences learning experiences and how they are engaged. Added to this, it should be noted that 'context' is not static, but active and dynamic. Third, the 'learner' cannot be separated from the 'educator' in teaching-learning situations. The positionality of the educator affects how the learners perceive, feel, behave and remember. Considerations of learning should begin with educator's self-reflection on their own influence in that context and on their biased perception of what is happening (Fenwick & Tennant, 2004).

One perspective of adult learning theory is that learning is considered as an acquisitional process, where knowledge is a substantive thing – a skill or competency, concept, new language, habit, expertise or wisdom – that an individual obtains through learning experiences. What is acquired is not just knowledge content, but strategies or capacities to develop new knowledge or cope with unfamiliar situations (Fenwick & Tennant, 2004). However, the idea that knowledge can be represented as a substantive thing antedating the learning individual who ingests it has been vehemently denied by critics. They argue that acquisition theory does not shed light on the differential knowledge that people construct, individually and collectively, from their experiences. Nor does it dwell on how adults revisit and reconstruct these meanings, or how they often experience transformation of identities and knowledge through reflective learning processes (*ibid.*).

What tends to be under-theorised is how social capital and situational politics impact on cognition. This includes the politics of cultural recognition that influence what is counted as learnable knowledge or acquisitive processes (Fenwick & Tennant, 2004). Acquisition theories also raise issues about "transfer" – translating and sharing knowledge among applications and groups. For example, studies show that experts may develop procedure-bound routines that are locked into particular contexts that blind them to the insights of relative novices (*ibid.*).

Here too, learners may be trapped within the isolation and barriers of what is common knowledge and habituated routine within a particular context, narrowing their opportunities to learn something new. This is made more complicated in that learners do not necessarily 'know' what this common knowledge is, as it is beyond their consciousness. The French sociologist Pierre Bourdieu's notion of '*habitus*' has significance here. According to Jenkins (1992) the power of Bourdieu's notion is that *habitus* is derived from the thoughtlessness of habit and

habituation, rather than consciously learned rules and principles. People learn through experience and explicit socialization, and:

...socially competent performances are produced as a matter of routine, without explicit reference to a body of codified knowledge, and without the actors necessarily 'knowing what they are doing' (in the sense of being able adequately to explain what they are doing).
(Jenkins, 1992:76)

The *habitus*, a product of history, produces individual and collective practices, continuously carried forward in a process of production and reproduction of these practices in everyday life. How then does one bring about the possibility for change and learning, both at an individual level and that of the collective (because, although *habitus* is embodied in individual agents, it is a social phenomenon)? According to Barth (cited in Jenkins, 1992) times of crisis, in which the routine adjustment of subjective and objective structures is brutally disrupted, constitute a class of circumstances when indeed 'rational choice' often appears to take over. He, however, emphasises that it is *habitus* that commands this option. Bourdieu (cited in Jenkins, 1992) says that dispositions, which make up *habitus* are the 'generative basis' of practices, and that these dispositions are acquired through social experiences. So then, if a situation was created where people were given the opportunity to engage with and learn from the social experiences and practices of people from another context, would that not stimulate a degree of reflection on their own experience and practices? Wildemeersch, Jansen, Vandenabeele and Jans (1998, cited in Fenwick & Tennant, 2004) suggest that individuals change by being exposed to different configurations in community relationships. He explains as follows:

As individuals interact across different communities, they bring meanings from one group to another, in turn challenging the new group's definitions of reality. There is always a tension between the individual's beliefs and societal meanings ... key to both the individual and societal learning is a 'continuing process of dialogue and co-operation with people located in other configurations ... making unexpected connections. (Wildemeersch *et al.*, 1998, cited in Fenwick and Tennant, 2004: 64)

Essentially, learning arises from dissonance (moving from one's own frame of reference to another) and what is key, according to Wals (2007) is to learn on the edge of peoples' individual comfort zones with regards to dissonance: if the process takes place too far outside of this zone, dissonance will not be constructive and will block learning. However, if the process takes place well within people's comfort zones – as is the case when homogenous groups of like-minded people come together – learning is likely to be blocked as well.

Social learning, understood as a collaborative reframing process involving multiple groups or stakeholders, is located in the multitude of actions, experiences, interactions and social situations of everyday life (Vandenabeele & Wildermeersch, 1998, cited in Wals & Heymann, 2004). Through discursive dialogue and cooperation between people positioned within different frames (i.e. interests, values, reality constructions and contexts) such learning can be intensified and lead to change. Wals and Heymann (2004) contend that interactions between people may be viewed as possibilities or opportunities for meaningful learning and that the creation of conditions for individual learning depends to a large extent on the collective goals of those engaged in the process. The degree to which these collective goals are achieved, however, depends on the amount of space available for possible conflicts, oppositions and contradictions to enter the learning process.

People can become so wrapped up in their own frames (their ideas, ways of seeing things, ways of looking at the world and ways of interpreting reality) that they may fail to see how those frames colour their judgment and interaction. According to Wals and Heymann (2004), learning can be viewed as a change process resulting from explication and critical analysis of one's own norms, values, interests and constructions of reality (deconstruction or deframing), exposure to alternative ones and then construction of new ones (reconstruction or reframing). Space for dialogue must be made for new views and perspectives that broaden the realm of possibilities, rather than the mere transmission or exchange of points of view. By explicating and deconstructing the oftentimes diverging norms, values, interests and constructions of reality, it not only becomes possible to analyse and understand their roots and their persistence, but also to begin a collaborative change process in which shared meanings and joint actions emerge (Wals, 2007). Of significance in the reconstruction of common frames is to create recognisable imagery of possible situations that transcend reality as currently perceived by those involved in the learning process. In order for participants to explore and create new frames they need to engage with one another through exchange, interaction and confrontation (Wals & Heymann, 2004).

Schön (1983, cited in Fenwick & Tennant, 2004) argues that people learn by noticing and framing problems in particular ways, then experimenting with solutions. It is thus argued that in encountering new or unique problems or situations different to the habituated norm, people learn. Brookfield (1995, cited in Fenwick & Tennant, 2004) suggests that when people reflect on their own experience with 'sceptical questioning' and 'imaginative speculation', they refine, deepen or correct their knowledge constructions. The key is confronting and perhaps rupturing

people's deep-seated beliefs, including those dominant ideologies that they have uncritically absorbed from their cultural community (Brookfield, 2001, cited in Foley, 2004).

Another perspective in adult education focuses on individual or personal meaning-making, through the process of reflection. As learners reflect on their experience, they actively interpret what they see and hear, emphasising aspects of greatest personal interest or familiarity, and so construct and transform their own unique knowledge (Fenwick & Tennant, 2004). Writers associated with reflexive constructivism, such as Piaget (1966, cited in Fenwick & Tennant, 2004) focus on the individual, alternating between assimilation of newly constructed concepts and accommodation of these to new encounters. Others, like Vygotsky (1978, cited in Fenwick & Tennant, 2004), focus on the social interaction between the individual and the environment, showing that in the process of constructing knowledge we affect those around us as much as we are affected by them. For Kolb (1984, cited in Fenwick & Tennant, 2004), learning is a tension and conflict-filled process, oscillating between concrete emotional experiences and deliberative cognitive reflection. Although all adults are exposed to a multitude of life experiences, Kolb (*ibid.*, cited in Fenwick & Tennant, 2004) maintains that not everyone learns from these. Learning happens only when there is reflection and internal 'processing' by the learner, in a way that actively makes sense of an experience or problem and links it to previous learning. During *critical reflection*, however, people start to question their own action and how they framed problems in the first place.

If one moves this theory of critical reflection from the individual to the collective and combines it with action, groups develop new awareness of social inequities and oppressions they had taken for granted, and envision more just formations (Fenwick & Tennant, 2004). This is *praxis*, and with the integration of critical reflection with action, the focus is shifted to that of practice.

Authors who write about adult education often note that the quantity and quality of life experiences play a key role in shaping a person's learning (ability). Lindeman (1926, as cited by Belzer, 2004:42) suggests that, "the resource of highest value in adult education is the learner's experience ... experience is the adult learner's living textbook". Lindeman also suggests that adult education involves a process of giving meaning to experiences by understanding their significance and value (Belzer, 2004). However, it should be noted that experiences are shaped by socio-cultural and historical factors and therefore are always open to reinterpretation and thus are not static in nature. Authors such as Dewey (1970, as cited in Belzer, 2004) have even suggested that not all experiences are educational and can in fact promote and foster the

opposite of learning. It has also been suggested (in Belzer, 2004) that prior experience can form 'mental blocks' which prevent learners from incorporating new ideas that challenge their previous beliefs.

Fenwick and Tennant (2004) explain that the difficulty in individuals reflecting carefully and even critically on their experiences is that we are embedded so thoroughly in our cultures (*habitus*) that we may not be able to distance our thinking from our experiences. Another aspect of this problem of 'mentalist' reflective views is their separation of thinking and acting. There is a growing shift to conceptualise learning as more relational and contextual than reflection-based. Situative theorists such as Lave and Wenger (1991), as well as Greeno (1997), Rogoff (1990) and Wenger (1998)(all cited in Fenwick & Tennant, 2004) in the post-Vygotskian tradition (which recognises the socio-cultural situatedness of learning) argue that learning is rooted in the situation in which a person participates, not in the head of that person as intellectual concepts produced by reflection. They further contend that knowing and learning are defined as engaging in changing processes of human participation in a particular community of practice. Lave and Wenger (1991) argue that individuals learn as they participate by interacting with the community (with its history, assumptions and cultural values, rules and patterns of relationship), with the tools at hand (including objects, technology, languages and images), and the moment's activity (its purposes, norms and practical challenges). Thus, 'knowing' is interminably inventive and entwined with 'doing'.

Lotz (1999) reports that a powerful historical narrative in adult education has been the historically located concept of 'andragogy', the ... "the art and science of how adults learn..." (Knowles, 1983, in Edwards *et al.*, 1996). Andragogy is based on the critical assumptions that adults learn differently to children, as they have experiences to draw on in learning situations. In addition, adult learning is seen to be determined by social roles and the fact that adult learners are problem-focused (*ibid.*). These assumptions are based on a naïve opposition with conventional pedagogical assumptions about child learners. A developing science of adult learning has resulted in wide-ranging 'technological implications' for adult learning, one of which suggests that the individual adult's problems should be the departure point for curriculum activities (*ibid.*). Hanson (1996, cited in Lotz, 1999) argues that education programmes based on the assumed differences between child and adult learners neglect issues of power and control, and over-emphasise an abstract notion of the adult learner as an individual. She thus describes andragogy as a form of:

...abstract individualism rather than an engagement with learners themselves within their real life situations. General characteristics are assumed rather than specific contexts and perceptions examined ... Andragogy fails to address the context and people's active experience of the world.

The following describes some of the fundamental pedagogical approaches to science education in formal child schooling problematised by Engeström (1991) (a well known socio-cultural learning theorist), with the view of drawing on his analysis of possible alternative approaches, to inform adult education. Within formal or traditional schooling, subjects are often taught through modelled abstractions mediated by text, diagrams and the educator. Based on his experience within formal education context, Engeström (1991) explains that instances of honest ignorance or incorrect knowledge in the learners stem from the fact that today people are often been led to mislearn what the natural world could have taught them through simple observation. He suggests that the reason for this is that school text is seen as the object of activity instead of being an instrument for understanding the world. When the text (or abstraction) becomes the object, the instrumental resources of the activity are impoverished – leaving the learners “to their own devices” (*ibid.*). This instrumental impoverishment produces what Resnick (1987, in Engeström, 1991) calls “symbolic-detached-from-referent thinking”. This creates a sense of distinction and separatedness between the scientific (abstract concepts – the invisible) and the everyday experiences in context (the visible). Engeström (1991) refers to this as the ‘encapsulation of school learning’.

Engeström (1991) analyses three contemporary approaches to break from the encapsulation of school learning and its instrumentalist orientation blindly adopted by science educators. The first approach, the instructional theory of “ascending from the abstract to the concrete”, was developed by V.V. Davydov (1977, 1988a, 1988b) and his collaborators over the last three decades. The strategy of ascending from abstract to concrete has two characteristic traits. The first being that it moves from the general to the particular. Secondly, this strategy is essentially genetic, aimed at discovering and reproducing the conditions or organisation of the concepts to be acquired. It requires that the learner reproduce the actual process whereby people have created concepts, images, values, and norms (within and applied to context).

Davydov's theory suggests that the encapsulation of traditional learning is due to an empiricist, descriptive and classificatory bias in traditional teaching and curriculum design. Knowledge acquired at school is usually of such an abstract quality that it fails to become a living

instrumentality for making sense of the bewildering multitude of natural and social phenomena encountered by learners in their out-of-school contexts. Knowledge, therefore, becomes abstract and remains inert. Davydov's solution to the encapsulation of school learning is "to push the school knowledge out into the world", moving from closed text to open context of discovery, making it dynamic and theoretically powerful in facing practical problems. Engeström (1991) maintains that this strategy does not pretend to eliminate the power of the educator, but by putting learners into dialog with the discoverers of the past, the strategy may well empower the students. School learning would have to create powerful intellectual tools in instruction that learners can take into the outside world to grasp its complexities (*ibid.*).

There is a tendency here to view the learner as cognitive – where the process is an individualistic meaning-making of the contextual world. Lave and Wenger (1991) are not satisfied with the Davydovian approach. They contend that due to the social character of learning, the process of internalisation, viewed as the acquisition of the cultural given, requires a 'socialness'. There is a need to account for the place of learning in the broader context of the structure of the social world. The alternative approach they propose is based on the notion of learning as increasing participation in a "community of practice" (Engeström, 1991). They argue that social practice is a generative phenomenon and that learning arises from it. Thus learning is integral to social practice. Learning commonly proceeds from simple or partial practises towards crucial and complete practices. Thus, learning takes place through the gradual increase in participation-situated negotiation and renegotiation in the world. To improve learning, the social practice should be reorganised. The learning curriculum should thus be embedded in opportunities for engagement in practice.

Lave and Wenger (1991) suggest that learning as participation in communities of practice is particularly effective (a) when participants have broad access to different parts of the activity and eventually proceed to full participation in core tasks, (b) when there is abundant horizontal interaction between participants, mediated especially by stories of problematic situations and their solutions, and (c) when the technologies and structures of the community of practice are transparent, that is, their inner workings can become available for the learner's inspection. The object of the activity is now the context of practical application, where a meaningful contemporary social use and formation of knowledge about phenomena takes place (Engeström, 1991). The viability of this approach seems to be dependent in the successful identification of a meaningful social practice.

The third approach analysed by Engeström (1991) is one that he calls 'learning by expanding'. Here he surmises that, as schooling is a historically formed practice, learners may break through encapsulation by critically and systematically examining its contents and procedures, current activity and its inner contradictions. He calls this the context of criticism. Engeström (*ibid.*) goes on to explain that students are not empty vessels.

He argues that on the grounds of this critical examination, learners may be able to design and implement in practice an avenue, a new model for their activity.

Engeström (1991) suggests that all three approaches, Davydov's ascending from the abstract to the concrete (context of discovery), Lave and Wenger's legitimate peripheral participation (context of practical social application), and the critical analysis of current practice of learning (context of deliberative criticism), could be employed as complementary modes of inquiry by learners and educators in particular contexts, hence the expanded object of learning. This kind of expansion alters the context of learning itself to an activity system, focusing on the formation of advanced networks of learning that transcend the boundaries of instructional education and a concentration on processes of social transformation. Engeström, Miettinen and Punamaki (1999, cited in Fenwick & Tennant, 2004) explain that learning occurs as a cycle of questioning something in this activity system, analysing its causes, modelling a new explanation or solution, implementing this model in the system, reflecting on it and consolidating it. But unlike individualist reflection-on-experience models, activity theory views learning as the collective construction and resolution of successively evolving tensions and contradictions in a complex system.

Countless methods of experiential learning in adult education have sprung from the often simplistic assumptions of andragogy and associated techniquing of adult learning (Jansen & van der Veen, 1992, cited in Lotz, 1999). Many of these ideas are seen to be appealing and valid as adult learning processes. Techniquing of adult education though these different experiential learning strategies follows the Davydov's logic of ascending from the abstract to the concrete (e.g. understanding mussel ecology for sustainable harvesting practice) and assumes education to be the successful transfer or facilitative construction of theoretical knowledge (see Participatory Rural Appraisal below in 2.8.2) for later practical application. This instrumental orientation in design of adult learning programmes had been questioned by many adult educators, including Lave and Wenger (1991), Jansen and van der Veen (1992, cited in Lotz,

1999), Lauzon (1995, cited in Lotz, 1999), Usher and Scott (1996), Engeström (1991) and others.

Jansen and van der Veen (1992, cited in Lotz, 1999) provide a useful overview of some the shifts in adult education in recent years. They emphasise the influence that challenges and themes associated with Beck's (1992) notion of 'risk society' have had on adult education. Beck explains that 'risk society' is one characterised by risks produced in and by the ongoing processes of modernisation. These themes include, for example, ecological safety, the internalisation of political structures, and the flexibility of labour forces. Usher *et al.* (1996) indicates that in the context of globalisation and its imperative market forces there has been a spread of vocationalism and a pressure on the accreditation of learning.

This has coincided with significant changes in intellectual and conceptual frameworks in educational thinking. These include feminism, critical pedagogy and postmodernism, which have had a bearing on changes in educational practice. These changes have signalled dissatisfaction with the dominance of external control within the technical-rational models of practice, which in many cases continue to dominate course and curriculum development and training models in adult education and training.

Usher *et al.* (1996) also point out that these changes in adult education have occurred alongside a broad levelling of power gradients in society, evident in the democratisation of institutional contexts. With this in mind, education seems most usefully viewed as engaging in processes of contextual deliberation in and around developing patterns in socio-historical interaction and emerging risk (Lotz, 1999).

As education forms diversify, it is appropriate to focus on the processes and the scope they allow. Even within environmental education, Le Roux (1997, cited in Lotz, 1999), drawing on the work of O'Donoghue, argues that it is more appropriate to talk of environmental education *processes* in education rather than environmental education as a separate field or approach to education. This view of 'processes' draws attention to the contingent, open-ended and diverse nature of environmental education. Here she lays emphasis on a *contextual* open-endedness, where the processes differ in different contexts and are shaped in differing situations (Lotz, 1999).

With the diversity of goals, processes, organisational structure, curricula and pedagogy, 'education' can no longer claim a monopoly over models of learning processes (Lotz, 1999). The notion of adult *learning* rather than adult education provides a wide array of learning possibilities among adults. Usher *et al.* (1996) notes that this reconceptualising of adult education affirms the significant place of the 'learner' rather than that of the institution of learning or the traditional practices of education. Recent social learning theories (Wals & Heymann, 2004) also centre discussions on *learning*, rather than education and training models and approaches or techniques.

This shift of emphasis from education to adult *learning* questions the power of the educator to define what constitutes worthwhile knowledge and what matters as learning (Lotz, 1999). Adult learning now allows for recognition that educational goals, forms and practices are shaped by diverse cultural and socio-ecological contexts, not by universal norms or the models and goals implicit within these (*ibid.*). The implications of this for natural resource management and community education processes include the planning of adult learning processes where the participants themselves become involved in what constitutes learning opportunities in particular contexts, and through open-ended deliberation with the environmental educator, develop models of process which might respond to the diverse and complex environmental issues and risks in context (Lotz, 1999), in ways that take account of the socio-cultural and historical context of learning (Engeström, 1991 and Lave & Wenger, 1991) and the learning potential associated with dissonance that arises in contexts of risk (Wals & Heymann, 2004).

2.8 Trends in Natural Resource Management (NRM) adult education

2.8.1 Science and NRM education (Trend 1)

O'Donoghue (1993) describes how the need for environmental education arose in southern Africa due to the succession of environmental crises brought about by the development and techno-scientific progress of modernism, and the complex social and environmental problems created by Apartheid. In response to these emerging issues, environmental education was defined as:

An ongoing process leading to the development of a South African population that is aware of, and concerned about the total human environment and its associated

problems, and which has the knowledge, attitudes, motivations, commitment and skills to work both individually and together towards the solution of current problems and prevention of new ones (Department of Environmental Affairs, 1989, cited in O'Donoghue, 1993).

This definition leaves little space for either transformation of formal education or for the reflexive reconstruction of modernisation itself (O'Donoghue, 1993). In trying to respond to environmental degradation, scientists have taken up the instrumentalist approaches inherent in formal education. Scientists adopted the utopian assumption that if people (very often rural communities over-utilizing the natural resources) were made aware about the environmental problems and issues in their area (by providing them with the 'hard ecological facts'), their behaviour would change and they would begin to solve the problems. When education is used as an instrument of getting a message across or implanting a particular agenda, Jickling and Wals (2003) consider it to be destinational and restrictive. These notions of 'getting the conservation message across', creating awareness and clarifying values with the ultimate goal of modifying behaviour, have done little to motivate local communities in sustained resource management and environmental conservation. O'Donoghue (2005) discourages this notion of 'making people aware' and indicates that local communities are not empty vessels waiting to be filled with information.

In realising that the 'hard ecological facts' are often too abstract and complex to simply be communicated, attempts were made to model these 'invisible' abstracts or concepts in pictures and diagrams to make them easier to visualise and understand (see review of Enviro-Picture-Building in 2.7.3.1). These teaching-learning materials were then often complemented with activities where the learners encounter or experience the natural environment (or a simulation of it) and concluded with a 'what you should and should not do to help or take action' message. By way of an example, I briefly describe a coastal marine awareness 'campaign' that I was involved in during 2005. In collaboration with researchers from the Ichthyology and Zoology faculties of Rhodes University and extension officers from the South African Institute of Aquatic Biodiversity (SAIAB), three marine awareness posters were developed and associated activities designed for use in rural community high school contexts of the former Transkei and Ciskei. The posters and associated 'lessons' were focused on communicating information about the way in which people depend on and utilize coastal marine species, and in instances of over exploitation and destructive harvesting techniques, how the marine ecosystem is negatively affected. In introducing the first poster, examples were given on how and why people use coastal marine

resources. The poster then went on to illustrate the negative impacts that over-exploitation of a specific marine species have on the rest of the ecosystem through a depiction of a marine trophic level pyramid (Fig. 2.11). In the second poster, the impacts that over-exploitation have on species with a slow recovery (or growth) rate were illustrated through the depiction of the life-cycle of mussel, oyster and abalone (Fig. 2.12). The third poster (Fig. 2.13) focused on the 'dos and don'ts' of marine harvesting and the overall message that 'you can help'.

Before the posters were shown and explained to the learners, workshops were held with the teachers of the schools to introduce the posters and discuss how they could be used as learning support materials. Each school visited was provided with a set of the three posters.



Figure 2.9 Teacher's workshop discussing options for lessons supported by posters



Figure 2.10 Group of teachers with posters near Dwesa, former Transkei

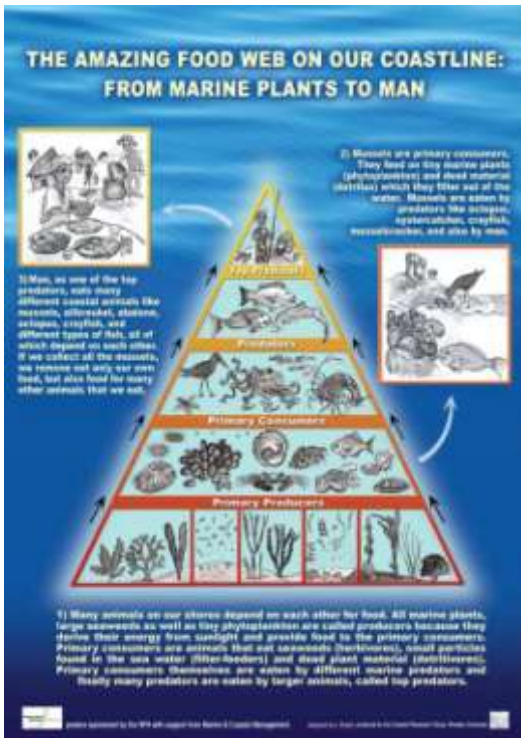


Fig. 2.11 Poster 1: How people depend on resources, and interconnectivity within the marine ecosystem



Fig. 2.12 Poster 2: Life cycle of mussel, oyster and abalone



Fig. 2.13 Poster 3: What you should and should not do to help

To compliment the educator's explanations and interpretations of the posters, encounters or experience-based activities were devised to assist the learners' meaning-making processes. These included a touch tank for the learners to see and touch the live organisms (Fig. 2.14), a variety of shells of different sizes to illustrate the age ranges, microscopes for learners to view microscopic larvae (Fig. 2.15), role-playing games within a trophic level activity, a spray activity with talcum powder to illustrate broadcast dispersal of gametes and embryos (Fig. 2.16), and an ecological pyramid building activity constructed with paint tins (Fig. 2.17).



Figure 2.14 Learners at touch tank



Figure 2.15 Learners view microscopic larvae



Figure 2.16 Serge using talcum powder to explain broadcast spawning



Figure 2.17 Tin pyramid activity

O'Donoghue and Russo (2004) critique the ecological pyramid tin building activities, explaining that the trophic level pyramid portrayed environment as natural systems and processes to the

exclusion of the social, economic and political processes that were seen as problems disrupting natural sustainability. In this activity people are seen as 'separate' from nature, and as the most dispensable and destructive unit. Various marine awareness programmes have been developed for and implemented in the rural marine harvesting context in the above manner, few focusing on the specific socio-economic and –political contexts or social knowledge generation and meaning-making processes and contexts of those who are targeted. Indeed, many awareness raising activities reflect Davydov's (1977, 1988a, 1988b) (see above section 2.7) assumptions of knowledge transfer from the abstract to the concrete, relying on individualistic reflections for meaning-making.

As mentioned above, a key shift in adult education has been away from these instrumentalist approaches to learning, where a pre-existing body of knowledge (usually determined by the expert educator) is simply 'taught' or transferred to learners. Doll (1989, quoted in Lotz, 1999) contends that curriculum should become a process of development rather than a body of knowledge to be covered or learned. Jickling and Wals (2003) argue that knowledge and understanding are constructed in a social context – new learning being shaped by prior knowledge and diverging cultural perspectives. *Mutual inquiry*, rather than the transmission of knowledge or the production of specific behaviours should be the general framework in which (educator and learner) relationship is placed. This socio-constructivist, transformative learning paradigm is more open and self-determined, so that knowledge is (co)created by transacting with prior knowledge and the curriculum, and is located in a social or socio-ecological context (Jickling & Wals, 2003). In the developing field of adult education, a socially shaped model of learning as consisting of interacting processes of ongoing deliberation (dialogue-encounter-reflection) amongst participants has engendered the concept of experiential co-operative meaning-making amongst adult learners in the context of real-life situations in local environments (Lotz, 1999). Adults apply their knowledge of a situation, in collaboration and in dialogue with others, so as to get a shared understanding and collective solutions to problems. In this sense, the function of education is to enable critical awareness of how people perceive their world with a view to fostering moral action (Jickling & Wals, 2003). In learning situations such as this, the role of the educator changes from one of 'expert' or 'authority on environmental knowledge' or even 'engineer of learning experiences' to that of an active mediator between learners and the situations (*ibid.*).

2.8.2 Participation and NRM education (Trend 2)

From the 1970's a dominant ideology emerged which saw adult education as 'emancipatory', aiming to 'empower' people and 'liberate' them from conditions that limit their thinking and action. This powerful narrative was motivated by the ideas of the critical educationist Paolo Freire, and developmental specialist, David Korten. Initially these approaches were based on naïve opposition between conventional assumptions about child and adult learners (see 'andragogy' above in 2.7). These simplistic assumptions and the 'techniquing' of adult learning led to a wide array of experiential teaching methods (Lotz, 1999). Many of these seemingly 'emancipatory' approaches to adult learning have become powerful in the African developmental context in recent years, with the emergence of participatory approaches such as Participatory Rural Appraisal (PRA) and Community-Based Natural Resource Management (CBNRM). In education and training the influences of this dominant ideology, are seen in the descriptions of educators as 'facilitators' and animators' (Hope & Timmel, 1986, cited in Lotz, 1999), and the proliferation of participatory technologies such as activity-based learning, games, fishbowl techniques, group-based learning and so on.

2.8.2.1 Participatory Rural Appraisal (PRA)

As a consequence of the enthusiasm for emancipation through participation in the current development context, PRA has been widely used in a variety of contexts (Cornwall & Pratt, 2003), including people-centred approaches to natural resource management. A cacophony of versions of PRA resulting from its widespread uptake have led to concerns about the quality of much of the work being labelled PRA, as much of its mainstream popularisation, marketisation and adoption took precedence over exposing shortcomings. Participatory approaches were often promoted without honest critical reflection.

Absalom *et al.* (1995) define PRA as, "a family of approaches and methods to enable rural people to share, enhance and analyse their knowledge of life and conditions, to plan and to act". But empirical research has shown that practitioners understand PRA very differently (Cornwall & Pratt, 2003). For many, PRA is primarily identified with its distinctive visualisation methods – the use of maps, calendars, and matrices etc. (often with local materials on the ground or symbols) by groups of people in poor communities to represent the general conditions of their life. These methods are often applied in a more focused way to 'appraise' or explore a particular sector or

issue (Cornwall & Pratt, 2003). For example, marine researchers, extension officers and educators often use these visual representation methods to explore and enter into discussion around coastal resource utilization with rural communities. Not all practitioners make use of visual representation however, with some regarding the use of group or community discussion, or semi-structured interviews and short questionnaires, as PRA practice (*ibid.*). For many, PRA ought to allow a community to critically analyse their own natural resource management problems and opportunities, and then culminate in supporting them to generate and implement viable management or action plans (Thompson, 2003). However, concerns have been raised that the participants' involvement often stops at the analysis stage and the final decisions are reserved for the professionals or the funders. This can also happen more subtly through professional 'facipulating' (facilitating and manipulating) the direction or conclusion of the analysis. Many PRA practitioners are guilty of this, simply substituting PRA for the top-down, external tools they used to use without changing the way they think about local people and learning, and the way they conceive their own role as people working toward social transformation (*ibid.*).

Many of these orientations to adult learning have been questioned for assuming that knowledge can be 'transferred' or 'facilitatively engineered' (Lotz, 1999). In early education and extension, approaches were based on communication-by-objectives, a theory of behaviour-modification through targeted messages and the transfer of curriculum content and context devised by an educational or other expert. O'Donoghue (2005) comments that in these top-down approaches, scientists, in identifying environmental degradation problems, tend to develop these messages for the community, thinking that once they have become aware of the problems, their behaviour will change towards solving the environmental degradation. Thomas and Stillwell (1994, cited in Silima, 2007) call this top-down approach a supply-driven and paternalistic approach that minimises participation and reduces chances for meeting community needs and capabilities, and more importantly it creates a dependency syndrome. Participatory approaches have changed from top-down forms of social engineering to 'neutral facilitation', which aimed at 'empowering' communities to develop themselves. This ideology of 'empowerment' has come to be questioned as the critical theories underpinning it are often applied in a very narrow manner as they rely too heavily on a philosophy of consciousness. Deliberate instrumentalism is, for example, to be found in the notion that raising people's awareness to the constraints in their thinking will enable them to take action (Lotz, 1999).

Jansen and van der Veen (1992) note that empowerment concepts were often undermined by, on the one hand, a tendency to stress instrumental goals (for example predetermining outcomes of educational programmes or developing programmes which support the idea of 'back to basics'); and on the other hand, a somewhat exclusive use of the concept of empowerment for deprived groups. They thus suggest that progressive adult education became closer to social work as it became reduced to exclusive work with deprived groups.

More recently, Lotz-Sisitka and O'Donoghue (2007) have argued that such empowerment assumptions drive scaffolded, choreographed, activity-centred processes of facilitated participation. Despite enthusiasm for these activities, such facilitated participatory workshop processes are proving to have similar limitations to early participatory technologies used in nature experience and critical emancipation processes. Lotz-Sisitka and O'Donoghue (2007) contend that these limitations include: the withholding and exclusion of the present (including its histories) to create the illusion of reconstructive freedom; a questionable assumption that a facilitatory scaffolding of the arena of 'solicited propositional co-construction' constitutes a constructive engagement with the realities of the everyday; and the questionable assumption that the developing blend of reflexive and collaborative activity will actually roll out into meaningful processes of both workplace and community transformation. They thus conclude that:

...learning in participatory ways within scaffolded activity (a culture of propositional activity for changed practice) cannot be equated with, and assumed to run on into, situated process of struggle for/to change (reflexive change in situated patterns of practice).
(Lotz-Sisitka & O'Donoghue, 2007:121)

2.8.2.2 Community-Based Natural Resource Management (CBNRM)

Throughout southern Africa, people have utilised and managed natural resources as a means of survival for centuries. It is widely accepted that the particular style of official natural resource management that emerged during the colonial and apartheid periods generated a range of social conflicts that now endanger the future of natural resources (Fabricius, 2004). In the Eastern Cape, forced removals and overcrowding in the former homelands eroded responsibility, trust and a sense of ownership. It is thus rare to find people within a community context with existing social ties, similar interests and objectives grouping themselves voluntarily to care for

the environment. In this historical context it is often difficult to persuade people to participate in or buy into issues of environmental conservation, as they have been associated with mass community relocations and the prevention of resource utilization (*ibid.*)

CBNRM arose mainly from a widespread assumption that rural poor are exerting unsustainable pressure on their natural resources. Better use of practices, policies and management systems, it was argued, could halt this environmental degradation. Formal CBNRM programmes were thus formulated and implemented, often initiated by a combination of government, non-government (NGOs), community-based organisations (CBOs) and sometimes the private sector, and remain heavily influenced and funded by the international donor community and the international development agenda.

With the exception of a small number of success stories, the overall results of CBNRM initiatives have been disappointing. According to Magome and Fabricius (2004), rural people's general lack of investment in biodiversity conservation stems from the fact that the benefits rural people receive from their informal use of resources generally exceeds those from formal biodiversity management.

In recent times, participation around natural resource management has become increasingly difficult when one considers that the traditional institutions and belief systems, which may have once demanded a degree of management and conservation of natural resources, are rapidly being lost in many rural areas as priority is given to surviving in the context of severe poverty and risk (*ibid.*). Indeed people's time is devoted to intra-community activities and the demands of creating a livelihood. Another complexity has arisen in post-apartheid South Africa, where the powerful discourse of democracy has led to poor understandings of the relationship between 'rights' and 'responsibilities'.

Policy makers and educationists alike now accept that top-down education and decision-making in natural resource management, as well as over-concentration on the biological and ecological aspects of resource protection, is likely to precipitate a spiral of conflict that places natural resources at risk (Fabricius, 2004).

2.8.3 Use of picture-based materials in adult education

With the realisation that 'hard ecological or environmental facts' were often too abstract and complex to be simply communicated, environmental educators began to consider the use of pictures and diagrams as beneficial in modelling these 'invisible' abstracts or concepts, making them easier to visualise and understand. Picture-based materials have also proven to be useful in multi-lingual, -cultural and -contextual situations, allowing for shared engagement and meaning-making, and for enabling contextual, deliberative approaches to learning as they provide a recognisable referent for meaning-making and probing of issues and alternatives. In light of the above, I review two picture-based materials used in adult education below.

2.8.3.1 The Enviro-Picture-Building (Share-net, Howick)

The Enviro-Picture-Building was devised as a game in the early 1990's as a collaborative effort of numerous co-operating partners. The process was undertaken through Share-Net and was funded by the Green Trust, WWF-South Africa. The political context at the time (an interim period of transition between the apartheid era and democracy in the South Africa in 1994) stimulated a questioning of the way people were doing things, the nature of environmental education practices and its underlying theories (O'Donoghue & Russo, 2004). *Madlasuthe's Farm*, the earliest game developed by a forestry training school, had to be reworked to remove offensive cultural stereotyping and to reconstitute its method of use from a directed training process to a more open-ended and interactive exploration of ideas and images. Other games, notably *The Urban Jungle*, *Reserves and Neighbours* and *Catchments and Coasts* then followed in quick succession (*ibid.*).

The Enviro-Picture-Building education material became one of the most widely and regularly used introductory activities in environmental education programmes, its popularity outstripping the earlier ecological pyramid activity built with tins (see section 2.8.1). In contrast to the tin pyramid building, the Enviro-Picture-Building was based on a landscapes and social change perspective illustrating socio-ecological interaction, change and risk (O'Donoghue & Russo, 2004). The aim of the project was to develop and produce a simple, exciting and flexible resource that could be used to explore key environmental ideas, discuss environmental issues and risks and encourage local action through discussing and 'building pictures'. It hoped to achieve this by introducing learners to the *language* of environmental issues and risks, as well

as the exploration of solutions to the problems (Lotz-Sisitka & Russo, 2006). Informal research during the development of the materials noted that learners had difficulty narrating characterising features of local landscapes. It was found that their narratives and interpretative abilities were significantly enhanced after they had played with language and images using Enviro-Picture-Building (O'Donoghue & Russo, 2004). The design involves two sets of pictures – issues and solutions, and it is this picture-based design that allows all learners, literate and non-literate, to participate in the game and associated learning process (Lotz-Sisitka & Russo, 2006).



Figure 2.18 Issue / Question card picture

Source: Enviro-Picture-Building, Reserves and Neighbours

Reserves and Neighbours

Q7 Find a picture showing how soil erosion has led to wild animals escaping from the reserve.

Notes:

When too many animals are kept on a piece of land they will eat too much of the grass and bushes - this is called overgrazing. Overgrazing reduces the amount of plant cover so that there are no roots to hold soil in position. Thus it is easily removed by rain and wind, causing soil erosion. Of course, once the soil is eroded, plants will struggle to grow there. With no soil and no plants, the area becomes like a desert, unable to support life. The hyenas will find it easier to capture and kill cattle and goats than their natural prey.

Useful Share-Net resource materials:

Enviro-Facts: Soil erosion (52)



Figure 2.19 Issue / Question card text



Figure 2.20 Replacement card picture

Source: Enviro-Picture-Building, Reserves and Neighbours

Reserves and Neighbours

Replacement card for position D2

Notes:

Land that has been eroded can be reclaimed if stock numbers, the underlying cause of the erosion, are reduced. Trees and grass will then grow and hold the soil to prevent erosion. Old tyres provide a place where soil and moisture collect and are thus an environment suitable for seeds to germinate. Once soil erosion is reduced, the river water will be clearer as a result of carrying less silt.

Investigation and action ideas:

1. Investigate and discuss the rural problem of overgrazing and erosion. In most cases, to decrease stocking rates only makes rural people poorer.



Figure 2.21 Replacement card text

The resource uses three teaching and learning features, namely, an ‘*interactive starter orientation*’ for introducing key concepts and language; a ‘*use your own words with pictures*’ potential to explore key environments and problems; and a ‘*visual organising framework*’ for environmental information in the form of the Enviro-Facts booklets. The game was designed to

enable a progression from generic pictures to the collection of local pictures and photographs by offering three activities, namely the 'question and answer challenge', 'co-operative picture building' and 'other pictures', which involved the exploration of the local environmental issues and solutions.

In the first (and most popular) activity the group of participants are split into two competing teams, each with a 'runner'. The facilitator provides each team with a shuffled set of the pictures, identical to the larger picture cards which he/she holds. The facilitator's large Question cards each have a question (Q1-Q20), which is answered by a picture held by the two teams (see figures 2.18 and 2.19). When the question is read out each team holds up the picture that answers the question to their runner who runs it to the chair or table in the front. The first correct card down wins the point. The large card from which the question was read is now placed on the wall with prestik or on the Pocket-Chart Board in the correct position, which is reflected on the facilitators booklet. These pictures that answer the questions in the game serve to focus attention on key features of environments and are used to build a landscape of thematic images. The thematic features of each card were later linked to the Enviro-Fact sheets, but this feature was seldom used (O'Donoghue & Russo, 2004). Once the thematic landscape is complete, the group is called on to identify the environmental problems and then brainstorm possible solutions. When each problem and solution has been fully discussed, the 'taking action' information on the appropriate Replacement card is read out and discussed before placing it over or replacing the 'problem card', showing an improved environment with problems solved (see figure 2.20 and 2.21). Further action is promoted as each replacement card provides notes and ideas to guide further work. The facilitator is asked to encourage the learners to explore local issues and to use the Enviro-Fact information sheets (also available from Share-Net) to 'kick-start' investigations.



Figure 2.22 Group playing the Enviro-Picture-Building game

The second activity, co-operative picture building, involves the laying out of the small picture cards around the picture building board in the pack for all the participants to see. To build the picture, the participants are asked to read out the statements on the board and select (after much discussion, deliberation and agreement) the card that best matches the description. Once the entire picture has been built the participants are asked to check their picture against the large picture and then identify and discuss possible solutions. Each replacement card is held back until each problem and solution has been pinpointed, “earning” the participants the card or the opportunity to draw their own solutions on a blank card.

In the third activity the participants are encouraged to take photos of or draw pictures of their local environmental problems (instructions are provided on how to create their own ‘sketching scopes’ from old small milk cartons). Thereafter, the participants are encouraged to start their own club or action research group to solve the local problems. Unfortunately, the intended progression from the first activity through to the exploration of local contexts is very seldom done (O’Donoghue & Russo, 2004), limiting the learning potential intended in the resource, and the resource remains an interactive technology for transfer of concepts.

The Enviro-Picture-Building idea has been adapted for the Namibian context and has also been modified for use in the UNESCO (2002) multimedia programme on ‘Teaching and Learning for a Sustainable Future’ developed by the Griffith University, Australia (O’Donoghue & Russo, 2004). More recently it was been adapted to the Lesotho highlands context (produced by WESSA and the Maluti-Drakensberg Transfrontier Conservation and Development Programme), as well as the Karoo context, scoping the environmental and conservation issues and their implications for the critically endangered Riverine Rabbit (produced by the Endangered Wildlife Trust), and also for wetland education in the WESSA/Mondi Wetlands ‘WATER’ education Programme.

Much of the popularity of the Enviro-Picture-Building resources appears to stem from the energising fun associated with its use. The interactive manner in which the game is conducted also appears to open the way for interpretative processes (O’Donoghue & Russo, 2004). The methodological strength thus appears to lie in an imaginative mobilising of landscape images with the necessary language to make meaning (*ibid.*). Another obvious strength is its adaptability and flexibility for a wide range of contexts; indoor and outdoor, formal and informal education environments, and diverse landscapes and issues.

As picture and photographs were more widely used in picture-building activities within professional education contexts undertaken by the Southern African Development Community Regional Environmental Education Programme (SADC REEP), Share-Net, the National Environmental Education Project (NEEP) and Higher Education Institutions (e.g. Rhodes University and the University of KwaZulu Natal) the idea of environment as interacting political, social, economical biophysical dimensions (O'Donoghue, 1995 cited in O'Donoghue & Russo, 2004) became a more strongly held abstraction. Within this context, the game and the use of images shifted from one of exploring socio-ecological landscapes to a participatory activity within which the participants were orientated to a wider concept of environment. The Learning for Sustainability Project (1991) was one such professional development initiative, which drew on the experiments with photographs and people's interpretation of them to support environmental education curriculum development processes. The '*Camera and Context*' resource (Du Toit & Sguazzin, 1999), produced as an outcome of the Project (described below) provides useful methods for experimenting with photographs to explore local context and develop learning programmes and open-ended curricula.

2.8.3.2 Context-Camera booklet (Du Toit & Sguazzin, 1999)

The Camera and Context resource was produced with the aim of both recording a process being undertaken (professional development of teachers around curriculum development) and inspiring others to experiment with the same or related processes (Du Toit & Sguazzin, 1999). Essentially it is a collection of ideas for working with photographs, providing examples of how these ideas have been used and comments on both of these things from a broader environmental and educational perspective. A total of 40 teachers (all practicing environmentalists), selected from three educational districts in the province of Mpumalanga, were provided with disposable cameras and asked to collect images according to three main themes: '*my environment*', '*my professional setting*' and '*a day in my life*'. These three categories were taken to be photo-narratives (or stories) generated with a particular teacher's context.

One of the key guidelines for photo interpretation which Du Toit and Sguazzin (1999) point out in their citation of Eder (cited in Du Toit & Sguazzin, 1999) is that it is not whether there is a 'right' or 'wrong' view of environment that is significant, but rather the implications of a particular view. Thus, in supporting this orientation, the exploratory activities around people's views of environment (photo-narratives), lead to a process of coming to understand the implications of

particular views. Although initially it was reported that the teachers adopted a position that by taking photographs they were giving objective, unequivocal account of the environment, Du Toit and Sguazzin (1999) argued for the exploration of the concept of environment from a socially critical orientation and focus. They used the photographs to challenge social constructs held by the teachers with regards to their view of their particular 'lived in' contexts. Thus, the emphasis on texts, stories and narratives and social construction of meaning is emphasised throughout the resource.



Figure 2.23 Camera & Context book by Du Toit and Sguazzin (1999)

Du Toit and Sguazzin (1999) draw on Clarke (1997) in their explanation of photographs being regarded as text. Clarke (1997) argues that in looking at a photographic image, people engage with a series of complex readings, which relate as much to the expectations, values and assumptions that they bring to the image as to the photographic subject itself. The 'photographic message' contained in an image reflects the codes, values and beliefs of a culture as a whole and cannot be seen as an independent, objective view of reality. Therefore, the interpretations of photos are taken to represent a complex collection of social meanings and constructions that are socio-culturally and historically contextualised. Du Toit and Sguazzin (1999) go on to explain that if the photographers are considered to be 'authors' of text and the image a reflection of a specific point of view (whether aesthetic or ideological), which exists within a wider body of reference and is related to a series of wider histories, then the act of reading the photograph is a political act. Clarke (1997, cited in Du Toit & Sguazzin, 1999) proposes that every image is part of a self-conscious act of reference on the part of the photographer to give meaning to things, although the primary frame remains the subject of the photograph (for example, a house or tree). Therefore it is possible to 'read' different levels of meaning: the literal meaning and any significant element associated with it, and then establish the series of "codes which themselves

are the reflection of a wider, underlying process of signification within the culture". In analysing an image, the teachers were asked to consider different perspectives, experimenting with a kind of 'photograph discourse analysis', where 'taken for granted' issues and assumptions were investigated. Du Toit and Sguazzin offer eight perspectives, which can be used as a framework to conduct an image analysis: personal, historical, technical, ethical, political, economic, cultural and critical.

The bulk of the Camera and Context resource consists of the description of ten methods that can be used to work with photographs. These I briefly outline below.

1) *Writing a photo essay* – This activity aims to make meaning from context. The teachers presented their 'My environment and its problems' photograph collections or series, giving each photograph a caption based on their analysis of the image (the captions are written on the reverse of photographs) (see figure 2.24 below). Each teacher presented a visual and aural narrative to the group, encouraging any discussion that arises. He/she then consolidated the meaning for him or herself or reviewed and redefined various aspects of the environment in light of the others' contributions. Du Toit and Sguazzin (1999) note that the teachers were determined to have the 'right' caption for a particular photograph, defending it as correct on the basis of a "the camera never lies" position. These positivist or realist orientations to knowing were frequently encouraged and challenged during the activities.

2) *Context mapping* – In this activity the teachers were asked to select an image from their collection, stick it in the middle of a blank page and identify issues within the image that are important to them or their community. Each context map became a dense, complex portrait of meanings that the teachers held with regard to local environmental context. This activity is regarded as the follow on to the photograph narration allowing for further exploration and deeper meaning making.

3) *One image: two stories* – Small groups of teachers were asked to view an image and create a system of meaning (a narrative or story) for it. The teachers were not aware that other groups had copies of the same image. Once each group had written its story they were given the opportunity to relate it to the whole group. They soon realised that the meanings differ depending on the composition of the separate groups. This activity illustrated how environment can be read as text that is influenced by who is doing the reading; therefore reinforcing that there is no 'correct' or 'true' interpretation (reflecting a relativist view of knowledge). What is debated was the appropriateness of the narration and the familiarity (with aspects of history, culture, society and natural environment) that that particular group of reader have with a particular context. Du Toit and Sguazzin (1999) comment that in this activity the image's status as a

'reflection of reality' is complicated by aesthetic, cultural and ideological contexts, which leads to the image developing multiple meanings.

4) *Telling stories* – In this activity the teachers were required to select either one or a series of photographs and construct written narratives, all the while drawing on their experience and particular context (see figure 2.25 below). This was seen as a powerful source to reflect individual and cultural understandings of environment or local context. These understandings could then provide a frame within which to engage in critical dialogue. Du Toit and Sguazzin (*ibid.*) argue that this activity provides a good educational opportunity for the exploration of personal assumptions, hidden values and individual perceptions embedded within a particular socio-cultural situation. In the process of reading an image, locating it within a social context and the process of interpretation, negotiation, reflection and making meaning, language plays an important role. Du Toit and Sguazzin (*ibid.*) point out however, that 'environmental language' and concepts (e.g. sustainability, resource management, environmental legislation, etc.) were lacking in the teachers' narratives.

5) *A broader view* – Here panoramic shots were taken, moving the focus from a single, specific subject (which implied an element of choice and indication of a hierarchy of significance, according to Clarke (1997, cited in Du Toit & Sguazzin, 1999) to one that includes more subject material and information about the conditions under which a single image was created. This allows the viewer to explore links and relationships between different subjects, as well as how these have changed over time, in more depth (similar to the landscape orientation of the Enviro-Picture-Building).

6) *Plus five; minus five* – This activity explores perceptions of what is desirable and undesirable in an environment. Teachers were provided with various scenes and asked to choose five things that they would add to the image, and five things they would remove, to change it for the better. This exercise can be used to explore perceptions of what people take 'change for the better' to mean, as well as to explore possibilities and scenarios for the future.

7) *Underlying factors* – Each teacher was provided with an image and asked to list five underlying factors that are the cause of the situation they perceive in the photograph (see figure 2.26 below). The activity requires that the teacher identify for him or herself an environmental issue or risk, and then decide on what the possible root cause and effect may be. Du Toit and Sguazzin (*ibid.*) note that the teachers immediately revealed particular ideologies in their attempts to identify causes, and that it is those ideologies which govern any attempt to address the cause through the management or elimination of the root cause.

8) *Thought bubbles* – In this activity the teachers were asked to place themselves in someone else's shoes and 'speak through a character', providing them with an opportunity to explore their

own and other's meaning held in particular contexts (see figure 2.27 below). Together with an image the teachers were provided with a 'thought bubble' in which there is a starter phrase. The starter phrases provided were as open-ended as possible, so as to guide the response and not determine it. As the emphasis was on the use of first person narrative, any picture analysis revealed more about the person narrating (and their broader social perspectives) than about the picture itself.

9) *The bottom line is* – Teachers were asked to spend time considering allocated photographs and then develop a 'the bottom line is...' sentence from it, which drew from a broad generalisation of their interpretation. After sharing this sentence with the whole group, modifying it if necessary based on the discussions, the teachers were asked to develop and narrate a story to illustrate the 'bottom line' sentence they had developed.

10) *Building on narratives* – This activity was seen as the culmination of the previous ones where the teachers were asked to select one of their narratives they had constructed and then scan them for links to potential educational opportunities. These links were either mapped out as particular topics for further discussion or analysed by way of an environmental discourse analysis of the text.



Figure 2.24 Photo narrative example
Source: Camera & Context book pp 34



Figure 2.25 Write a story example
Source: Camera & Context book pp 44



Figure 2.26 Five underlying factors example
Source: Camera & Context book pp59



Figure 2.27 Thought bubble example
Source: Camera & Context book pp 67

Du Toit and Sguazzin (1999) conclude that the work with photographs and images described in their resource was based on the notion that:

...it is not the physical reality of objects that surround us that is of paramount importance in relation to environmental education, but rather the meaning that we individually and collectively as members of social systems, negotiate and attach to them". (pp 79)

They further contend that both the images and the narrative generated from working with them can assist in the exploration of the socially constructed meanings that people hold and/or negotiate with regards to their local environments. Du Toit and Sguazzin (*ibid.*) argue that an orientation to learning that fails to grapple with the meanings people make of the world around them is not likely to empower or assist them in dealing with problems as they arise.

2.8.4 Implications for materials development in this research

2.8.4.1 Significance of context

Lotz-Sisitka and Russo (2006) comment that research, formal or informal, contributes greatly to the materials development process. Some developers undertake a 'needs analysis', while others conduct 'contextual profiles' to inform the materials development. These contextual profiles

provide useful insights into the issues being confronted by the communities; the social dynamics at work within the communities; language and literacy issues; and useful historical insights. This research allows the materials developer to move beyond their own (sometimes blind or narrow) assumptions of the purpose of the materials; the intended learner group and their social, emotional, physical and intellectual characteristics; and how the materials will be used.

Lotz-Sisitka and Russo (2006) caution however, that research into the context and the material content should not be confined to the start of the materials development process, as ongoing research allows materials developers to gain ever broadening insights that further contribute to and inform the framework that guides research into the issue and the materials development itself.

What is key in the design of the Enviro-Picture-Building material was that it is a simple, exciting and flexible resource that is used to explore key environmental ideas, discuss environmental issues and risks and encourage local action within a specific 'landscape' or context. The materials were designed to enable an exploratory progression from the thematic pictures of the first activity to the collection and engagement with pictures and photographs of the learner's own local context, using the language provided in the first two activities. With the Camera and Context resource, the focus remained on the exploration of the learner's context and the meanings they make from it.

2.8.4.2 Use of pictures

Well-selected, picture-based learning materials can be useful in overcoming language barriers (Lotz-Sisitka & Russo, 2006), as well as in situations where the learners have poor levels of functional literacy. Picture-based materials can alleviate some of the challenges by providing a visual rather than a vocabulary-dependent or written text. The Enviro-Picture-Building material has been helpful in creating situations for non-English speaking learners to respond to pictures that depict local environmental issues. In selecting pictures for picture-based materials, however, care should be taken to ensure that the objects and contexts depicted in them have a degree of familiarity to the learner, otherwise the learner may not be able to 'read' them, as described by Mbanjwa (2002, cited in Lotz-Sisitka & Russo, 2006). Also, one should always be mindful to provide space for different interpretations when selecting pictures and photos, as Du Toit and

Sguazzin (1999) point out that there is no 'right' or 'wrong' view of environment, but multiple or polyphonic interpretations and meanings.

2.8.4.3 Language

Language forms the basis of learning, in that concepts and ideas are formed in language, allowing human beings to express what they know and learn (Lotz-Sisitka & Russo, 2006). It is also the medium through which teachers scaffold learning. In a country with many different vernacular languages, including those brought by colonisation, one is required to consider language issues from a number of perspectives. Two major considerations are: which language is most widely spoken by the learner group and what language is used in the instruction or facilitation. As described in section 3.2.1 and chapter four, the learner groups for this study come from rural coastal areas in the former Ciskei, and are therefore Xhosa speaking. The materials would therefore need to be designed in such a way that the participants can interact with the materials and one another, describe issues, engage with situations, as well as communicate their knowledge and understandings in mother tongue. The use of picture-based materials (Enviro-Picture-Building) has proven to be very appropriate for multiple uses with different groups (different languages, different age groups, and different contexts) (*ibid.*). Du Toit and Sguazzin (1999) contend that in the process of reading an image, locating it within a social context and the process of interpretation, negotiation, reflection and making meaning, language plays an important role. As it is likely that not all educators who are to make use of the materials are Xhosa speaking, any text that appears on the materials, as well as the guidance information will have to appear in both English and Xhosa.

Inspired by socio-constructivist and transformative views about education and actively engaged learners, as well as considering inclusiveness and collaboration to be essential in enabling environmental thought, Jickling and Wals (2003) explore possible conceptual tools to better discuss, critique, and employ as devices to stimulate effective and creative dissonance. They refer to Smyth (1999; 2002) and his consistent search to find language that can reach across conceptual divides and remain respectful of dissensus and dissent. In consideration of what O'Donoghue and Russo (2004) consider to be a strength of the Enviro-Picture-Building resource, and what Du Toit and Sguazzin (1999) noted the participants of their photo-based educational activities lacked, the provision an *environmental language* which allows the learners to engage with, interpret and explore the issues, problems and potential solutions, appears to be

useful. This orientating language would have to be introduced in such a way as to connect to and arise from the familiar in the socio-cultural context of the learners, but not be constrained by the blindness of *habitus* (see section 2.7).

2.8.4.4 Potential of developing and sharing narratives from photographs

The construction of narratives through the reading of photographs was seen to be a powerful source of individual and cultural understandings of environment or local context, within the Camera and Context resource (Du Toit & Sguazzin, *ibid.*). These understandings then provided frames within which the 'readers' engaged in critical dialogue with their peers. Du Toit and Sguazzin (*ibid.*) argue that constructing and sharing narratives provides a valuable educational opportunity for the exploration of personal assumptions, hidden values and individual perceptions embedded within a particular socio-cultural situation. Their research, however, seems somewhat constrained within the individualised reflection trajectory of adult education and failed to move beyond an individual cognitive gains focus.

2.8.4.5 Participation in materials development process

While participatory approaches to materials development bring a range of perspectives, Lotz-Sisitka and Russo (2006) contend that sometimes one needs to draw on specific expertise to inform the materials. This could involve drawing on input from specialists in the particular field (in this case, marine scientists, marine managers and those involved in community based marine co-management initiatives) in order to get accurate, relevant and up-to-date information, that can then be edited and adapted to suit the learner groups for whom the materials are intended.

Working *with* the potential users of the materials, rather than simply assuming that the materials can be developed *for* or *by* them, has important implications for the appropriateness or relevance of the materials. Lotz-Sisitka and Russo (2006) contend that developing learning materials through collaborative work and meaningful debate *with* the proposed learners, as also shown in the research by Lupele (2003, cited in Lotz-Sisitka & Russo, 2006), enhances understandings of the issues being discussed, as it allows for deliberation and exchange of meanings, thus engaging points of tension and dissonance to broaden existing knowledge and experience in relation to context. They go on to explain that working with the learners in the

development of materials creates a sense of ownership among the participants, increasing the likelihood of the materials being used more widely and in meaningful and relevant ways.

2.8.4.6 Flexibility and adaptability

If the materials developer has a very fixed idea of how the materials should be used, they are unlikely to be used in other ways. Materials developers need to open to potential ways of using materials and therefore approaching the development with multiple possibilities for use is likely to make them more flexible and useful in a broader context (Lotz-Sisitka & Russo, 2006). These contexts could include indoor and outdoor, urban and rural, formal and informal education environments. Designing materials so that they can be changed or adapted for use in different contexts also encourages educators to use them in combination with other materials, and allow open-ended spaces for learners to co-engage with educators in defining the education process.

Developers should also consider how to provide guidance on how the materials may be used, without being 'over-instructing' or 'over-structuring' in what is intended for their use. Overdone instructions, which don't allow for a degree of innovation and creativity, may limit the use of the materials. The piloting of test materials is thus recommended as a useful way of judging how much guidance is required, as well as determining in what new and different ways they can be used (Lotz-Sisitka & Russo, 2006).

2.9 Conclusion

This chapter provided an overview of the current challenges facing rural communities in South Africa with a brief introduction to subsistence marine utilization in the context of this study. This was followed by a review of the overarching status of international and national coastal marine research, policy and management, with particular reference to the shortcomings in legislative implementation. This serves as an introduction to the contextual profile of the study discussed further in chapter four.

An overview of adult education and specifically, the approaches used in community-based natural resource management, marine education and awareness within rural communities was traced. This is followed by a review of the use of picture-based materials in adult education, with consideration of two existing picture-based resources. Based on this review and the context

overview, the chapter culminates with a brief discussion of key aspects for consideration for the development of materials within this study.

The following chapter, Chapter Three, focuses on a discussion of the research design decisions, as well as the methodology and methods used in this research.

CHAPTER THREE

Research design decisions, methodology and methods

3.1 Introduction

This chapter describes the perspectives, considerations, realisations and events that shaped the design of the study. It locates the study broadly within an interpretive paradigm. Through a consideration of social constructivism, and its proposed limitations within this study, a vantage point of Critical Realism and the analytical tools it provides is presented.

Chapter One and Two of the study revealed some of the complexities of adult education at the interface of marine natural resource management and awareness raising, materials development and the realities of subsistence marine resource utilization in the context of poverty. With these complexities in mind it was necessary to design the research in such a way as to remain sensitive to the dynamic contextual nature of the study and thus allow for flexibility in the methods of enquiry.

3.2 Methodology: Interpretive case studies within a critical realist framework

3.2.1 Critical realist framework

Scientists and authorities (Marine and Coastal Management officials) are often under the impression that if the local harvesters are made aware of the scientific ecological information and research findings, they will understand why it is necessary for them to change their 'unsustainable' harvesting methods (Davies, 2005). However, well-intended attempts to inform the public about problems and solutions, through factual, scientific explanations may actually be discouraging local communities as they are not always easily understood (De Young & Monroe, 1996). On the Ciskei coast, as with so many developing areas, 'traditional' and modern understandings of marine ecology and management regimes are in conflict (Mathoko, 2000). Kaehler (2003) explains that the local harvesters of particularly Hamburg and Ngqinisa communities are unlikely to co-operate voluntarily with modern forms of marine management as they are in conflict with various socio-economic directives and cultural beliefs, and would

probably have to experience the imminent collapse of the marine resources before they changed their ways. Indeed it became evident from the initial contextual profiling of this study that few of the local harvesters understood the resource management policies and the approaches taken in their development, or how scientific or empirical research informed their development (Davies, 2005). Added to this, due to high levels of illiteracy, few community members could read information pamphlets designed to explain the issues at stake (Fatman, 2003a). According to Fatman *et al.* (2003b) it is this limited understanding and the cultural belief that the shellfish resources are infinite, that has led rural harvesters to view the limitations to access, dictated by modern management and legislation, as an unnecessary hardship. In addition to this, due to a history of colonial and apartheid exploitation of the Xhosa-speaking communities in the area (see section 4.3.1), the perception exists that the intentions of those who seek to impose this management, are not to be trusted (Fatman *et al.* 2003b; Bigalke, 1973; Mahola, 1990; Timmermans, 1994; Harris, 1997a).

There thus appears to be a disjuncture between the communities' social epistemology and the authorities' scientific epistemology. The question is then, what role can environmental education processes play in enabling closer 'dialogue'. According to Terre Blanche and Durrheim (1999) epistemology is concerned with how knowledge is generated and the premises by which it is accepted. Burr (1995) explains that the way that people see, understand and take action in the world is historically and culturally specific, and socially constructed. However, critical realists propose that the world is not simply socially constructed, and that a consideration and "unpacking" of ontology provides further research tools to understand the social construction of meaning, as well as the ontological situatedness of meaning and experience (Sayer, 2000). If the world was socially constructed, the social epistemologies and the scientific epistemologies could be relativistically "in opposition". This study proposes that through analysing the ontological dimensions and the relationships that exist between them, a methodology for engaging with these two seemingly opposing epistemologies can be found. A Critical Realist framework was thus used in this study, which proposes a stratified ontology, where mechanisms/structures, events and experiences constitute three analytically distinct domains of reality: the real, actual and empirical (represented in Table 1).

Table 3.1 Analytically distinction domains of reality

	<i>Domain of Empirical</i>	<i>Domain of Actual</i>	<i>Domain of Real</i>	<i>Example</i>
<i>Experiences</i>	✓	✓	✓	new harvesting approaches
<i>Events</i>		✓	✓	policy changes
<i>Mechanisms</i>			✓	macro-economic structures

Adapted from Baskar (Archer, Baskar, Collier, Lawson, Norrie, 1998:41)

By drawing on the framework provided by a stratified ontology, the social complexity of the marine resource harvesting issues, community relationships and their relationships with the resources were explored. For example, Hammond-Tooke, Palmer and Bernard (cited in Fatman, et al. 2003b) argue that the traditional forms of marine resource management are closely linked to the cosmology of the Xhosa people. Supernatural beings, the '*mamlambo*' or river people, are believed to control the availability of marine resources by influencing the tides and the weather. It is believed by local people that in order to gain good harvesting fortune, these beings should be respected by adhering to certain imperatives, conventions and prohibitions. These include the prohibition of certain categories of people harvesting resources and that small/young sea-animals should not be collected or consumed (*ibid.*). It was thus suggested that these traditional patterns of practice around harvesting, in the past allowed for a degree of protection of the ecologies of the organisms used. My interest lay in determining whether these cosmological beliefs are still held by the local harvesters and whether they continued to influence their harvesting practice. In relation to this I hoped to probe, with the development of technology, influx of people and strengthening of commercialisation how, the harvesting culture has changed to practices and patterns of harvesting that have depleted certain resources. Further, as present day management policy and legislation are informed by, and based on the research of the ecologies of the species used, I hoped to explore how certain aspects of the traditional ways of resource management can be viewed as being in line with these current management strategies.

Popkewitz (1991) emphasises the importance of bringing the past into contact with the present to better understand the patterns and ruptures of the social condition. Therefore, I wished to explore and probe the domains of reality (ontology), particularly the ecological (an aspect of the real) and socio-historical (the actual), with an emphasis on how they relate to one another. My concern was to explore how ontological narratives can be used to interpret and reflect on the

relationship people have with the marine environment in the present, how it is experienced and how species are harvested today (the empirical).

The study focused on the marine species which were historically used as a food source, and which are currently being used for both subsistence and financial gain, and are considered threatened due to overexploitation. These include Rock Mussel or *Imbaza*, Alikreukel or *Qongwe* and Oyster. Although there are a number of other species that are used for subsistence, including Periwinkles, Limpets, Saddlebacks and Octopus, there is either little evidence to show that they are threatened or, due to the difficulty in surveying them, their status has not yet been determined (Kaehler, 2005).

It was my intention to explore the *real* / mechanisms (with particular reference to the social ecology and the ecological) underlying and influencing the socio-historical / socio-cultural activities and events in context (*actual* / events) in such a way that took account of and provided insight into the harvesting experiences (*empirical*) of the shellfish collectors in Hamburg and Ngqinisa. According to Usher (1996), in order to understand and make meaning of the social world, people need to understand the meanings that construct and are constructed by human behaviour and action (in the domains of events and experiences). He (*ibid.*) goes on to explain that human action (including research) is given meaning through interpretive schemes. An interpretive framework for research, based on the harvester's interaction with photographs and pictures, was used. The photographs and pictures were used as platforms to stimulate dialogue and engage with harvesting decisions around sustainable resource utilization. The analysis, generation and sharing of information and experience through the use of visual material was framed around a relational analysis of three domains of reality (ontology). Such sharing processes, which include information generation and interpretation, have been successfully used in local communities around similar issues in the former Transkei (Fielding, 2005).

3.2.2 An interpretive orientation

The study was based on the belief that the social world can be understood from the standpoint of the individuals who are part of the ongoing action being investigated (Cohen, Manion & Morrison, 2000). Therefore, an understanding of people's actions and context of action can only be reached by the researcher if he/she comes to understand that their interpretations of the world are socially and culturally informed and arise from their social interactions in the world. Beck

(1979, cited in Cohen, *et al.* 2000) comments that since the social sciences cannot penetrate to what lies behind social reality, they must work directly with the rules people devise to cope with it. Unlike the normative paradigm, which objectively considers people's behaviour a response to stimuli (either external or internal) and therefore in the past, the interpretive paradigm focuses on action (intentional behaviour-with-meaning) and is therefore future orientated. Central to the interpretive paradigm is to understand the subjective world of human experience (Cohen, *et al.* 2000). By working with a critical realist ontology, I sought to interpret these experiences in relation to history, culture, context and ecology, thus seeking ontological depth in my interpretations.

The research was qualitative in approach, following an interpretive orientation (underpinned by a critical realist ontology), in that it sought to uncover how individual and group interpretations of reality influences both intentions and actions (Winberg, 1997). Interpretivism generally focuses on the multiple meanings which research subjects make of their world (Janse Van Rensburg, 2001), in the realm of the empirical. Critical realist ontology allows one to probe these meanings causally and relationally (Sayer, 2000), while recognising the fallibility of such interpretations (see section 3.4.3).

3.2.3 Case study approach

In line with the interpretive orientation of this study, a case study approach was used in this research, focusing on a relational analysis framed by three ontological domains (discussed in 3.2) as an analytical vantage point for engaging with marine harvesting in the cases of Hamburg and Ngqinisa communities. Cohen, *et al.* (2000) recognise that the strength of case studies is that they observe effects in real contexts, recognising that context is a powerful determinant of both causes and effects (Sayer, 2000). Sturman (cited in Cohen, *et al.* 2000) argues that case studies necessitate in-depth investigation into the complex dynamics of context, in that it unfolds interactions of events, human relationships and other factors. Sayer (2000) refers to such research as 'intensive' research.

Some of the advantages of case study offered by Adelman *et al.* (1980: 59-60) cited in Sikes (1999) are as follows:

- Case study data is 'strong in reality'.

- Case studies allow generalisations either about an instance or from an instance to a class. Their particular strength lies in their attention to the subtlety and complexity of the case in its own right.
- They recognise the complexity and ‘embeddedness’ of social truths. By carefully attending to social situations case studies can represent something of the discrepancies or conflicts between the viewpoints held by participants.
- Case studies, considered as products, may form an archive of descriptive material sufficiently rich to admit subsequent reinterpretation.

According to Cohen *et al.* (2000) case studies observe the characteristics of an individual unit in order to probe deeply and analyse intensively the multifarious phenomena that constitute the life cycle of the unit with the view to establishing generalisations about the wider population to which that unit belongs. Danermark, Ekström, Jakobsen & Karlsson (2002) argue that critical realism allows one to generalise across cases at the level of the real.

Two case studies were researched in this study, the villages of Hamburg and Ngqinisa and the marine harvesting experiences and practice of the people that live there. However, as the research progressed, the necessity arose to review a third set of harvesting practices, not so much as case study, but rather as related projects based within the communities of Sokhulu in KwaZulu Natal, and more particular to this study, Coffee Bay – Hole in Wall in the former Transkei (see refer to 2.6.1.2 and 6.5). These projects focused on the rehabilitation of the coastline by the re-introduction and management of rock mussel by the above-mentioned communities. The review of their development, implementation (and partial failure) allowed me to plan and set in motion the third and fourth phases of this study, namely: the learning exchange trip to Coffee Bay and the ‘report back / taking action’ phase back in the Hamburg and Ngqinisa contexts.

Kemmis (1990) explains the role of the researcher in the research is not one shorn of human interests and programming to execute a design devoid of socio-political consequences. Research is an active and interventive process where decisions are often taken ‘on the spot’, without the luxury of cool and considered reflection away from the real-life exigencies of the situation. The imagination and invention of the study are cognitive and cultural processes; the case study worker’s actions and his/her descriptions must be justified both in terms of the truth status of his/her findings and in terms of social accountability. Social science has the unique

problem of treating others as objects for study; the unique problem in case study is in justifying to others why the researcher can be a knowledgeable observer-participant who tells what s/he sees.

Stenhouse (1983) explains that many researchers seek theories that will penetrate the varying conditions of action, or applications founded on the comparison of each case. Generalisation and application are matters of judgement rather than calculation, and the task of case study is to produce ordered reports of experience, which invite judgement and offer evidence to which judgement can appeal. Hence, the use of a stratified ontology and analytical dualism in this study, which seeks to determine the relationships between the 'layers of reality' and thus in turn imagine what possibilities exist for increased agency and change through environmental education.

Stake (1995:2) further describes a case study as "the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances". This explains the emphasis that was placed on gaining an overview and understanding each specific context in this study.

Stenhouse (1983) identifies four broad styles of case study: ethnographic, evaluative, educational and action research case studies. Within this research, aspects of two seem relevant. Within ethnographic case studies a single case is studied in depth by participant observation supported by interview, after the manner of cultural or social anthropology. Here it calls into question the apparent understandings of the actors in the case and offers from the outsider's standpoint explanations that emphasise causal or structural patterns of which participants in the case are unaware. While this was not an ethnographic study *per se*, an attempt was made to clarify and offer explanations as to what structural mechanisms make the contingent circumstances in the realm of the participant's experiences and context possible and able to exist.

The action research case study is concerned with contributing to the development of the case or cases under study by feedback of information, which can guide revision and refinement of the action. (Stenhouse, 1983). Although it is hoped that this research will provide educational actors and decision makers with insights that may help them to judge the merit of educational processes, materials, programmes etc., which according to Stenhouse (1983) is the purpose of evaluative case studies, it is not the focus. The focus of the study was to investigate possible

ways in which learning spaces could be opened and guided towards informed decision-making and action around the sustainable utilization of marine coastal resources.

Yin (1994) categorises case study into three different forms. Within this study I have used elements of two, descriptive and explanatory. Descriptive case study hopes to present a complete description of a phenomenon within its context, while an explanatory case study hopes to present data bearing on cause-effect relationships – explaining which causes produced which effects.

3.2.4 Selecting research participants

As collection of shellfish has long been culturally considered to be a feminine activity (Fatman, 2003a), the majority of the research participants were women. Men were, however, encouraged to join the groups, as gender roles have been broken with the commercial exploitation of resources. I intended to select participants from both medium and elderly age groups in order to include knowledge and experiences of the present and past, and thus gain different perspectives. Masuku (1999) also contends that different experiences and understandings exist amongst different ages.

Due to the poorly implemented and monitored abalone permit distribution process between 2001 and 2003 (S. Raemaekers, personal communication, May 2005), as well as various socio-political upheavals in the past, most of the traditional and formal social structures in Hamburg have become fragmented. For this reason, I approached the Keiskamma Art Project in Hamburg for assistance in forming the Hamburg focus group, as many of those working for the project are harvesters and have ties with the former abalone committee. On the 7th of February 2006, I called a meeting with the Keiskamma project management, where I introduced myself and my research plans. The Keiskamma Art Project team appointed Nozimasile Nokuzola Makubalo (hereafter referred to as Noseti), the art designer and co-ordinator, to assist me. Noseti led Bulelwa (my late field assistant from Rhodes) and I into the village to visit some of the harvesters at their homes, where I introduced myself and invited them to attend an introductory meeting at the backpackers later that day. Those who attended the introductory meeting, besides Bulelwa, Noseti, a fellow masters student and myself, included two elderly women, one elderly man, six middle aged women and one young woman. Unfortunately the elderly man never rejoined the group after the first interaction, and as the year progressed the group of women dwindled to a

steady seven, including Noseti. This group of seven included a family group of three sisters, as well as a mother and daughter team.

In Ngqinisa, it was my intention to make contact with the harvester focus group established by Fatman (2003a), as no formal structure exists for harvesters. To do this, I approached Mr Jinja, a well-respected member of the community and elected field assistant for Fatman's field research. I was somewhat delayed in making contact with Mr Jinja and establishing the Ngqinisa focus group as there are three villages in the area with similar pronunciations to Ngqinisa. The first is called Gqinisa and is near the village of Wesley. The other is situated North-East of Peddie, and although I realised that this mountainous area could not possibly shelter the coastal village I was looking for, I thought I should visit it to be sure. When I finally found the coastal village of Ngqinisa on the 28th of March 2006, I visited its small primary school, Shwele-shwele, which Fatman had used as a venue to her interviews. Here, I was delighted to find that Mrs Jinja was a teacher, and thus finding Mr Jinja was easily achieved. He led me through the village and down to the beach in order to invite the shellfish harvesters he knew to an introductory meeting for my research at the school later that afternoon. Those who attended the meeting, besides Mr Jinja and I, included seven women, of whom three were young, and four middle-aged; and nine men, of whom most were young to middle-aged and one elderly man. Of the sixteen that attended the introductory meeting, only three middle-aged women and one middle-aged man continued to participate throughout the year.



Figure 3.1 Shwele-shwele Primary School, Ngqinisa

3.2.5 Field assistance and translation

As I cannot speak or understand isiXhosa, Bulelwa Nqweniso, research assistant working for the Rhodes University Environmental Education and Sustainability Unit (EESU) at the time, was asked to serve as a translator and facilitator during the focus group interactions, and due to her experience as a field assistant, she also assisted with the translation and transcription of recorded stories and dialogue from the focus group interviews into English. These transcriptions were abridged, as it is the core stories that are of importance. It is with great sadness that I report that Bulelwa succumbed to a lengthy illness early in 2006, and thus I had to rely on Gladys Tyatya, the EESU secretary, for the translation and transcription of the majority of the focus group interviews. As research assistance is not a formal part of Gladys' portfolio and thus relatively new to her, she struggled to find the time to assist me as well as the other master's students. This coupled with the fact that the coastal context and marine harvesting issues were unfamiliar to her, made the progress slow, as I had to explain in detail the background behind each interview. I therefore approached Michelle Cocks, from the Rhodes University Institute for Social and Economic Research, to gain the contact details of her field assistant. Michelle had conducted a marine resource utilization survey in Ngqinisa for the Zoology Department in 2003 as part of the 'Sustainable Utilization of Coastal Marine Resources' project, and was assisted with translation and transcription by Nomtunzi Sizani, research assistant for the Sutherland Herbarium in Grahamstown at this time. As Nomtunzi is an experienced translator and transcriber, and is familiar with the context and issues described in the recorded focus group interviews, her assistance was efficient and trustworthy.

In Hamburg, Noseti from the Keiskamma Art Project, continued to serve as my research field assistant. In Ngqinisa, Mr Jinja served as my field assistant. Their main tasks were to contact all the focus group participants and inform them of meeting dates, times and venues, as well as facilitation and translation during the focus group sessions, individual interviews and the exchange excursion to Coffee Bay. The fact that both Noseti and Mr Jinja reside in the case study villages, are respected members of the community, and were shellfish harvesters themselves at one time, was invaluable in that they knew the area and context well, knew where to find and how to contact the focus group participants, and themselves knew the complexities and dynamics of harvesting in the area. Making contact with them, however, was not always easy, as this could only be done via their mobile phones and network coverage in both Hamburg and Ngqinisa varied considerably. At times, I had to resort to phoning Jackie Downs of the Keiskamma Project in order to get hold of Noseti, or one of the focus group participants in

Ngqinisa to make contact with Mr Jinja, as his phone was stolen mid-year. In gratitude for their services, the field assistants were paid an amount of fifty rand per day.

3.2.6 Participation in research process

The research process was to a degree participatory in nature as I involved the research participants of the research in the planning and implementation of stages of the study, as well as the initial phase of the materials development (Terre Blanche & Durrheim, 1999).

Although attentive and positive at the introductory meetings, the decision to participate in this research on the part of the harvesters seemed to be centred on two earnest queries voiced during these meetings. These were firstly, whether I intended to inform the authorities of their harvesting activities, either observed by me or shared with me; and secondly, whether they were to be compensated for their involvement.

To the first question, I explained that anything that I was to be told or anything that I observed would be for my research alone and that I would take care to ensure their anonymity in the reporting. To achieve this, the use of pseudonyms was offered. It was, however, agreed that they would be referred to as respondents, and therefore no names mentioned. Also it was agreed that wherever possible I would smudge out the faces of those in photographs, to protect identities. With regards to payment for their participation, I explained that I was unable to pay them for their time, but promised that I would provide lunch for those who attended the research meetings and a braai at the end of the research to thank all those who participated. Unfortunately this was not enough for some individuals and thus the second and third focus group sessions were somewhat smaller than the first. One woman from the Ngqinisa group proved to be increasingly difficult in that she refused to return the camera, sabotaged a number of the group discussions through politically and racially driven comments or simply arrived at the meetings only to eat the lunch provided. The decision was therefore made to avoid informing her of meetings and exit her from the research process.

According to Fabricius (2004) it is an unrealistic aim to 'never raise expectations'. In being aware of this, it was necessary for me to explain from the start what this research aimed to achieve and how I intended to achieve it. In this, I emphasised that as the research progressed, these aims and the methods employed may need to change and be adapted as we learn from one another.

3.2.7 Critical methodological implications for case study work – In-depth investigation

An intensive approach was used to trace and explain the main causal relationships that exist between the three ontological domains within each of the case contexts (Sayer, 2000). This involved a causal analysis in order to explain why certain events (may have) came about (Danermark, *et al.* 2002). The strategy of Retroduction³ was used to identify and trace the possible causes and conditions which lie behind the understandings and relationships that harvesters have with the marine resources and community members around their use, as well as their experiences of resource decline (*ibid.*). This was to provide explanations of what foundational events/circumstances, structures and mechanisms (causal powers) have or may have made these experiences possible (*ibid.*), as well as the provision of insights into what possibilities exist for the emergence of change, given the nature of these characteristics (Sayer, 2000). Archer *et al.* (1998) maintains that through an exploration of the emergent properties and powers of structure and agency (structural constraints versus degrees of agential freedom) it is possible to analyse how they have shaped and re-shaped one another over time, identifying the variable outcomes at different times, including those which could bring about transformation.

This research therefore has a critical dimension in that I created opportunities for the participants to thoughtfully examine their experiences in relation to the narratives of the broader context and to explore the underlying mechanisms and events, and then consider alternative action. Lather (1986) argues that the reality-altering impact of a research process itself should not only be recognised, but should also be consciously channelled so that the respondents gain self-understanding and self-determination. The narrations (pictures and stories) and the engagement with the ecological (domain of the real) (Kaehler, 2003/05 & related research) and socio-historical and cultural events and information (domain of the actual) (Fatman, 2003a & contextual profile), therefore served not only as platforms to motivate, engage with and explore the experiences of harvesters, but also to stimulate reflexivity with regards to their use of and knowledge around the marine resources (ways of knowing and doing). This was done through the use of metaphor in relation to narrated stories and picture-based texts. In this way, the research process was also an educational process.

³ Danermark, Ekström, Jakobsen & Karlsson (2002:96) discuss retroduction as a fourth mode of inference, (after deduction, induction and abduction), where the transfactual conditions and basic characteristics which constitute structures and mechanisms behind phenomena (not directly observable in the domain of the empirical), are described and analysed. Such descriptions are *explanations*, and are fallible, as causal relations are infinitely more complex than the explanations may project.

3.3 Methods of data generation

Due to the poor literacy levels amongst the research participants, photographs and drawings, storytelling and observation were selected to enable them to investigate, explore, narrate and creatively reflect on their harvesting experience and practice. By making sense of what was emerging at each step of the research, I identified errors or shortcomings, gaining insights into how I could plan and implement the next step of the data generation and interpretation process in a more meaningful and relevant way.

3.3.1 Document analysis

In keeping with the theoretical framework of a stratified ontology, an attempt was made to structure the background overview or contextual profile within two of the three ontological domains. As the narrative around harvesting experience and practice (*empirical* domain) was to be gathered during the fieldwork with the harvesters themselves, an overview of the real and actual domains was conducted as follows. A development of a marine ecological narrative, including associated scientific research and management, which would allow for the analysis of the domain of the *real* was conducted. The second layer involved the development of the contextual narrative, which in turn would allow for the analysis of the *actual* domain. In doing this, I was using Archer's (1988) strategy of analytical dualism, which *analytically* 'separates out' dynamics of reality to better understand them.

3.3.1.1 Ecological overview

This allowed for the analysis of the domain of the real; "what is", which includes the mechanisms that exist independently of how people experience, make meaning of or represent them. Here the scientific descriptions of the target species ecologies (of rock mussel, oyster and alikreukel) (sourced from field guide books) and well as the scientific evidence of depletion of these resources (sourced from scientific papers published in scientific journals) was seen to be an example, as well as the risks associated with the depletion. Also, it was necessary to review documents where rural communities have been involved in development of co-management structures and rehabilitation projects. Two such case studies included the Sokhulu and Coffee Bay mussel rehabilitation projects (see section 2.6.1). It also included the structural features of the scientific epistemology (e.g. scientific methods), that shaped the original call for this research

and the poster education project I had been involved in as part of the programme's educational interventions.

Document analysis was also conducted to identify the current management structures for coastal marine living resources with regards to legislation, regulations and policy on international, national (see section 2.5), and local levels (see section 2.5 & 4.2.2). The aim of this analysis was to identify the informative links between the ecologies of the target species and the development of legislation to protect them. This links to the next step, in which the socio-historical dimension of current management strategies was investigated.

3.3.1.2 Contextual overview

Considering the critical realist methodological framework of the study and the necessity for an in-depth understanding of the context and the broader background into which it falls, an in-depth, contextual profile was conducted. This overview involved the analysis of the real and actual domains. The contextual profile ranged from a review of the ecology of the target species used by the harvesters of Hamburg and Ngqinisa (sourced from annual reports (2003 & 2005) within the 'Sustainable Utilization of Marine Living Resources' programme, Fatman's (2003a) unpublished master's thesis provided by Sven Kaehler of the Rhodes Zoology Department, and field guides), and the international, national and local policies and legislation that governs their use (sourced from the Recreational Fishing Information Brochure (December 2004), published by the Department of Environmental Affairs and Tourism; the Marine Biodiversity Status Report for South Africa (2000) and the Baseline Study of the Utilization of Living Marine Resources in the Eastern Cape Province (2001)); the broad context of South Africa and the Eastern Cape (sourced from Statistics South Africa webpage, as well as authors such as Natrass (2007), Kelly (2005), Giliomee & Mbenga (2007) and Magasela, (2006)); the history of the former Ciskei area (described by Ainslie (1998), Kopke (2006), Crampton (2004), Williams (1995), Schnell (1954)); to the specific contexts of the Hamburg and Ngqinisa villages (sourced from interviews with village elders and Dr. C. Hofmeyer, as well as the Keiskamma Trust webpage, Fatman's (2003a) unpublished thesis and a report by Hollard (2004)). Although it is customary to complete the contextual profile before starting the data generation and analysis stages of research, I found that it was necessary to continue gathering contextual information throughout the entire research process.

A brief analysis and audit of two existing picture-based materials/resources was conducted: The Enviro-Picture-building Game (Share-Net, Howick) and the Context-Camera booklet (Du Toit & Sguazzin, 1999) (see section 2.8.3.1 and 2.8.3.2). These two resources were selected in consultation with my supervisors and colleagues.

3.3.2 Story telling / narrations

From the beginning, I wanted to steer away from a purely extractive method of gaining the research participant's stories of harvesting experience and practice. It was thus decided to begin the field research by simply opening the 'floor' to any story, which the participants wished to share about marine harvesting. The unstructured nature of this approach was unexpected and therefore created a great deal of uneasiness initially, as the individuals in the focus group mustered the courage to be the first to tell their story and 'break the ice'. This uneasiness disappeared, however, in the telling of that story, as the others began their stories by simply adding to what the first had already narrated. As the group became more comfortable, I began to ask responsive questions pertaining to what was being narrated at the time (see Appendix A for first set of stories, HF1).

De Young and Monroe (1996:173), explain that "a good story readily encourages a depth of cognitive processing that makes it more likely the information presented will be used in making decisions about the issue and behaviour in question". As noted by Stein (*ibid.*:174), stories are an inherent part of culture, and this significance of and familiarity with story-telling was a key factor in the research.

3.3.3 Visual materials – photographs and pictures

The use of pictures and/or photographs is widely used to stimulate discussion and story-telling, which exemplify experiences of local people (Du Toit & Sguazzin, 1999). The purpose of generating and using visual materials (photographs and pictures) in this research, was to capture the realities of marine harvesting, with the view to stimulating dialogue, which could investigate and explore the complexities of the harvesters' experience and practice, and later support decision-making processes on patterns of harvesting. Walker (1993) notes that the interpretation of photographs is a cultural act that can give the researcher insights into how individuals have created meaning. What is important to remember, however, is that because the

interpretations of photographs and pictures are influenced by socio-cultural constructs of the readers, they are often different. So although the reflection on and narration of each photograph's interpretation was guided to keep the focus on marine harvesting, the readers were free to interpret them in any way, which included relating other stories of harvesting to their initial interpretation.

Clarke (1997, cited in Du Toit & Sguazzin, 1999) regards photographs as 'dense text' within which an ideology responsible for constructing meaning is written. Photographs can thus be used to engage with the expectations and assumptions of the photographer and the 'reader', relating not only to the subject of the images, but also to the cultural codes, values and beliefs that they reflect (*ibid.*).

The photographs generated and used in this study were gathered from three different sources and for three specific reasons. (i) The majority of the photographs were taken by me during my visits to the case study sites. These, among others were intended to produce a visual narrative alongside the harvesters' narrations of experience and practice. To begin the storytelling process, the first set of photos taken was of the Hamburg landscape, capturing views of the Keiskamma River, the huts overlooking the sea, the coastal forest and the coastline. To start the process the research participants were asked to describe what they saw from the landscape images presented to them. This gave a sense of the context and the meaning that the participants gave to the place in which they lived. Thereafter, I took photos of harvesters on the rocks collecting resources at low tide. These were then introduced and the participants were asked to narrate their harvesting practice. As the interview process progressed I gained insights into what objects and actions I should photograph next to stimulate further discussion and reflection.

ii) The second source of photographs was from the harvesters themselves. Each group of research participants was provided with two disposable cameras and encouraged to take photographs of scenes which they thought would best depict their harvesting contexts and stimulate story telling. The analogy I put to them to do this was that they should think of the camera as simply a means to freeze a picture in time of a world they saw and experienced every day. Rather than be prescriptive on specific images to collect, I intentionally left this open to the judgement of the photographers and the group. According to Du Toit and Sguazzin (1999), such an approach allows for the photographs to be regarded as 'dense' texts of social meaning constructed within the contexts (see section 2.8.3.2). Instead of nominating certain individuals to

take on the role of the photographer, I asked that those interested should volunteer or if necessary, the photographer be nominated by the group itself. One of the concerns voiced by both groups, but particularly by the Ngqinisa group, was what they should tell the 'inspectors' if they question them about the cameras. I explained that they should tell the inspectors that they were working with a student from Rhodes University and mention my name, and if they continued to ask questions they should direct them to Mr Jinja and/or give them my mobile phone number (which I provided).

A degree of orientation was required, not only to show the group photographer how to use the camera, but more importantly, to prepare them for their 'role' as photographers gathering images that best represented the context and harvesting practice of their group. He or she was thus asked to remain open to the recommendations offered by others in the group and to allow others to take photos if they so wished, in an attempt to stem the individualistic natural sense of importance or status, which could easily develop. In Hamburg, the youngest member of the group was nominated to take responsibility for taking the photographs and taking care of the camera. Although I suggested that others in the group should make use of the opportunity to take photographs, the elderly women seemed reluctant, adamant that it should be the task of the younger women. In Ngqinisa, however, the group argued over who should be responsible for cameras and photography. Eventually it fell to a strong-willed middle-aged woman and a young man. Two weeks later, however, Mr Jinja informed me that he had taken the camera back from the woman, as it was her intention to keep the camera and make use of the film for her own interests, as compensation for helping me. Mr Jinja then gave the camera to the young man as he had already utilized the film of the first camera with good results and mentioned that he would like to take more photographs.

These photographs, together with the photographs taken by myself, were used as discussion points during the second and third focus group interviews in Hamburg and in the second focus group interview in Ngqinisa. Thereafter all the photographs were pooled and drawn on to create posters where the participants arranged the pictures to narrate a visual harvesting story (Hamburg focus group interview 4 and Ngqinisa focus group interview 2) (see Appendix C for participants' photo series posters)



Figure 3.2 Hamburg participants creating poster



Figure 3.3 Ngqinisa participants creating poster

iii) The third source of photographs was from Dr Gugu Calvo-Ugarteburu, from the Zoology Department of the Walter Sisulu University, from her work with the Coffee Bay harvester community and their mussel rehabilitation project. These, together with a number she had taken while visiting a similar project in KwaZulu Natal, as well as photos I had taken during our exchange visit to Coffee Bay, were used by the participants of this research as part of their report back presentation to their fellow community harvesters of this visit (see section 3.3.10).

I was conscious at all times of the fact that the very presence of the camera influences people's reactions, making possible the misrepresentation of the subjects, objects or events under scrutiny. Therefore, at no stage during this study were claims made that the photographs 'proved what happened'.

As mentioned by Du Toit and Sguazzin (1999), one of the drawbacks of the use of photography is the high costs involved. Indeed, the costs of buying the disposable cameras and the development and printing of the photographs were quite considerable.

3.3.4 Focus group interviews

The main focus of these interviews was to gather case stories or narratives of harvesting practice and experience within a group setting. As mentioned above (section 3.2.6), this involved the reflection on the empirical (experience) domain; 'what is felt, done, explained/reported etc.' The reason I chose to conduct these semi-structured interviews with a group of harvesters rather than individually from the start was that I had hoped that through the sharing of stories and

experience, others in the group would be stimulated to interact with the narratives of their peers, adding to them and providing alternative perspectives from which to stimulate further dialogue and discussion. To further support this group dynamic and interactive reflection on resource harvesting and utilization and to stimulate further narration, I worked with photographs in the focus groups. Small focus groups were used, as it is the meaning that individual participants make of their experiences that was to be explored (Janse Van Rensburg, 2001).

Initially I had proposed to conduct six semi-structured focus group interviews with each case study group in January and February of 2006. This, however, was not possible due to a number of delays caused by unforeseen circumstances, and unnecessary, as it became apparent that many of the stories told in the groups were becoming repetitive. I therefore conducted three semi-structured focus group interviews and discussion sessions with each of the volunteer focus groups from Hamburg and Ngqinisa. The first of each followed the introductory meeting where I introduced the research and invited them to participate in an open story telling session where they could share any experience or reflection on marine resource harvesting and utilization that they wished (see Appendix A). Unfortunately, the recording of the Ngqinisa introductory meeting was destroyed by a malfunctioning tape recorder. The second sessions were focused on the reflection on, and contextual narration of, the photos that had been taken by myself and the research participants (see section 3.3.3)(see Appendix B for Hamburg photo reflections, HF2). Due to the greater number of research participants and photographs in Hamburg, two sets of photo reflection narrations were recorded, as opposed to just one in Ngqinisa. During the third sessions, the group participants worked together to create and narrate two stories of marine harvesting and utilization in the form of two photo series in a poster form (see Appendix C).

These interview / discussion sessions took place between February and April of 2006. The entire proceedings of each group session were recorded on tape, once permission had been granted to do so. I explained before each session that the participants need not mention their names when they spoke and that they could narrate their stories in isiXhosa. As they spoke, my field assistants briefly translated what was being said, thus making it possible for me to ask the speaker questions about his/her story.

3.3.5 Individual interviews

Once I delved into the slow process of having the focus group stories translated and transcribed, I began to realise that many of the stories that had been narrated during the focus group sessions were similar and reiterated; and yet when speaking with the women on a one to one basis on other occasions (transporting them to and from their homes or on the beach etc), different versions were told which slightly, or occasionally, completely contradicted the common group story. Through my greater interaction with the harvesters and the insights gained through observation, I came to the realisation that my contextual profiling work had not sufficiently documented the specific directives that influenced the day to day life of the people that relied on marine resources. It was due to these two realisations that I decided to conduct a further three interviews per case study, with selected individuals, in order to gain deeper insight into the lives of the harvesters, investigate the grounds for the irregularities in the group stories and broaden my contextual profile. Huberman and Miles (cited in Cohen *et al.*, 2000) explain that changes in observational protocols and interview schedules in the field reflect a better understanding of the context, thereby heightening the internal validity of the study. Further, Danermark, *et al.* (2002) maintain that it is not only possible, but necessary to draw on one's own experiences acquired during the research process and in ordinary life to inform the investigation.

I selected the six individuals (three for each case study village) on the basis of their continued participation in the research, their obvious reliance on the marine resources and their range in age. In Hamburg, I selected one elderly, one middle-aged and one young woman. When interviewing the young women, however, her mother, also a research participant, hijacked the interview, explaining that she'd answer for both of them because they harvest together and live in the same house. Unfortunately by that stage in Ngqinisa, there were only middle-aged people still involved, and therefore two middle-aged women and one middle aged man were selected.

These individual interviews were semi-structured and based on questions that I had prepared beforehand (see Appendix D) which were informed by insights and queries that had emerged from the initial stories and focus group interviews. The questions formed the basis of the interviews, but some details were probed in more depth when relevant. A number of the questions were also open-ended to allow for unanticipated answers and freedom of expression.

In preparation for the interview, the questionnaire was translated into isiXhosa (see Appendix D2) by Gladys Tyatya from the Rhodes Environmental Education and Sustainability Unit. It was

thought that if the field assistants read out the questions in isiXhosa and wrote down the responses in isiXhosa exactly as they were answered, the interviewees would feel more comfortable and the interviews would run more smoothly. The individual interviews were started with the harvesters in Ngqinisa and the realisation was soon reached that there were a number of serious shortcomings with this method. The most obvious of which was that I could not understand what was being said and thus could not formulate or ask any follow-up questions in response to the answers given, in addition to which, was the uncertainty as to whether the field assistant firstly, explained the questions correctly or clearly, and secondly whether he/she wrote down the answers accurately and in full. Besides being cut off from the interview interaction by the language barrier, it became apparent that the translations from the English questions into isiXhosa were sometimes themselves inaccurate or unclear, as on a number of occasions the participants asked for clarification on specific foci and meanings in the questions. This was attributed to the fact that although Gladys is fluent in both isiXhosa and English, her knowledge of the marine context and resource harvesting is limited, which disallowed the use of vocabulary familiar to the marine harvesters.

A different approach was therefore taken with the Hamburg individual interviews. Noseti, my field assistant, was given a copy of the isiXhosa and English questionnaire, and as I read out the each question in English, she translated and posed the question to the interviewee in isiXhosa with reference to the isiXhosa questionnaire. She then translated the answers directly into English, which were written down onto the English questionnaire. Although this method took a great deal longer, it allowed for a great deal more interaction, elaboration and the opportunity for interaction.

Once the answers had been synthesised for each of the six questionnaires, I found that there was a need for additional information, as further questions were raised and thus more detail was still needed. A follow-up questionnaire was thus constructed, specific to each person, based on the responses each person had given to the generic questionnaire and my observations (see Appendix E). Unfortunately by this stage it had become increasingly difficult to work with one of the women in Ngqinisa (see section 3.2.5), and thus her follow-up interview was not possible.

The more I worked with the data, gaining a deeper understanding of the complexity of the issues and relationships influencing the lives of the people of Hamburg and Ngqinisa, the more I came to the realisation that the socio-historical profiling that had been conducted prior to the field work

had been insubstantial and superficial. It was thus necessary to verify the details that I had already gathered and then construct a more detailed, first hand narration of the history of the area, including its social and economic status, as part of the follow-up individual interviews with selected research participants. At the same time, in-depth interviews with Dr Carol Hofmeyer, founder of the Keiskamma Trust and associated projects; Mr Des Kopke, former history lecturer at Rhodes University, and the MCM junior compliance officers in Hamburg were conducted. In Ngqinisa, two community elders were interviewed in an attempt to gain a deeper understanding of the history of the village, the roots of its current socio-economic status, and what they felt could be done to improve it.

3.3.6 Observation

On a number of occasions I ventured down to the rocky shore at low tide to observe the marine harvesting in practice. This provided the opportunity to observe and thus gain deeper insight into what had been said during the focus group sessions by the harvesters, with regards to what the search for and collection of the marine resources actually entailed. Additionally, it allowed for observation of any contradictions or variances in the harvesting practices that had been described and what was actually practiced. An attempt was made to document the above by taking photographs. These, in addition to the photographs taken by the research participants, informed the foci or platform for further story-telling and discussion. Most of the observations were recorded in a research diary (see section 3.3.7 below) and/or one of two research journals (see section 3.3.8 below), one of which was unfortunately stolen along with my bag at the Environmental Education Association of Southern Africa (EEASA) conference in Zimbabwe in August 2006.

Observation provided insights not only for myself, but also for the research participants during the Coffee Bay exchange excursion (refer to sections 3.3.10 and 6.5.1). Most of the interaction between the research participants and the community members from Coffee Bay was centred on demonstrations and show-and-tell interpretation (see section 3.3.9 below).

3.3.7 Research diary

A fieldwork diary was kept as a record-keeping tool to document the sequence in which the field visits to the two case study sites took place, as well as to record the events, happenings,

discussions and personal reflections that occurred during these visits. According to Hitchcock & Hughes (1995) a case diary may also be used as a source of “analytical reflections”, thereby serving as a reflective journal in which the researcher records issues, axes of tension and topics for clarification. These were useful to trace the development of the research process (and associated data sets) as well as to stimulate deeper questioning around pertinent issues and emerging understandings (see Appendix F for an example of a diary entry)

3.3.8 Research journals

Research journals were used to record ideas and tentative strategies for each step in the research process, from planning interviews and meetings, tracing thoughts, theoretical diagrams, to many draft pencil sketches to depict target species' life cycles. They also helped me to keep track of what literature I had read and the references of those which I still wanted to seek out. As I read through the literature, particularly relevant passages and quotes were copied into my journals from which I could make sense of the ideas through diagrams and reflective internal narration. I also found the research journal especially useful to record the comments, reflections and suggestions offered by colleagues and supervisors (see Appendix G for an example of journal entries).

3.3.9 Preparation of research participants for exchange excursion: Introduction of metaphors

The reasoning for the selection of the Coffee Bay community as the most ideal for an exchange interaction was based on three important criteria. The first was that the village has a history of subsistence resource use, which has now become a dangerous activity as harvesters resort to collecting the last of the overexploited resources in the wave crash-zone of the rocky shore. Due to high collector densities and the commercialisation of many of the marine species, the rocks at Coffee Bay have been virtually scraped clean, a phenomenon which the Hamburg and Ngqinisa harvesters believe can never occur. Secondly, the harvester community in Coffee Bay has established a resource management committee to discuss issues around permit allocation, utilization pressure and strategies for the management and rehabilitation of intertidal communities. As this has not yet happened in either Hamburg or Ngqinisa, and is a vital step towards any collaborative future attempts to manage and sustain their marine resources, it was

hoped that in the interaction with and reflection on the narration of how the Coffee Bay resource management committee was created and what has come of its establishment, the harvesters of Hamburg and Ngqinisa would see possibilities for their context. The third aspect which made Coffee Bay a suitable option for a learning exchange was that its community members are taking action to rehabilitate their coastline through the re-introduction of rock mussel, which they in turn had learnt to do from the Sokhulu community in Kwa-Zulu Natal (see section 2.6.1.2). What made it all the more applicable as a case study to learn from was that the pilot phase of the project had been a failure and thus, in starting it again, the community has insights which they could pass on to the harvesters of Hamburg and Ngqinisa.

In preparation for the exchange trip to Coffee Bay, it was necessary to introduce and explore key ecological ideas about the target species with the research participants (oyster, alikreukel and especially mussel), as well as how these three species interact with one another in their intertidal habitat and how the harvesting influence of people may disrupt the productivity and survival of each. Through my own research into the above key ecological ideas, it emerged (at the time unconsciously) that the use of culturally and historically situated metaphor, as a methodology to open up an educational space, would be useful to show the relationships and connections between what is observable in the everyday life and culture of the harvesters, and the ecology of the species they were harvesting. These ideas and metaphorical descriptions were presented to the Hamburg group on the 2nd August 2006. Unfortunately the meeting with the Ngqinisa group for the following day had to be cancelled due to heavy rains and the poor conditions of the road to the village. The explanation of the ideas and metaphors to the Ngqinisa group was thus conducted by myself, with the help of the Hamburg participants, on our way to Coffee Bay. This turned out to be useful as it provided an opportunity for the Hamburg group to narrate their understanding of the concepts and allowed me to clarify any uncertainties.

It was through working closely with the harvesters in context (considering their experiences, practice and circumstances), as well as the ecology of the resources (the Real), that allowed the metaphors to arise as emergent propositions to try and bridge the gap between their situated knowledge/logic/capital and the ecological/scientific capital (see section 6.4 for the metaphor descriptions). The metaphors provided orientating imagery and language with which these new understandings could be scaffolded. According to Danermark *et al.* (2002) metaphor can be seen to be an abductive strategy of recontextualisation. They explain that social scientists do not discover new events that nobody knew about before, but rather discover connections and relations, not directly observable, by which we can understand and explain already known

occurrences in a novel way. Therefore, metaphor can be used to recontextualise and redescribe the empirical (observed by the participants through their story telling and my observation of their context and harvesting) and theory (the abstract ecological facts), so that the relationships and linkages not given in our way of perceiving the world can be highlighted.

Danermark *et al.* (2002) explain that abduction is about relating studied phenomena to some form of classification system, frame of interpretation or code, giving meaning to the phenomena (in this case providing accessible imagery and language based in the culture and situated in context). In a fundamental sense, all abduction builds on creativity and imagination. One needs the ability to form associations, and a creative reasoning process that enables one to discern relations and connections not evident or obvious – to formulate new ideas about the interconnection of phenomena, to think about something in a different context. The strength of theories and models, and in this case metaphor, lies in their ability to break away from a descriptive discourse (to describe empirical experience) and provide a possibility to ‘see something as something else’. Using models and metaphor in science allows one to explore reality by establishing new relations in it (*ibid*), and thus to engage ontological depth in educational practices (see section 6.4).

Hutten (1954, cited in Black, 1962: 236) explains that “we are forced to employ models when, for one reason or another, we cannot give a direct and complete description in the language we normally use”. In the case of this study, as the research participants were Xhosa speaking and thus battled to understand English, there was a need to create a ‘language bridge’ or ‘redescription’ through recourse to analogy and metaphor. According to Black (1962), metaphor plugs the gaps in the literal vocabulary. So viewed, metaphor is a species of *catachresis*: the use of a word in some new sense in order to remedy a gap in the vocabulary, putting of new senses into old words. Black (1962) continues:

...a memorable metaphor has the power to bring two separate domains into cognitive and emotional relation by using language directly approximate to the one as a lens for seeing the other; the implications, suggestions, and supporting values entwined with the literal use of the metaphorical expression enable us to see a new subject matter in a new way. (Black, 1962:62)

In considering the potential of the contextually situated use of metaphor, one finds oneself wondering how is it possible to *know* if these redescriptions provide better understanding about the objects of study. Danermark *et al.* (2002) explain that it is important to stress that abductive logic, applied in social science, very seldom (if ever) leads to definite truths. Hence when I presented these metaphorical connections to the ecology of the marine species, to my zoology supervisor, his first response was that I was over-simplifying the ecological concepts. But it is argued that the process of abduction is more about viewing the *relation* between science and the contextual reality than about relating directly to ultimate truths. The value of this is that abductions open the opportunities for increasingly creating better knowledge in two senses: First, redescription can provide a deeper knowledge about a particular case under study, and second that one can gradually test, modify, add to and ground theories about general contexts and structures by relating these theories to ever new cases.

In this study, the metaphorical explanations or 'stories' were drawn from the context of the research participants so that they might use familiar language and imagery to allow them to make meaning of the ecological facts presented in a new way. Black (1962) emphasises that the extended meanings that result, the relations between initially disparate realms created, can either be antecedently predicted nor subsequently paraphrased in prose. And thus it is not possible to comment *upon* the metaphor, as the metaphor itself neither needs nor invites explanation and paraphrase. He adds that, "metaphorical thought is a distinctive mode of achieving insight, not to be construed as an ornamental substitute for plain thought" (*ibid.*: 237).

Besides describing abduction as formalised logic and as redescription or recontextualising, Pierce (cited in Danermark *et al.* (2002) also discusses abduction as an interpretative element, which is an absolute condition for all perception. In the broader sense it can be seen as an overall term for all forms of interpretation made from a pattern or system of classification. According to Pierce (*ibid.*), it is in the nature of all perception to be interpretative. Perception, or empirical observation, demands that we give meaning to what we observe, by interpreting or classifying it in a certain way. Even the simplest observation is thus linked to generalisation, even though we do not usually think of it as such. Such observation is part of the transitive object of science; the observation contains an interpretative element. Empirical observation can never be the same thing as an actual reality, which is relatively independent of the cognitive subject. The meaning of two observations of one and the same phenomenon can therefore differ, depending on pre-understanding and conceptual starting points. In a critical scientific

analysis it is important to employ the abductive inference for redescription, so that we can interpret particular phenomena as part of general structures.

3.3.10 Exchange interaction

Hauck and Sowman (2005) argue that experiential learning or learning by doing (such as exchange visits), as well as interactive methods (such as small group discussions in case studies) are more effective than conventional training methods (such as lecturing and seminars). Fatman (2003a) has highlighted the potential in taking harvesters (from Hamburg and Ngqinisa) to visit coastal villages of the former Transkei or KwaZulu Natal, which have experienced severe resource degradation, so that they can see for themselves that resources can be depleted. This experience could be more effective if the communities visited had benefited from successful awareness and capacity building processes, as well as co-management, monitoring, sustainability and alternative livelihood projects.

The core of this research was an attempt to provide the rural marine harvesters with the opportunity to reflect on their harvesting experience and practice by developing educational processes that allowed them to consider what lies behind, influences or informs what they know and do. It was hoped that in reviewing their harvesting practice they would come to see and understand the relationships or connections between the ecology of the organisms they depend on, the way they harvest them and the legislative framework that aims at sustainable utilization. But as I gathered the stories of practice and experience described by the harvesters of Hamburg and Ngqinisa, hoping to find and use examples of contextual knowledge to make the connections relevant and real, I soon realised that it is only through engaging with others' stories (including the stories that science and ecology provide) that they could break out of the traps (inconsistencies) in their own stories and circumstance.

After a discussion with my supervisors, the opportunity to do this was made possible within the story exchange framework of the study. I then contacted Dr. Gugu Calvo-Ugarteburu, from the Zoology Department of the Walter Sisulu University, to find out if I could bring a group of harvesters from Hamburg and Ngqinisa to meet some of the Coffee Bay marine harvesters on a story exchange trip. Due to the overexploitation of marine resources by the Coffee Bay community, the area had been targeted for a pilot mussel rehabilitation project and awareness campaign, managed by Gugu and her team. As part of this project and awareness campaign,

Gugu had arranged a similar exchange trip for a number of Coffee Bay harvesters to learn from and share with the harvesters in KwaZulu Natal, and due to its success, was very excited to give participants of my research the same opportunity. It was hoped that through the exchange of stories of harvesting and utilization experience and practice, similarities (developing empathy) and differences (being faced with something new) would be shared, and that through that experience they would re-look at, reflect on and engage with their own situation, considering what possibilities exist. Monroe and Kaplan (cited in De Young & Monroe, 1996:175) argue that the exchange of stories around the solving of environmental problems may be more effective than an approach of 'learning through doing'.

Therefore, on the 10th of August 2006 I transported four of the research participants from Hamburg and three from Ngqinisa, including my field assistants, Noseti and Mr. Jinja, to Coffee Bay to meet with the community members involved in the mussel rehabilitation project in Coffee Bay the following day. During this phase of the research, I decided to take 'a back seat', wanting what transpired to be steered by my research participants and their interactions with the Coffee Bay harvesters. In preparation for the exchange visit I had had numerous communications with Gugu and Bonele, her field assistant and student, about the harvesting context of Hamburg and Ngqinisa and what it was I thought would be useful for my research participants to see and learn for the harvesters in Coffee Bay. Having been part of the exchange meeting where the Coffee Bay harvesters had learnt from those in Sohkulu in KZN, Bonele assured me that he, and the harvesters we were to meet, knew what aspects of their community's harvesting history and context, as well as resource co-management process, should be highlighted and shared with the group from Hamburg and Ngqinisa. I remained in the background, at all times observing and recording what happened by way of photographs, and documenting the proceedings in my research diary when I returned. (Refer to Chapter Six for a description of what emerged from the report-back meetings).

My research participants first met with the Coffee Bay harvesters on the beach where they were shown the practicalities of re-introducing mussel to the intertidal zone.



Figure 3.4 Coffee Bay harvester demonstrating how to attach plastic sleeve to rock



Figure 3.5 Coffee Bay harvester and Bonele explaining mussel rehabilitation techniques

After the meeting on the rocks, the Coffee Bay harvesters and research group continued discussions at the local primary school. Here aspects of resource co-management, monitoring, permit allocation and stakeholder involvement were discussed, with a focus on sharing stories from the respective contexts. The research participants made use of the photographs they had taken to illustrate their story-telling.



Figure 3.6 Coffee Bay harvester explaining how marine resources are managed and harvesting monitored



Figure 3.7 Ngqinisa harvester showing Coffee Bay harvester his harvesting context

3.3.11 Report-back meetings

During our return trip from Coffee Bay on the 12th August, the research participants agreed that it would be necessary to report what they had seen, heard and learnt to their fellow harvesters in their respective villages, so that each harvesting community could discuss what was possible for their harvesting future. It was agreed that each group would arrange the separate meeting in Hamburg and Ngqinisa and that I would put prepare a PowerPoint presentation containing the photographs I had taken during our visit to Coffee Bay, as well as the photographs that Dr. Calvo-Ugarteburu had given me depicting the mussel re-introduction techniques and process and the harvesting context which made the project necessary. This PowerPoint contained few words and was essentially a series of photographs which they could draw on to assist them in their description and explanation of the Coffee Bay visit and what they learnt from it.

I was informed by my field assistant in Hamburg within a week that the report-back meeting with the Hamburg community had been scheduled for 10:30 on the 22nd of August at the community hall. The eldest of the research participants who went to Coffee Bay was nominated to relate the group's shared experience. Those who attended included my research participants, Serge Raemaekers from the Rhodes University Ichthyology and Fishery Sciences; two community harvester monitors; two Hamburg MCM compliance officers; two Eastern Cape Nature Conservation officers; Mr Daniel Socyeni, the local ward councillor, and a small number of local harvesters.

Her presentation was received with great interest and a considerable amount of scepticism around how her recommendation to start a mussel re-introduction project in Hamburg could be funded, supported and managed by the community (see section 6.6 for details of the discussions). Many of the questions raised around how the community could gain support from the government could not be answered, as the relevant representatives from MCM and SCD were not present. It was thus decided that a second meeting be called which could be attended by a greater number of community harvesters, as well as the necessary coastal marine resource management representatives. The MCM compliance officers present added that the people of whom we spoke had scheduled a meeting with the harvesters of Hamburg the following week to hand out mussel, oyster and alikreukel permits and that that forum would be ideal to announce the second meeting.

In Ngqinisa, the report-back meeting was scheduled for the 24th of August, to be held in the Shwele-shwele primary school building. Unfortunately, despite the relative small size of the community, the invitation to the meeting had not spread sufficiently and thus only a small number of community harvesters arrived. The man and women that went to Coffee Bay were nominated to narrate what they had seen and learnt in Coffee Bay, followed by Mr Jinja who had been nominated by the group to present the proposal to start a mussel re-introduction project in their area. Again, the respective presentations drew on the photo prompts on the data projector to support and guide their narrations. Mr Jinja's wife kindly served as a translator to allow me to follow what was said. As with the Hamburg meeting there was a great deal of excitement paralleled with scepticism.

As with the exchange visit itself, I purposely allowed the research participants to drive the report back meetings. At each meeting my involvement consisted of setting up the data projector and with my field assistant at my side, silently translating what was being narrated, I changed the slides. Again I focused on documenting my observations, as well as the learning processes that developed during report-back engagement with the communities and how discussions around the establishment of a management structure and resource rehabilitation plans emerged.

3.4 Data analysis

Before entering the process of data analysis, it was necessary to organise, cluster and code my data in such a way that it allowed me to arrange the range of data sources into sets and thereby track the sequence of the research process. (See Table 3.2 below).

Table 3.2 Coding of data sets and their explanations

CODE	EXPLANATION
HF1	Hamburg Focus Group interview 1 – introduction & initial stories
HF2	Hamburg Focus Group interview 2 – reflecting on photographs, story set 1
HF3	Hamburg Focus Group interview 3 – reflecting on photographs, story set 2
HF4	Hamburg Focus Group interview 4 – questions & poster narrations (PN1 & PN2)
HI1	Hamburg Individual interviews set 1
HI2	Hamburg Individual interviews set 2 – follow-up
Hhis1	Hamburg History interview 1 – with Dr Kopke
Hhis2	Hamburg History interview 2 – with Dr Carol Hofmeyer, October, 2006

HMCM	Hamburg Marine Coastal Management compliance officers interview, 15 June '06
NFI	Ngqinisa Focus Group interview 1 – reflecting on photographs
NF2	Ngqinisa Focus Group interview 2 – poster narrations
NI1	Ngqinisa Individual interviews set 1
NI2	Ngqinisa Individual interviews set 2
Nhis1	Ngqinisa History interview 1
RBM1	Report Back Meeting 1 – Hamburg, 22 nd August 2006
RBM2	Report Back Meeting 2 – Hamburg & Ngqinisa, 12 th September 2006
RD, 7/2	Research Diary, (e.g.: entry – 7 th February)
RJ, 12/8	Research Journal, (e.g.: entry – 12 th August)

In presenting the data, the research participants were referred to as 'respondents' and thus their narrations and responses were numbered consecutively. For example: Respondent 6 (HF1) explained that the water is lower when the moon is round. The following response or narration would then be coded R7, and the next R8, and so on. It was therefore not possible to follow the responses of specific people during the focus group interviews and number them according, because all the discussions took place in Xhosa and were recorded as such. In the individual interviews, however, each individual's responses was numbered consecutively and recorded as one data set (e.g. either Response 1, R2 or R3, HI1).

The process of data analysis proposed by Huberman and Miles (1994) contains three subprocesses: data reduction, data display and conclusion drawing and verification. Yet an essential phase to start the process is called data immersion (*ibid.*). During this phase, the data was read and re-read several times in order to get a sense of the whole of the material, until it became intimately familiar to me. The 'thickness' of description found in the data largely arose from the different ways in which data had been generated (variety of sources, see section 3.3) and the way in which these had been represented in the research process.

Knight (2002) cautions that if one approaches the data with a research question in mind, one's view can easily be narrowed to see only what is obviously relevant to those perspectives. Initially I naively fell into this trap, in trying to follow the critical realist framework explicitly; I tried to 'impose' the themes of harvester knowledge, reasoning, relationships and actions onto the data. This soon became impossible as I delved into the complexity in the data. I realised that I had narrowed the interpretive categories far too soon, and thus needed to start with broader themes

that emerged directly from the data narratives. The data was then summarised, clustered and coded into broad categories, within which I could begin to search for patterns and consistencies in harvester knowledge, reasoning, relationships and actions across these themes, which in turn, revealed inconsistencies, paradoxes, contrasts and contradictions in these.

The data within each category was then summarised into separate analytical memos to generate properties or sub-categories. Although these categories only emerged when working with the data, I tried to refer to my research question and goals, as well as the framework of a stratified ontology at all times to guide me through the process of interpretation (See sections 3.4.1, 3.4.2 & 3.4.3).

In order to interpret and analyse the relationships between the broader context, the situated contextual narrative and the learning processes that took place, within a stratified ontology framework, the methodological strategy of Analytical Dualism was used to analytically separate the different ontological domains in order to analyse the situation as a whole. Archer (1988) explains that analytical dualism is by no means the same as philosophical dualism, where ontological domains are dealt with separately. It is where it is theoretically useful to analytically separate the ontological domains, so that the relationships between them can be observed, that analytical dualism becomes useful.

Essentially all of the ontological domains are inherently influenced to varying degrees by structure, culture and agency. But in each domain, one is hierarchically distinct. As Archer (*ibid.*) mentions, in order to work with analytical dualism, one must be able to distinguish between the 'parts' (structures) and the 'people' (agents). By definition, Analytical Dualism is a development of the transformation model for agency/structure, to which a time dimension has been added. Thereby, three phrases can be defined: 1) social structure, laying down the conditions (constraining and enabling) the actions of the agents; 2) actions, happening in a social interaction between the agents; 3) elaboration or stasis, as a result thereof, that is, reproduction or transformation of the structure.

Table 3.3 Representation of research framework: stratified ontology and overlapping domains of reality.

Analytic Dualism	Research Design		Domain of REAL	Domain of ACTUAL	Domain of EMPIRICAL
	Participatory research using story-telling & photographs & exchange visit	EXPERIENCES	✓	✓	Agent's narratives of harvesting experience (what people do & say – the meaning they construct in context).
	Contextual profiling of: social, historical, cultural, political, economic events & interview data	EVENTS	✓	Cultural practices; historical, political and economic influences & events.	
	Contextual profiling and review of ecology, legislation & policy	MECHANISMS	Underlying structural factors: ecological (state & risk of resource depletion established by scientists), cultural, socio-economic and historical structures and mechanisms.		

Adapted from Bhaskar (Archer, Bhaskar, Collier, Lawson & Norrie, 1998:41)

It is one thing to distinguish between the agents and the structures, but another to then come to understand the relationship between them. The question posed is then: how does one attain knowledge about the general from knowledge about the particulars; or vice-versa? Danermark *et al.* (2002) suggest the use of different modes of inference, which they explain are descriptions of various procedures, ways of reasoning and arguing applied when one relates the particular to the general. He emphasises that inference involves deductive logic, where one tests whether conclusions drawn in an argument follow in a logically valid manner from the premises given to support the conclusions. Inferences can also be made inductively. In critical realist research Danermark *et al.* (2002) suggest the use of abductive and retroductive modes of inference as

well as deductive and inductive modes of inference (see Appendix H for table of mode of inferences). Inference within a retroductive mode is further used to denote various thought operations, which are neither formalised nor strictly logical conclusions, but suggest a form of argument advancing from one thing to something else, for example, arguing from individual observations (e.g. illicit harvesting) to gain knowledge about general basic structure (e.g. the structure of poverty). Knowledge about constituent properties or transfactual conditions is attained by means of transfactual arguments made possible through the thought operation of **retroduction**. With retroduction one advances from and beyond a description and analysis of the concrete phenomena (in this case, the situated stories of harvester experience and practice), following a process of abstraction, to isolate and reconstruct the basic conditions or constituents for these phenomena to be what they are (in this case the result of power relations, for example). This entails moving from surface to depth, from the domain of the empirical to the domain of structure and mechanisms. What is core to retroduction is the ability to see beyond the empirically observable in social reality and clarify the basic prerequisites or conditions for social relationships, harvesters' action, reasoning and knowledge, by way of transcendental argumentation. By taking Retroduction as my starting point, I attempted to attain knowledge about what ontological relations make the experiences, practices and understandings of the harvesters of Hamburg and Ngqinisa what they are (see sections 5.6 & 5.7).

Table 3.4 Representation of the process of Retroduction through the stratified ontology to analyse the data

		Ontological depth	Analysis using Analytical Dualism
R E T R O D U C T I O N	↓	LAYER 1 – Case X	Situated story - experience and practice of harvesters
	↓	Focusing on the harvester's:	Data sourced from interviews, focus group discussions, storytelling, photograph narrations and observations.
	↓	- actions	Inductive inferences
	↓	- relationships	
	↓	- reasoning	
	↓	- knowledge	
	↓	METAPHOR ↑ ↓ (abductive inference, also used educationally in the process (see section 6.4))	
↓	LAYER 2 – Contingent circumstances affecting Case X	Contextual profile data	
↓	LAYER 3 – Structures and mechanisms that make Case X possible	Literature and retroductive analysis of layers 1 & 2 to map out possible causal relations (see sections 5.6 & 5.7)	

3.4.1 First layer of interpretation

As mentioned above, it became necessary to begin my interaction with the data by developing broad preliminary categories or themes, from which I could begin to draw out subcategories and see patterns of harvester actions, relationships, reasoning and knowledge emerging. The following nine categories were derived from the data in order to organise it into broad areas of interest (using an inductive mode of inference):

- Resource dependency and livelihoods
- Food security and health
- Income
- Relationships that influence resource use
 - Relationships with compliance officers and community monitors
 - Relationships with other harvesters
 - Relationships with white people
- Changing social practices and power relationships
- Contradicting perspectives and practices associated with access
- Changing understandings
- Perceived solutions to problems
- Apparent insignificance of isiXhosa cosmology

These preliminary categories were intended to be sufficiently general to allow both anticipated and unforeseen findings to emerge. This layer of interpretation represents the empirical domain focusing on the realm of experience reflected in the stories, narrations and observations of the research participants. In the tenth category of this layer of interpretation I attempted to identify relationships and patterns between the social relationships, harvester actions, their reasoning and knowledge arising from the cases described within the broad themes.

3.4.2 Second layer of interpretation and explanation

The second layer of interpretation represents the contextual and historical explanations within the actual domain of the ontological framework. In this layer, an attempt was made to present and investigate the contingent circumstances that affect the cases described in the first layer of interpretation, thus beginning the process of retroduction. The following themes were used:

- Legal framework and policy change
- Educational background and opportunities
- Socio-economic situation (poverty) and choices / alternatives
- Resource depletion

3.4.3 Third layer of interpretation and explanation

Using a retroductive mode of inference in this last layer of interpretation, an attempt was made to clarify what structural mechanisms may be making the contingent circumstances possible and able to exist. This represents the *real* domain within the ontological framework. The following themes were used:

- Systems of society and culture
- Cosmology
- *Habitus*
- Power relations

To assist with the retroductive inferences, I attempted to answer the following questions:

- What structures of traditional society, contemporary society, modernising society and post-apartheid society lie behind certain circumstances?
- Is there a system of social positions or power gradients at play here?
- What in the harvester's social interactions and conversations cause social order and stability to be maintained?
- What are the taken-for-granted assumptions, tacit expectations or common understandings forming the foundation of ordinary social interaction?
- What systems of social control or constraints (norms and rules) make this possible?
- Is this particular action grounded in socially or culturally acquired dispositions (*habitus*)?

Danermark *et al.* (2002) explain that such questions can facilitate the 'thought experiments' necessary for retroduction.

What was important to bear in mind in trying to answer the above questions was the fact that these structures and mechanisms occur in an open reality, where they seldom or never appear

in a pure form, but are always part of a complex interaction with other mechanisms under more or less specific circumstances. Therefore, they can seldom be identified and explained in isolation, but rather in relation to one another.

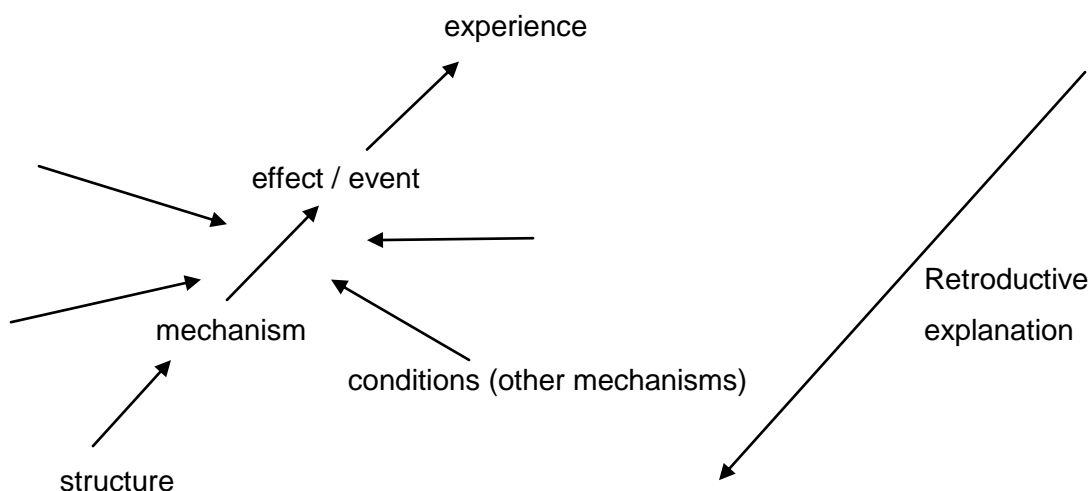


Diagram 3.1 Critical realist view of causation

Adapted from Sayer (2000:15)

Danermark *et al.* (2002) emphasise that the researcher by no means discovers or detects new social events or activities, but rather re-constructs the preconditions for these well-known social situations to be possible. They further maintain that it is only through experience gained through in-depth empirical investigation that well-grounded retroduction is possible. In my experience from this study, this also requires careful contextual profiling and historical tracing of influences that are present in the study site or context.

As there are no fixed criteria from which it would be possible to assess in a definite way the validity of any retroductive explanation, argument or conclusion I make through delving into the depths of the harvester's reality, they can be seen to be fallible. Fallible in the sense that I cannot attempt to make claims about absolute truths, as what is deduced are *my* interpretations, which in themselves are contingent (uncertain and dynamic). In turn it is important to realise that the explanations that the research participants have given about their harvesting experience, practice and knowledge are in themselves fallible and contingent. However, it is through the rigour of the research that these explanations, theirs and mine, provide indicators for what is useful to learn, to understand and to change (if and when necessary). Danermark *et al.* (2002) propose that through this process we are better able to explain society and, as this research

project's interest is education, better able to design and plan for education programmes and materials that reflect ontological depth. The study as a whole argues that this might provide means of strengthening situated / social learning processes in communities. I am, therefore, not attempting to draw conclusions or make truth claims about how the harvesters of Hamburg and Ngqinisa should and should not behave and change their practices in this research. Instead I am trying to open up an educational space or process within which the educators and research participants can start exploring, thinking about, questioning and talking about harvesting practices and how they would like them to be, thus creating the context for deliberative, situated learning processes.

The ontological domains mentioned above are all closely linked, yet ontologically distinct. It is not my intention to fragment the issue/context, but rather to separate them as a means to analyse and show how they link, relate and interplay, and to explore the educational possibilities that the stratified ontology could provide. In Chapter 5, I therefore offer only *some* explanations towards this end (see section 5.6 & 5.7).

3.5 Validity and quality

Cohen, Manion and Morrison (2000) recognise that data validity is achieved through honesty, depth, richness and scope of the data, together with the extent of triangulation and degree of objectivity of the researcher. They add, however, that threats to validity and reliability can never be entirely erased and at best the research could strive to minimise invalidity.

To guard against researcher biases distorting the logic of evidence, Lather (1986) emphasises the importance of 'face-validity' or member checking in establishing data credibility. Therefore, the tentative interpretations of the transcribed and summarised data (from the narratives, group discussions, interviews and observations) were presented for refining to the research participants. This activity was soon abandoned, however, because of two main problems: as the majority of the research participants were illiterate, the transcription summaries had to be read out to them. Besides taking a great deal of time, few could understand the English transcriptions. As a result the research participants themselves agreed that 'checking' process need not include them as they were confident that the field assistants could ensure that what was recorded and summarised was 'correct'. Therefore, the field assistants from Hamburg and Ngqinisa were provided with the transcription summaries of each group.

Sayer (2000) emphasises that reflexivity around the kinds of values and subjective positions that inform analysis or accounts, and their implications is conducive to objectivity in the sense of developing true and practically adequate accounts in critical realist research. As mentioned above in 3.4.3, I was constantly aware that the interpretation made in the analysis of the data through analytic dualism, were *mine* and thus subjective and fallible. However, testing them through retroductive explanation in relation to literature and contextual profile data helped me to avoid what Archer (1988) calls 'methodological individualism', which is a common problem with interpretive research that only analyses the empirical experience of research participants. At the same time, I was aware that the subjectivity of the respondents, their opinions, attitudes and perspectives, as well as the social politics of working in a group together, contributed to a degree of bias.

Triangulation further provided evidence of data credibility, as a variety of techniques were used to validate research data (Jackson, cited in Southwood, Carstens & Brauteseth, 2004) and check the integrity of inferences drawn from the multiple data sources (Schwandt, cited in Southwood *et al.* 2004). Considering the complexity of the study contexts and marine utilization issue, and the fact that research methods themselves are filters through which the environment is selectively experienced (Cohen *et al.* 2000), a multi-method approach was used in the research to minimise bias. Of significance here was the realisation that the use of focus group interviews alone, and the social politics and bias they carried, would not provide a full representation of the harvesters' reality. It was thus necessary to conduct individual interviews as an additional data generation method to get a broader sense of the issues under investigation. As discussed in 3.3.5, it became necessary to repeat these individual interviews to confirm details and gain further details and explanations. According to Cohen *et al.* (2000), this can be considered to be 'within method' triangulation.

At all times, the data generation and analysis was guided by the research purpose and context. This is emphasised by Maxwell (1992) in that validity is not just about what methods are used, but whether the data, accounts or conclusions gathered from those methods adhere to the purpose and context of the study.

To a degree I paralleled my own experiences and those of other researchers and stakeholders, with the stories of the local harvesters in order to determine the relationships between the accounts and how they are expressed. It is this intersubjectivity that allowed for the inclusion of multiple perspectives, depth and quality (McNaught, Taylor & O'Donoghue, date unknown cited

in Janse Van Rensburg, 2001). According to Maxwell (1992), descriptive validity does not involve generalisability or representativeness. The group sizes were thus small and I avoided assumptions that a narrative emphasised in one data source applied to all. I attempted to be as thorough as possible in how the data was handled, ensuring that it was dated, stored, documented, referenced and presented systematically to ensure authenticity.

3.6 Ethical considerations

Cohen *et al.* (2000) explain that receiving the consent of the research participants protects their right to self-determination. In preparation for the fieldwork component of this study, I attempted to seek permission and approval from the community and traditional leaders to enter their communities and conduct my research with the harvester groups. During an orientation visit to Hamburg, in the company of Serge Raemaekers (ichthyology doctoral student) and Zihko Fatman (social science masters student) however, I learned that there are few community leaders which I could approach. I then asked whether there might be healers, ward councillors or committee members and forum chairs who were respected by the community and could be seen to provide such consent. I was directed to the following people:

- Dr Carol Hofmeyer, a respected healer and the community doctor. As she had started the Keiskamma Art Project and number of other community upliftment projects, and was a pioneer in the Hamburg community's fight against HIV/AIDS, she was highly respected. In my attempts to meet with her I found that she was often away, and thus I spoke with her son, Graham Hofmeyer, who offered advice and support.
- Stanley (the chairman of the former abalone committee) and Nosipho (the secretary of the former abalone committee), who were interviewed by Serge, both offered support.
- Gloria, Zikho's field assistant, was said to be a respected elder of the community. During my second visit to Hamburg my field assistant took me to the small shop that Gloria owned near the backpackers, where she introduced me and what I intend to do. Gloria offered her support and help.

During our visit to Hamburg, I asked Zikho whom I could approach in the Ngqinisa community to gain approval, as well as assistance for my fieldwork. She recommended I find Mr Jinja, who had served as her field assistant and was a respected member of the community. Once I had found the village and Mr. Jinja (see section 3.2.4), he explained that there were no formal

leadership structures in Ngqinisa and that as he was well known and experienced in working with university students, he could serve as my liaison with the community.

Huberman and Miles (1994) advise that researchers should make their preferences clear. The participants were therefore made aware of my research agenda and extent of authority at all times, as well as the supervisory role of Rhodes University. In addition, I was aware of my behaviour, language and manner of dress with regards to the participant's gender and culture. The considerations specified in the paper 'Ethics in Research', (Murray, 2005), were referred to, with special attention to the following:

- Those involved in the research did so voluntarily, and were informed of their right to withdraw at any time and remain anonymous.
- Acknowledging the demands of daily routine, I endeavoured to give the research participants adequate notice of my intention to meet with them, by way of my field assistant distributing messages and by occasional mobile phone contact with some of the participants.
- I strove for open communication between myself, the translators and the participants, developing a relationship of trust and partnership.

As the use of photography in the data collection and presentation of research findings had the potential to override the assurances given around issues of participant anonymity, the following was considered (Guidelines for use of video recording and photography in educational research, 2005):

- The purpose, focus and nature of the voice recordings and photographs were explained to the participants, with assurance that such recordings will focus on the research topic, and not incidental issues of interest.
- Consent was sought from the participants for the use of voice recording and photography for research purposes and permission to show data in presentation of seminars, conferences and education purposes. Special attention was drawn to the fact that if they agreed to the visual material being shown, it may not be possible to guarantee anonymity. To address this, the participants were given the option of using pseudonyms in the research. It was later agreed that they would simply be referred to as respondents and numbered according to their responses. To ensure anonymity I used a 'photo camouflage' technique to protect identity of subjects (see figure 3.3 for an example).

- All voice and photograph material was made available to be heard and viewed by participants at any time.

A commitment was made to provide each of the participants with a copy of the educational materials when these are completed.

3.7 Conclusion

This chapter has drawn attention to the contextual embeddedness of the study and multidimensional research methods employed to explore this. Located within an interpretive paradigm, the appropriateness of a Critical Realist vantage point is discussed in relation to the methodological framework and data analysis. Chapter Four, the following chapter, continues the contextual profiling started in Chapter Two, but focuses not on the general (as in Chapter 2), but on the specific context of the two research sites. The chapter begins with a brief ecological description of the three marine species of interest in the study, and then focuses specifically on the socio-historical context of the former Ciskei region and how this and the contextual realities of the Hamburg and Ngqinisa communities has influenced utilization of marine resources.

CHAPTER FOUR

Contextual profile of two research sites: Hamburg and Ngqinisa

4.1 Introduction

Chapter Four forms part of the contextual profile of this study, as it narrates a story of the relationship between the coastal marine resources, how and why coastal communities use them and how the natural environment responds. Further, it tells a story of the region, its history and people, why it is the way it is, and hints at where it might be going.

This section of the profile first describes the ecology of three coastal marine species targeted by local communities for subsistence use, and which are specifically focused on in this study, making reference to the broad overview of the international and national policies and legislation pertaining to the management and use of the coastal marine environment presented in Chapter Two. This serves as a background to a brief description of *local* implementation of this legislation and marine utilization policy. In keeping with the ontological framework in this study, this forms the continuation of the review of the *real* domain, but also begins to describe some aspects and dynamics of the actual domain (as described in 3.2.1).

Where in Chapter Two an overarching review of the challenges facing rural communities in South Africa was presented, this chapter delves into the socio-historical, cultural, economic, political/legislative and educational dimensions that have come to structure and influence the specific contexts of the Hamburg and Ngqinisa.

4.2 Ecological overview

The boundaries of the former Ciskei are delineated by the Great Fish River in the South and the Chalumna River in the North. The coastline is approximately 50km long and is characterised by long sandy beaches interspersed by low aspect rocky reefs. Numerous perennial and non-perennial rivers occur and there is a distinct lack of pronounced embayments. This means that the coast has very little shelter against wave action (Godfrey *et al.*, 2005). Although the former Ciskei is located on the East Coast, the sub-tropic influence of the warm Agulhas Current is decreased as the warm waters are spread over the wide continental shelf that widens from the

region of East London (Branch *et al.*, 1994). At this interface of slightly cooler coastal water, a wide array of marine species thrive.

4.2.1 Ecological explanations of target species

4.2.1.1 Brown rock mussel / Imbaza – *Perna perna*

Brown mussels, the dominant mussel on the South and East coasts, attach themselves to the rocks in the wave crash zone by means of strong, beard-like strands/byssus, forming dense beds in the mid-intertidal zone to a few metres under water (Rouhani & Cowley, 2004). Classified as members of the class Bivalva, mussels have shells split into two valves, which extend laterally on either side of the body to encase it. These two shells are hinged together along the back by an elastic ligament, which stretches when the animal clamps the shells together and springs apart when the animal relaxes (Branch *et al.*, 1994). Brown mussels are identifiable by their smooth, yellow-brown shells (sometimes tinged with green) marked with chevron patterns (Branch *et al.*, 1994). Specimens from crowned intertidal beds are often elongated (almost rectangular in cross-section) and can grow to a maximum length of about 125mm. Submerged specimens are fast growing, and thus have taller and narrower shells. They have large gills, which they use both for respiration and to feed. Mussels are filter feeders, using their gills to filter out tiny plankton suspended in the water, washed over them by wave action. Due to this diet (filtering action of gills) they lack radula.

Being broadcast spawners, mussels release huge quantities of sperm and eggs into the water twice a year, which develop into planktonic larvae (Rouhani & Cowley, 2004). According to McQuaid and Lawrie (2005) spawning, and therefore recruitment of mussels is extremely spatially and temporally varied. Their predators include octopus, spiny starfish, black oystercatcher birds, mussel cracker fish, whelks and humans.

Mussels are one of the preferred shellfish collected on the shores along the S.A. coast (Lasiak & Dye, 1989). They are harvested as an important source of protein by subsistence collectors and as a luxury food for others. The edible flesh is whitish yellow (males) or orange brown (females), which consists mostly of their gonads. The extensive exploitation of mussel beds has altered the algal community structure in many of the Eastern Cape rocky shore ecosystems, impacting on the survival of other herbivore species (see 4.2.1.4 below).



Figure 4.1 Dense mussel bed



Figure 4.2 Small mussel clumps after harvesting

According to the Marine Living Resources Act of 1998, a person may only collect a total of thirty adult mussels per day with a permit. The collection method may only be by hand or with an implement with blade or flat edge not exceeding 12mm in width.

4.2.1.2 Cape rock oyster – *Striostrea margaritaceae*

Also classified as a bivalve, this large, heavy oyster has a deep, multi-layered, cup-shaped lower shell, which is cemented to rocky reefs from the low water mark to about five metres underwater. The upper shell is thin and flat, often bearing radial threads (Branch *et al.* 1994). Growing up to a maximum length of 180mm, this oyster is highly edible and is exploited throughout its range, from Cape point to well up the East Coast (*ibid.*). Although oyster is not a favoured food item in coastal communities, they are collected for their aphrodisiac properties, and increasingly to meet a growing commercial demand.

According to the Marine Living Resources Act of 1998, the legal limit for the collection of oyster is a maximum of twenty-five adult (50.8mm in diameter) oysters per person per day with a permit.



Figure 4.3 Bag of locally caught oyster for sale in Hamburg



Figure 4.4 Large oyster, Hamburg

4.2.1.3 Alikreukel / Giant Periwinkle / Iqongwe – *Turbo sarmaticus*

This large snail which falls into the class Gastropoda, subclass Prosobranchia, occurs from False Bay to the former Transkei, living in rock pools and on reefs in the intertidal zone to a depth of about eight metres (Rouhani & Cowley, 2004). Alikreukel have large, round, spiral shaped shells, with a height less than their width. About three rows of low nodules spiral around each whorl of the shell (though they may erode & disappear in later life) (Branch *et al.*, 1994) giving it a bumpy appearance. The opening or aperture of the shell is smoothly round, with its outer lip dark brown or black. The inner lip is white to bright orange. The operculum or door is round, thick and calcified, with its outer surface densely packed with white nodules (*ibid.*). This operculum blocks the opening of the shell when the animal withdraws. The majority of the body is made up of a large, flat foot, which is used to move. Alikreukel have well-developed heads with small tentacles and a radula or tongue with which they graze or rasp fine micro-algae and small seaweeds (Rouhani & Cowley, 2004). Classified as macroalgal grazers, Foster (1997) notes that they prefer green and red alga to brown and coralline forms. Reaching a maximum size of 100 mm, alikreukel grow relatively slowly.



Figure 4.5 Alikreukel catch, Hamburg



Figure 4.6 Three alikreukel with two large Limpets, Hamburg

The alikreukel's main predators include octopus, spiny starfish, black oystercatcher birds, mussel cracker fish, whelks and humans.

As with mussel and oyster, alikreukel reproduce by means of external fertilization, broadcast spawning sperm and eggs directly into the water (Foster, 1997). They only reach sexual maturity at about 5.5cm when they are about two years old. Spawning takes place only once a year between November and March, when the day length is longest and sea temperature greatest, and it is thought that if they reach the age of four years (around 7cm) they would have gone through two breeding seasons (*ibid*).

Spawning is thought to be initiated during rough sea conditions, especially associated with onshore westerly winds and storms (summer). It is speculated that the onshore wind may help to keep larvae inshore. Rapid fluctuations in sea temperature caused by upwelling may also serve as a cue to initiate spawning. Molluscan veliger larvae absorb dissolved organic matter and thus such nutrient rich upwelling events may be advantageous for development (Foster, 1997).

Stocks are probably maintained by either direct input from the resident spawning stock or by larval drift from nearby populations. In the Eastern Cape where most upper intertidal stocks are exploited, larvae might come from inaccessible subtidal populations, from stocks in protected nature reserves or from stocks associated with inaccessible areas where exploitation is limited. Larvae have a relatively short life span of less than 10 days (Grange, 1976, Hickman, 1992); therefore dispersal range is probably limited (Lasiak 1991). Although adult alikreukel are capable

of considerable movement in its rocky shore habitat, they are probably restricted in its long-shore movement by patchiness of rocky shores (separated by long sandy shores) along this coastal region. These isolated populations are likely to be particularly sensitive to extreme exploitation (Foster, 1997).

Alikreukel are harvested for food by both recreational and subsistence collectors, and are sometimes used for bait. According to Branch *et al.* (*ibid.*) although it is still fairly easy to find alikreukel, it has become increasingly difficult to find large specimens in the intertidal zone except in marine reserves, despite regulations limiting its collection. Legal sized animals occupy exposed portions of the intertidal, and despite being cryptic and hiding in crevices, they are easily recognised by experienced shellfish gathers. This aspect, together with their restricted and shallow distribution, makes them easily accessible to collectors (Foster, 1997).

According to the Marine Living Resources Act of 1998 harvesting regulations for alikreukel, a person may not collect more than five specimens per day. These may not be less than 63.5mm in size and may only be collected by hand. Branch *et al.* (1994) contends that by the time alikreukel reach collectable size they are already at an age of about three to four years old.

Along the former Transkei coast, approximately 40% of the alikreukel collected are immature (Lasiak, 1991). This may result in serious depletion of the reproductive stock, and in turn the demise of these populations (Foster, 1997). The alikreukel's protracted spawning period coincides with peak holiday season, when the rocky shore experiences increased exploitation: the removal of undersized specimens and disturbance (turning of boulders in search of bait), which in turn makes recruitment unpredictable. Possible management of harvesting pressure may include implementing a closed season during vulnerable spawning season or closed areas used on a rotational basis amongst populations for protection of spawning stock (*ibid.*).

4.2.1.4 Impact of over-utilization on species ecology

Intertidal and subtidal marine ecosystems rely primarily on herbivores, detritivores and filter-feeders. Macroalgal grazers, such as alikreukel, play an important role in processing macroalgae and therefore the transfer of energy from macroalgae to the detritivore trophic level. Therefore exploitation would reduce the role of this mollusc in the transfer of energy to the particulate feeder trophic level (Foster, 1997).

In South Africa the practice of removing shellfish (e.g. limpets, oysters and mussels) to supplement the diets of impoverished communities is increasing in the context of poverty and vulnerability. Where over-exploitation of shellfish has occurred (e.g. along the former Transkei coast of the Eastern Cape Province), a rapid and extensive establishment of coralline algae has resulted (Dye, 1992). Mussels are recognised as key species in structuring communities on temperate intertidal rocky shores worldwide. Therefore, their exploitation has important implications for rocky shore community structure and conservation of biodiversity (Harris *et al.*, 1998). For example, where mussel and oyster beds have been removed by over-harvesting, coralline algae have rapidly and extensively taken their place. The extensive presence of this poor quality food in the intertidal community could reduce the growth rate and reproductive fitness of macroalgal grazers such as *T. sarmaticus* (alikleukel) (Foster, 1997). This, in turn, could affect the ability of *T. sarmaticus* populations to endure exploitation by humans. However, *T. sarmaticus* extends its distribution into the subtidal region where it would encounter a different suite of macroalgae (*ibid.*). This in turn would provide a degree of protection as few rural subsistence harvesters venture into the deeper waters of the subtidal zone.

As is the case with most invertebrates that cannot move once they are settled onto the rocks, mussel and oyster larvae have certain chemical cues of their conspecifics (adults) that they can pick up in the water that guide them to appropriate sites to settle or recruit on the rocks (S. Kaehler, personal communication, 20 June, 2006). Although there is evidence of chemoperception in mussels and oysters, their recruitment depends largely on the substratum. Mussel and oyster larvae prefer to settle onto complex structures where they are protected from predators and wave action. In extensive adult beds they receive the protection they need (and external fertilization maximised), but if the rocks have been cleared bare by harvesters, they are almost always washed away by wave action (*ibid.*).

4.2.2 Local implementation of legislation

4.2.2.1 Enforcement of legislation

Local enforcement of legislation aimed at regulating marine utilization has been notoriously poor, particularly along the East Coast. Although the government has made efforts to increase compliance and extension personnel in this area, it is far from sufficient. In the former Ciskei area, three compliance officers were appointed in late 2005 and stationed in Hamburg. They are,

however, responsible for overseeing the entire area between Kiwane beach to the east and the Fish River in the west (Mr Mpani, personal communication, 15 June, 2006). Due to this large stretch of coastline, most of the patrols are done by vehicle, which according to Carol Hofmeyer (personal communication, October, 2006) is ineffective as the harvesters see the vehicle coming and leave before the compliance officers can check their catches.

In an effort to increase their effectiveness, the MCM compliance officers have developed a partnership with the local Nature Conservation office in Hamburg, and further afield at Kiwane (east of the Keiskamma). On two occasions during the field-work component of this study, I was met on the beach by both the Nature Conservation officers and the compliance officers. They are also assisted by the local police station when arresting abalone poachers.

4.2.2.2 Local management

In an attempt to mobilize local involvement and the co-management of marine resources by local harvester communities, MCM has set up the Subsistence Fisheries Management Unit (SFMU) and Sustainable Coastal Development (SCD) project, mandated to establish local subsistence management committees along the entire coastline of South Africa. In the study area, the SFMU has set up three such committees: one in Hamburg and Bell, one in Bodium and another in Kaizer's Beach. Although each committee meets separately, they occasionally attend combined meetings arranged by the SCD extension officers working in the region. I attended one such meeting on the on the 22nd June 2006. Here I learned that each committee is supposed to be made up of at least seven local harvesters and two community catch monitors. The community monitors were still in training as they had only been employed at the end of 2005. These monitors patrol the beaches at low-tide four days a week (normally Thursday to Sunday) and around the spring tide periods. During these patrols they check whether the marine harvesters they encounter hold permits (either recreational or exemptions); they record the number, size and weight of the marine species collected, and provide information about the harvesting regulations for each species.

The data recorded by the monitors in collected and sent to the SFMU officers in Port Elizabeth, where they are then supposed to be synthesised and the results communicated back to the community monitors and committee members. Unfortunately, at the time of the meeting in June

2006, it was explained that none of the data to date had been captured, as there was still a great deal of confusion in the Research Department of MCM.

When I queried why it was that the Ngqinisa village across the Keiskamma had been excluded for the committees and that no community monitors had been employed from the village, it was explained that MCM were still in the initial stages of assessing the various coastal villages and at that stage the village had been excluded because they were under the impression that the only harvesting occurring there was abalone poaching. I mentioned that the people of Ngqinisa were indeed collecting mussels and other species for subsistence and recommended that they be considered.

4.2.2.3 Exemptions vs. permits

Before the revision of the Marine Living Resources Act (MLRA) and in the absence of a subsistence fisheries policy, subsistence harvesters were required to buy recreational harvesting permits from local post offices in order to collect marine resource legally. Many could not afford the R65 annual recreational permit, and thus collected resources 'illegally'. This resulted in considerable conflict between harvesters and MCM compliance officers.

In an attempt to increase the socio-economic benefits of inshore and coastal resources for local subsistence communities (promoted by the amended MLRA of 1998), MCM instituted the allocation of abalone exemptions in Hamburg in 2001 and 2003 (see 2.5.2 and 4.3.4.1). This pilot project was a failure, and the allocation of harvesting exemptions has since focused on mussel, oyster and fishing.

By June 2005 there were 25 registered harvesters in Hamburg, who had received exemption permits for mussel. They were selected based on the criteria that they were unemployed and were not receiving any social grant from the government. In mid-2006, Lusanda Mbola, of the SFMU in Port Elizabeth, approached Mr Dave Kritzer, manager of a small commercial oyster farm in the Keiskamma estuary, to discuss a possible partnership. With his help, 14 local harvesters (who were unemployed and not receiving a social grant from government) were selected and given an exemption to collect wild oyster and sell them to Dave at market related

prices. The arrangement was that these harvesters would only be allowed to collect the specified number of oyster a day and Dave would only buy them if they were of the legal size. The local community catch monitors would monitor their catches. Both the mussel and oyster subsistence exemptions are only valid for one year and thus harvesters have to re-register every year.

4.3 Social history and socio-economic situation

4.3.1 Setting the scene: History of the Ciskei region and Keiskamma area

The recorded history of the Eastern Cape prior to the twentieth century is dominated by the nine Frontier Wars that were waged between 1779 and 1878 (Ainslie, 1998). These wars have been described as the brutal contestation of different ways of owning and managing land and its resources (Crais & Bundy (date unknown), cited in Ainslie, 1998). Settler demand for the land (mostly for extensive livestock grazing purposes) claimed by Xhosa-speaking groups for the same purpose, and for control over indigenous labour characterised this struggle (Lacey, 1979 & Webster, 1991 cited in Ainslie, 1998). The eastern frontier was not a kind place, renowned for its climatic extremes. Drought and consequent loss of crops and livestock was, in many instances, the final reason for serious confrontation and resultant carnage (Williams, 1995).

Long before this, however, the first inhabitants of the Ciskei area were the Khoekoen, the Strandlopers, and the Khoisan (bushman), evidence for which can be found from the shell middens along the beaches and dunes, as well as in the caves and rock overhangs of the Keiskamma River. The Nguni people entered the area about 400A.D, followed later by the amaXhosa, both of which had the habit of chasing away the Bushman as they preyed on their cattle (Kopke, 2006).

The first Europeans in the area were shipwrecked sailors (*ibid.*) falling prey to the treacherous Wild Coast coastline. The following wrecks were recorded in the Keiskamma region: In 1593, the 'Santo Espirito' wrecked near Haga-Haga (east of East London), the 'Bennebroek' wrecked near the Umtana River mouth (between the Fish and the Keiskamma Rivers) in 1713, and the American ship 'Hercules' wrecked near Begha River mouth (also between the Fish and Keiskamma Rivers) in 1796 (Crampton, 2004). The Gqunukhwebe clan, under the leadership of chief Cungwa and his three son's Koba, Pato and Khama, lived along the coast between the

Tyolamnqa (Chalumna) and the Fish Rivers (Kopke, 2006), moving as far west as Algoa Bay (Pieres, 1981). Xhosa-speaking groups in these areas were involved in relationships of economic exchange and social (including intermarriage) and cultural (noticeable by a number of linguistic influences) interactions with Khoisan groups who also inhabited the area (*ibid*: 97).

From as early as the 1750s, these people were also in contact with white hunters and travellers, and later with the Dutch farmers ('trekboers') who were expanding the frontier of the Colony eastwards. From 1703, these farmers could apply for grazing permits enabling them to rent 'loan farms' which were large tracts of grazing land (a minimum of 6000 acres) at a token price for their exclusive use. Thus was introduced a system of individualisation (if not strictly private) property rights which was to bring these 'trekboers' into conflict with the shifting pastoralism of the Khoi Khoi and Xhosa-speakers in the area (*ibid*. 122). By the late 1760s, the 'trekboers' had laid claim to all Khoi Khoi grazing land between the Gamtoos and the Fish rivers and had come into contact with the Gqunukhwebe, Gwali, Mbalu, Ntinde and Mdange Xhosa-speaking groups (Switzer, 1993 cited in Ainslie, 1998).

During the war of 1818-19, the area between the Fish and Keiskamma rivers (currently Peddie district) was virtually cleared of Xhosa groups, including the Gqunukhwebe and the Nlambe, their huts and food supplies were destroyed and their cattle seized (Webster, 1991b). A neutral zone was established between the two rivers that extended to the Kat and Tyhume rivers below the Winterberg. This zone became known as the 'Ceded (or Neutral) Territory' and was intended to be an uninhabited buffer area between settlers and Xhosa-speakers (Peires, 1981). During the 1820s missionaries entered the Keiskamma area. In 1826, the Wesleyans under Rev. W. Shaw built a station on the Twecu River (a tributary of the Chalumna) and converted Chief Khama to Christianity. The Rev. Keyser from the Knapp's Hope mission spent his annual holiday preaching to the people who lived at what is now Keyser's Beach (Kopke, 2006).

By the early 1820s, Dutch-speaking settlers and British settlers began to cross the Fish River to farm in the disputed territory (Switzer, 1993 cited in Ainslie, 1998). The Ceded Territory was spared from the 1829 drought that devastated both the Colony and the Xhosaland up to the Kei (Pieres, 1981), and as a result both settlers and Xhosa-speakers drove their herds of cattle into it, making the government's attempts to keep the Ceded Territory uninhabited untenable (Ainslie, 1998).

Chief Khama moved out of the area in late 1830s, because of the ostracism by his brothers for accepting the Christian faith. In 1835, Sir Benjamin D'Urban brought with him the Mfengu (Fingo) people, who had lived under Chief Hintsa to the east of the Great Kei River, and settled them in six locations and on two mission stations in what became the Peddie District. In order to accommodate the Mfengu, D'Urban forcefully removed Chief Pato's people from their traditional lands. This alienated the chief and his subjects forever (Kopke, 2006). D'Urban allocated land between the Fish and the Keiskamma River to the Mfengu, establishing fortified villages from which they would provide the colony with military support against the Xhosa (Crais, 1992). The Mfengu were bound to the British for over 50 years, which made them very unpopular among the local amaXhosa (Kopke, 2006).

After the Seventh War (the War of the Axe) in 1847, the Cape Colony was extended to include the area of land between the Great Fish and the Keiskamma Rivers, including Victoria East, and the new colony, British Kaffraria, was established (Williams, 1995). During 1850-53 the Eighth Frontier War (the War of Dispossession), was fought in the Amatole mountains, which banished the amaXhosa to the area immediately west of the Great Kei River (Kopke, 2006). The extreme eastern boundary was shifted to the Kei River and this area was maintained under military law, which was extremely biased and severe (Williams, 1995). After the Eighth War the idea of bringing settlers from Europe into this region was first mooted (*ibid.*). For several reasons, chiefly the economical pacification of the frontier and the gradual civilization of the "Kaffirs", Sir George Grey, governor of the Cape Colony, decided to implement a policy to intermix Europeans and Natives territorially (Schnell, 1954). Sir Harry Smith originated the idea of placing retired soldiers into small holdings in villages, where they would be under a superintendent and be subject to being called up for military parades and even military service. In addition to this, Sir George Grey allowed the acceptance of the British German Legion as military settlers. He held that the military settlers would impress the greatness of the military strength upon the minds of the Natives, so that they would give up all ideas of fighting the white man (Williams, 1995). For this study, it is significant that it was the Germans who were used to implement and initiate the experiment.

A curious aspect to the story of German military settlers, who came to the Ciskei area, or British Kaffraria, was that they came by accident rather than design. During the Crimean War, England and France were allies in fighting Russia, and in 1855 Lord Panmure (British Secretary of War) obtained consent to recruit Germans, Italians and Swiss as reinforcements. One thousand

German 'volunteer' soldiers led by Baron von Stutterheim were trained, but before they could be sent to battle, the Crimean War ended. England was faced with a newly established army with no immediate wars to fight (Hamburg and the Keiskamma River, n.d). Governor Grey agreed to take the men as military settlers, but only on condition that they would come married, accompanied with their wives and children. In 1856, despite the promise of 8000 men, only about 2362 men, accompanied by 361 women and 195 children, arrived to be divided into three Regiments and scattered to occupy 22 different settlements (Williams, 1995). The First Regiment (under Col. Woodridge) were sent to the Peddie district (which is of interest here), which included Fort Peddie, Bodium, Bell, Hamburg, East London, Cambridge and Panmure (*ibid.*). Thus, the British Kaffraria became "a chequer-board of black and white" (Schnell, 1954). The sites chosen for the villages were based on military objectives, the land surveyors were inexperienced and insensitive and the allotments were small (only five acres), thus there was little agricultural or any other economic potential. With no regard for good land, water and fuel (wood), the settlements were in many instances viewed as useless (Williams, 1995). Added to this, the men were young (they had to be under the age of 25 to be recruited) and had no agricultural experience, and thus with drought, dysentery and stock diseases, the productivity and durability of the villages waned (Schnell, 1954) as many abandoned their properties and went to East London or King Williams Town to find work.

As Sir Grey was concerned about the permanence of the villages being abandoned by the German military, he proposed to bring out 2000 German emigrants a year for two years, who could farm and "constitute a society". The necessary finance was arranged such that British Kaffraria would cease to cause anxiety and expense to Britain. A loan of £50 000 was raised and the plan formulated and implemented (Williams, 1995). JC Godeffroy of Hamburg, Germany was hired as the emigration agent, while Dieseldorf & Co. did the actual recruitment of German families. Each married couple was to receive 20 acres of land, every single man ten acres. In addition, five acres were granted for each child over 14 years of age and 3 acres for children over 10 years of age (*ibid.*). In 1858-59 these emigrants joined the settlements and despite encountering early hardships of delayed land allocation (some had to wait almost a year), and having to eat their seed as food as rations ran out and drought, by 1867 their farms flourished and many had entered various trades and businesses (Schnell, 1954). According to Schnell (1954) the contribution of the German immigrants made was not one of scholarship or science, but one of agricultural work. Most had little education, but they were hard working and enterprising, and as a class made a name for themselves. According to Kopke (2006) much of the land in the Ciskei was alienated and subdivided into farms. All forests (coastal and inland)

were demarcated government property and protected, and in this way the Colonial Government insured that the frontier lands were occupied and protected by Europeans.

It is important to note at this point that between May 1856 and June 1857 what became known as the Cattle Killing Episode began. The cumulative impact of more than 40 years of disruptive, discriminatory and generally violent contact with British-colonial rule had shaken the economic and cultural foundations of the Xhosa people. The Xhosa response was to seek release from bondage through an act of atonement, as much a spiritual as a physical catharsis. They also sought to stop the decimating spread of lung sickness (Peires, 1989 cited in Ainslie, 1998). This act required them to kill all living cattle (which are central to the Xhosa culture) and consume all their corn without cultivating more. They believed that this sacrifice would be followed by the resurrection of their ancestors and disease-free herds of cattle, and that the English, Mfengu and other white foreigners would be swept into the sea by the Russians (Mostert, 1992). A few clans (chiefs Siwani, Anta and Khama) refused to take part in the sacrifice and so the Xhosa were divided into Believers and Unbelievers, which in turn threatened civil war within the nation (Crampton, 2004). Of the most assiduous in this slaughter in the Ciskei area was Chief Pato's Gqunukhwebe, who killed almost 100 percent of their cattle (Mostert, 1992). According to Crampton (2004) Pato's people were utterly destroyed. Schnell (1954) referred to this event as the 'National Suicide', which Mostert (1992:1187) described as the greatest self-inflicted immolation of a people in all history, the saddest and most overwhelming of all South Africa's many human tragedies. Shockingly emaciated and utterly destitute, the Xhosa were forced to turn to their enemy, the English, for help. On Governor Grey's orders, famine relief was provided only in exchange for manual labour and anyone who tried to remain on and cultivate their own land was refused food. Trivial crimes and unsubstantiated charges were used to force people off their land and into exile as labourers on white farms (Crampton, 2004). Thousands of Xhosa flooded into Mfengu locations, where they 'became Mfengu' by changing their legal status. As a result, the Mfengu population expanded dramatically, making the settlements between the Fish and Keiskamma rivers severely overcrowded (Stapleton, 1996 cited in Ainslie, 1998). From a total population of about 104 721 before the Cattle Killing, the Xhosa were reduced to 37 229, and according to a government report in 1857 all but one of the Xhosa chiefdoms had showed a radical decline in their populations, the sole exception being the imiDushane under chief Siwani, who had refused to participate (Crampton, 2004).

These overcrowded conditions made grazing land a scarce commodity (due to restriction of land ownership to the reserves), and even though attempts were made to increase arable production

in the land left behind by the exodus of some 40 000 Mfengu to the Mbashe River in 1865, drought and livestock diseases contributed to the creation of an increasingly sub-subsistence rural economy, as did attempts by the Colonial government to increase the flow of labour from these rural areas through administrative and legislative means (Bundy, 1973 cited in Ainslie, 1998). By the end of the 19th century the majority of the Mfengu people had become heavily indebted, sub-subsistence farmers who had to leave the area periodically in search of employment (Moyer, 1976 cited in Ainslie, 1998). By 1905 these reserves had become reservoirs of labour, which slowed the development of the urban African proletariat and served to underpin a system of migrant labour. Consistently high indices of adult male and female labour migration hamstrung rural agriculture, and by dislocating and fragmenting village membership, the authority of institutions responsible to manage natural resources was undermined (Ainslie, 1998). The reserve system was legally reinforced in rural South Africa by the Native's Land Act of 1913, and then the South Africa Native Trust and Land Act of 1936, which designated land for ownership and occupation for Africans. The official response to the disintegration of the rural economy and the virtual depletion of the natural resources was the implementation of rehabilitation schemes, which included the division of land for arable, grazing and residential purposes and the relocation of people and livestock (Bundy, 1988 cited in Ainslie, 1998). These schemes did not, however, address the root of the problem, namely that there were too many people and animals on too little land (Lacey, 1979 cited in Ainslie, 1998).

In 1945, more than half the livestock died and agriculture declined due to relentless drought and increasing erosion. Government drought relief took the form of employment of destitute men and women in public works programmes, such as road-building, contour maintenance and dam construction. This did little to reverse the declining fortunes of the poorest or make a lasting impression in terms of arresting the ecological decline in the reserve area (Mager, 1992 cited in Ainslie, 1998).

When the National Party came to power in 1948, one aspect of its policy was to maximise the number of people in the reserves. To deal with the overcrowding problem, the Tomlinson Commission (1955) recommended that the reserve population be divided into farmers and rural-based wage-earners, where the latter had no rights to land or stock ownership, subsisting by means of wages from the urban sector (Ainslie, 1998). Consideration of the impact this would have on natural resources took the form of Betterment Planning. Control over the rural population was exerted through the local chiefs, headmen, dipping foremen and police, as the responsibility of policing and compliance within these resources rehabilitation programmes fell

on them. Unfortunately the legitimacy and effectiveness of these functionalities started to become discredited as resistance to the Betterment grew (*ibid.*). The implementation of the Betterment Planning was accompanied by the establishment of the Bantu Authorities. The one goal of the Bantu Authorities Act was to re-invent the 'traditional' African system through the establishment of tribal, regional and territorial authorities with limited powers (*ibid.*). Both Betterment and Bantu Authorities tended to have the effect of strengthening the dominant conservative groupings in these locations, while simultaneously confining as many people as possible to the reserves and making them dependent on the central government. In this way, the state hoped to divert emerging African nationalist forces (Moll, 1988 cited in Ainslie, 1998). These policies were to have the opposite effects in many areas (Mbeki, 1964; Mager 1992, 1995b cited in Ainslie, 1998).

In the Peddie District, as in other parts of the Ciskei, there was both silent acquiescence and vehement resistance to the implementation of Betterment Planning (Mager, 1992 cited in Ainslie, 1998). In the southern coastal section of the District, two chiefs who agreed to Betterment without the consent of their followers were murdered (Mzozoyana, 1995a; De Beer, 1984 cited in Ainslie, 1998). Mager (1992, cited in Ainslie, 1998) notes that in the early 1950's, the mobilisation of rural people, including large numbers of women, in the Peddie District against Betterment came increasingly under the influence of the Port Elizabeth-based ANC Youth League (Hirson, 1977 cited in Ainslie, 1998). This corresponded with the collapse of the rural economy, which resulted in families becoming totally dependent on the wages of younger, urban-based men.

Under Apartheid, the Transkei and Ciskei became the 'homelands', 'independent' (self-governed) states of the greater (i.e. white) South Africa (Crampton, 2004). In pursuance of these ethnically constituted states, the South African State proceeded to relocate large numbers of Africans into areas demarcated for the development of self-governing ethnic enclaves with rationalised boundaries (Ainslie, 1998). Throughout the 1970's and early 1980's, 'black-spots' were removed and resettled and white-owned farms were bought up for inclusion into the reserves.

This population expansion of whole communities onto land which established villages regarded as their grazing land (Manona, 1980 cited in Ainslie, 1998) further exacerbated the depletion and destruction of the natural resources by an already swollen population in the reserves. Population increase in the Ciskei area was also augmented by the various measures introduced by the

state to eliminate 'squatting' on white-owned farms. Manona (1988, cited in Ainslie, 1998) notes that there were successive waves in the 1960's and 70's of 'destitute' farm-workers that were pushed off these farms in the wake of widespread mechanisation and the accompanied wage cuts. In 1981, the former Ciskei gained its 'independence' from South Africa. The commercial agricultural sector for this 'country' was deemed unviable, and the subsistence sector had collapsed. Rural employment was practically non-existent and migrant-labour offered the only viable strategy for household income generation (Charton, 1980 cited in Ainslie, 1998). The majority of the young men worked in the mines and on the white-owned farms, making the homelands, "a country of women and children, a dumping ground for the old, as the infirm and the unemployed were forcibly removed from the white cities" (Crampton, 2004: page no. unknown). Lennox Sebe, the puppet president of the apartheid-created Ciskei 'homeland' to facilitate its 'separate development' policy (*ibid.*), channelled government funding reserved for drought relief etc. through the Tribal Authorities or the Department of Agriculture to the members of his Ciskei National Independence Party (CNIP) (Rogers, 1980 cited in Ainslie, 1998). As word of his corruption spread, opposition towards the Bantustan system grew. Sebe, despised by his 'subjects', was ousted (Crampton, 2004) in a military coup in March 1990 and was replaced as 'head of state' by Brigadier Oupa Gqozo.

With the unbanning of the African National Congress (ANC) and other liberation groups in February 1990, opposition from non-statutory groups, like the South African National Civic Organisation (SANCO) and village Residents' Associations, mounted against the delayed re-integration of the Bantustans into South Africa and the continued existence of the Bantustan administration (Ainslie, 1998). As a consequence of the political upheavals in the period 1990 to 1994, many inhabitants of rural villages were alienated from the loci of authority at all levels of the Bantustan administration. This led to a great deal of uncertainty in resource management practices as local systems of control fell away or were ignored. Land invasions occurred, particularly by newcomers into commonage grazing land of established villages as the Residents' Associations assumed the responsibility of allocating residential land (*ibid.*).

In 1994, after the democratic election where the ANC won the majority vote, the former Ciskei was re-integrated into South Africa, forming part of the new Eastern Cape Province. Even with this change to a democratic government in 1994, this legacy of developmental backwater remains (Crampton, 2004). The long-standing and entirely pragmatic commercialising of activities aimed at resource conservation and rehabilitation (through the payment of labour), has resulted in people not being prepared to perform these activities on a voluntary basis. Voluntary

collective action to conserve natural resources has been, and remains highly unlikely, given the weak incentives involved. The politicisation of the countryside during the era of authoritarian Bantustan politics has further eroded a sense of custodianship that rural people might have felt towards the resources that are still crucial to their subsistence (Ainslie, 1998). Due to the renowned natural beauty of the Wild Coast area, the potential of tourism to boost the local economy is immense. Several development initiatives and marketing drives, aimed at bringing in both local and international tourists, have been initiated (see 4.3.3.2.3), but the region's reputation for violent crime remains an enormous deterrent (Crampton, 2004).

4.3.2 Local context of Ngqinisa village

Ngqinisa village is located on the eastern bank of the Keiskamma River and falls within ward 32 of the Buffalo City local municipality (Municipal Demarcation Board, 2007). Considerably smaller than Hamburg the village has approximately 145 households at present with a population of approximately 1200 people (M. Ngcama, personal communication, January, 2007).

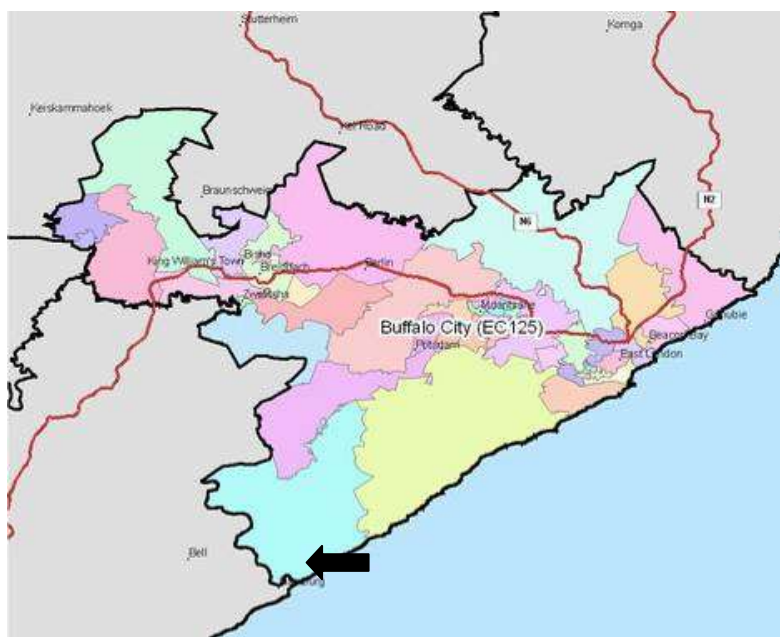


Figure 4.7 Ward 32, Buffalo City Local Municipality

Source: Municipal Demarcation Board



Figure 4.8 Aerial photograph of Ngqinisa village

Source: *Sustainable utilisation of coastal living resources*. Progress report, 2005.



Figure 4.9 View from Ngqinisa homestead



Figure 4.10 View of Ngqinisa from grazing-lands

4.3.2.1 Ngqinisa's past

According to one of the middle-aged women and Mr Jinja, my field assistant, the majority of the families that now live in Ngqinisa moved to the area around 1950. It was, however, found that this date could have been earlier as more details about how and why the village was established before this time was gained from two village elders. The first was found sitting in the shade of a very large Wild Plum tree. Now in his early 90s, he recalled that his family used to work on the white-owned farms around the village, ploughing and planting a variety of vegetables. He explained that he had been born in Ngqinisa (which would date back to the early inhabitation of the village back to the early 1900's), and that he and his family had lived off the beans, wheat, watermelons, mielies and potatoes that they grew.

Unfortunately very little information could be found about Ngqinisa. However, the majority of the socio-economic and –political issues challenging the nearby village of Hamburg can also be ascribed to the Ngqinisa context (see 4.3.3.2 below).

4.3.3 Local context of Hamburg village

Hamburg is a small coastal town that falls within ward 11 within the Ngqushwa municipality (Municipal Demarcation Board, 2007). The town lies about 14km down a gravel road off the R72 road that runs between East London and Port Alfred. Situated on the west bank of the Keiskamma River, many of the residents and holiday properties are afforded impressive vistas of the river mouth and sweeping coastline. The former Hamburg municipality comprises a number of neighbourhoods that are referred to by the local people as Qolweni, Hamburg town, Nqoqhaga, Gogogweni, Phola Park, Ndlovini, Ntilini and Laleni (Fatman, 2003a; Hollard, 2004). In 2004, Hollard (2004) reported a permanent population of about 3000 in Hamburg, mentioning however, that this increases greatly during the December holidays. Referring to a Hamburg household affordability survey conducted by his organisation in 2000, Hollard (2004) reported that about 77,5% of Hamburg’s residents live in formal houses and about 10 to 12,5% in shacks or mud huts. While Hamburg is relatively well serviced by rural standards, with the majority of houses having access to electricity, fresh piped water and waste disposal, unemployment levels are unacceptably high.



Figure 4.11 Ward 11, Ngqushwa Local Municipality

Source: Municipal Demarcation Board



Figure 4.12 Aerial photograph of Hamburg village

Source: *Sustainable utilisation of coastal living resources*. Progress report, 2005.



Figure 4.13 Beach from Hamburg homestead **Figure 4.14** Hamburg homestead from beach

4.3.3.1 Hamburg's past

Both German and Xhosa were the earliest residents of the military village called Hamburg after its wealthy namesake in Germany (William, 1995). As described above (in 4.3.1) the village of Hamburg is situated in the area that was involved in the confrontation between the amaXhosa people moving South and the Boer and British moving North. The conflict that arose was predominantly over cattle grazing land of both groups. Indeed, Hamburg, along with its neighbouring villages of Bodium and Bell, was founded by the British to protect the then colony frontier border, the Keiskamma River. In 1856 the British government sent soldiers from the German Foreign Legion to settle in the area. Many of these military settlers found the conditions

harsh and drifted into the nearby towns. German families then settled in the area in 1858, building a life out of agriculture. According to C. Hofmeyer (personal communication, October, 2006) many Xhosa families that had worked on the German farms had continued to stay on the land from as early as the 1900s. These are the 'old families' of Hamburg (about 20) and what makes Hamburg unique in South Africa is that the Xhosa people have had some degree of land ownership for over a hundred years. The town did not flourish as a permanent German settlement, but achieved increasing prominence as a popular white South African holiday and fishing destination after the second world war (Hollard, 2004), especially for the white farmers from Peddie, who come down regularly (C. Hofmeyer, personal communication, October, 2006). Many families of both German and South African descent forcefully removed in the late 1970's by the South African Nationalist government, are still remembered by the elderly Xhosa people in Hamburg today (*ibid.*). Hamburg became part of the Ciskei and, suffering severe neglect and mal-administration (Hollard, 2004), its popularity as a white holiday resort waned, as did the wealth of the village (The Keiskamma Trust: The Hamburg Community, 2004). In the early 1990s, when it became evident that Apartheid was going to fall, the decedents of many of the white farmers returned, buying their old houses and plots back from public works (C. Hofmeyer, personal communication, October, 2006). Some remnants of original German houses and gravesites can still be seen.

4.3.3.2 Current socio-economic situation in Keiskamma area

As outlined in Chapter Two, the Eastern Cape region is beset with issues of unemployment, the ravages of HIV/AIDS and poverty. Below I briefly describe how these issues have impacted on the Keiskamma area (Hamburg and Ngqinisa).

4.3.3.2.1 HIV/AIDS in Hamburg

No one knows exactly when AIDS manifested itself in Hamburg, because no-one, back then, recognised or would acknowledge that anyone in the village had AIDS. In the minds of the villagers, AIDS was a disease of big cities, far from their rural home. Sometime in the late 1980s however, AIDS did enter Hamburg, brought in all likelihood, by young men and women who had left the community to find work in the towns and cities up and down the coast. Hamburg has always depended on the sea for its livelihood, but by the latter half of the 20th century the waters

of Hamburg were largely fished out, and the community's young men left to find work in the mines. Those jobs kept them from their families for months on end, and inevitably the young men sought out the company of women who had left their own impoverished villages and entered South Africa's flourishing sex trade. Just as inevitably, some young women from Hamburg joined this exodus to Cape Town, Durban and Johannesburg. When they got too sick to work, these young men and women – the pride and hope of their families, the absentee breadwinners – came home to die. The presence was acknowledged, but the cause of their suffering was not. When they died, they were quietly interred in one of the cemeteries on the outskirts of the village. This compact of silence and shame lasted until 2002 when Dr Carol Hofmeyer began to tend to the people of the Keiskamma River valley. By this time, one in every three adults in Hamburg was infected with HIV and the numbers were rising. With no treatment available, beyond palliative care, Dr Justus Hofmeyer, her physician-husband, and others in the community succeeded in raising funds and getting life-sustaining drugs (anti-retrovirals) from the United States government, to treat the people of Hamburg who needed them (something that the South African government was not yet doing).

Although the South African government has begun to offer anti-retroviral treatment to people living with AIDS, the waiting lists for drugs are long, and the nearest hospital where the drugs are dispensed is 48km away from Hamburg – beyond the reach of the most debilitated and desperate. To meet their needs, the Hofmeyers built an AIDS hospice and treatment centre in Hamburg. They also launched a community-wide awareness effort, to encourage HIV testing, prevent new infection and offer treatment to those already infected. To get a sense of the impact AIDS had had in the community, Dr Carol conducted an informal, door to door survey to identify children orphaned by the epidemic. After two weeks she compiled a preliminary, partial list of Hamburg's AIDS orphans numbered at 70 (Bayrd, n.d.).

4.3.3.2.1.1 The Keiskamma art project and trust

In 2000, the Keiskamma Art Project was initiated by Dr Carol Hofmeyer with the help of Jan Chalmers (Oxford, UK) and Jacky Jezewski (Brantome, France). Most of the Hamburg community is unemployed and the main sources of income were abalone poaching and government grants. Considering this and the impacts of HIV/AIDS, the high incidence of petty crime and alcoholism and the slow, but constant, depletion of the once pristine environment (The Keiskamma Trust: Art Project: History, 2004) Dr Carol Hofmeyer's initial motivation for the

Project was to teach embroidery to impoverished local women, in part as a way of assisting them economically, in part as a way of enabling them to come to terms with their grief through this unique form of communal therapy.



Figure 4.15 Keiskamma Art Project

The unemployed women started with cushion covers and small items, sold in local markets, but soon they undertook their own version of the famed Bayeux Tapestry (which depicts the Norman Conquest of England), growing the embroider group to more than a hundred women (and a few men). Unlike the original, the Keiskamma Tapestry depicts the history of the Eastern Cape, up to the end of Apartheid, celebrating its hope for the newly democratic South Africa, and now hangs in the South African parliament in Cape Town. Shortly after the completion of the Tapestry, the group began on the next ambitious project, their own version of the Isenheim Altarpiece (one of the greatest works of the German Renaissance, the masterpiece of Matthias Grünewald), to commemorate Hamburg's determination to prevail in the face of AIDS (Brown, n.d.).

The Altarpiece tells a story of sadness and grief, but also of hope and pride. It is the community's documentation of their own story, reflecting the cosmology and cultural perspectives specific to Hamburg. As there is little accessible literature on the cosmology and contextualised story of Hamburg, I have chosen to briefly describe their story:

With the altarpiece closed, the central image is a cross, with the body of Christ replaced with an image of a Xhosa woman dressed in the traditional attire of a recent widow. She is grieving over the loss of her husband who has died of AIDS. While Grünewald depicted Mary Magdalene and St. John at the sides of Christ, the blue-clad Keiskamma widow is surrounded by the children of

Hamburg, many orphaned by AIDS, as well as the grandparents and other older members of the community who are increasingly called upon to look after those orphans. The figures on the flanking panels are not saints, but simply well-known and respected elderly women of the Hamburg community, Susan Paliso and Leginah Mapuma. The widow in the centre has chosen to remain anonymous, to serve as a symbol of the hundreds of women in the region who have lost spouses, children, grandchildren, and lifelong friends. The predella (bottom panel) depicts the funeral of Susan Paliso's son, Dumile, who succumbed to AIDS in 2002, at the age of 35.

When the first set of panels is opened, the image of Vuyisile Funda, a local character known as Gaba (which in isiXhosa means "the prophet"), is revealed. Gaba is said to be visited by God just before daybreak each day. In the course of these visitations he is instructed never to assault anyone, and when he feels angry or confused, God tells him to go to the dunes along the sea and run barefoot in the sand until his anxieties are resolved. His footsteps leave patterns in the sand (often that of a cross), which he claims are made unconsciously. The red satin dress worn by Gaba, when dancing in the dunes, is said to be an expression of solidarity with women.

The central panel also shows the local choir singing while angels and birds fly overhead. This is to reflect the spiritual aspects of life in Hamburg. The dominant image on the left panel is a wild fig tree, which both shelters and nourishes the inhabitants of Hamburg. On the right panel, a great spiral depicts the local land animals and the fish of the sea, as a never-ending circle of life.

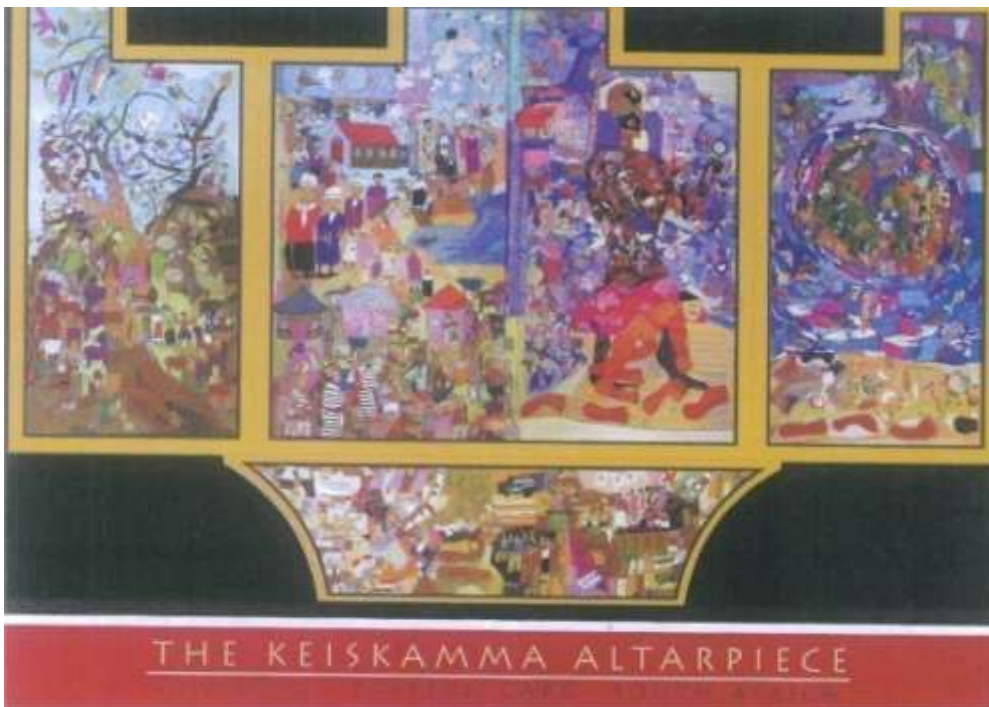


Figure 4.16 The Keiskamma Alterpiece: central panel

Source: Post card

The opening of the inner set of panels reveals dramatic life-size photographs of three local grandmothers and their grandchildren, some of them orphaned by AIDS. The care of these children has largely become the responsibility of their grandmothers.

- Susan Palsio, 82, shown with her arm around her eight-year-old grandson, whose father's funeral is depicted on the pedella.
- Eunice Mangwane, 58, pictured with her three grandchildren, who works closely with Dr Carol Hofmeyer at the AIDS treatment centre in Hamburg, has been instrumental in founding AIDS support groups in other villages.
- Caroline Nyongo, 47, holds her 2-year-old grandson with her three children at her side. It was Caroline's group that made the beaded trees, birds, and beasts seen above her and in the side panels.

The outlying panels represent areas outside Hamburg where those who have died of AIDS are buried. In contrast to the busy, crowded landscapes of the other panels, these are unpeopled. According to Dr Carol Hofmeyer, the Keiskamma Altarpiece "represents a turning point in our community's relationship with HIV and AIDS (with) no single creator (it) embodies not just our fears and our losses, but the slow restoration of hope in our community" (Bayrd, n.d.).

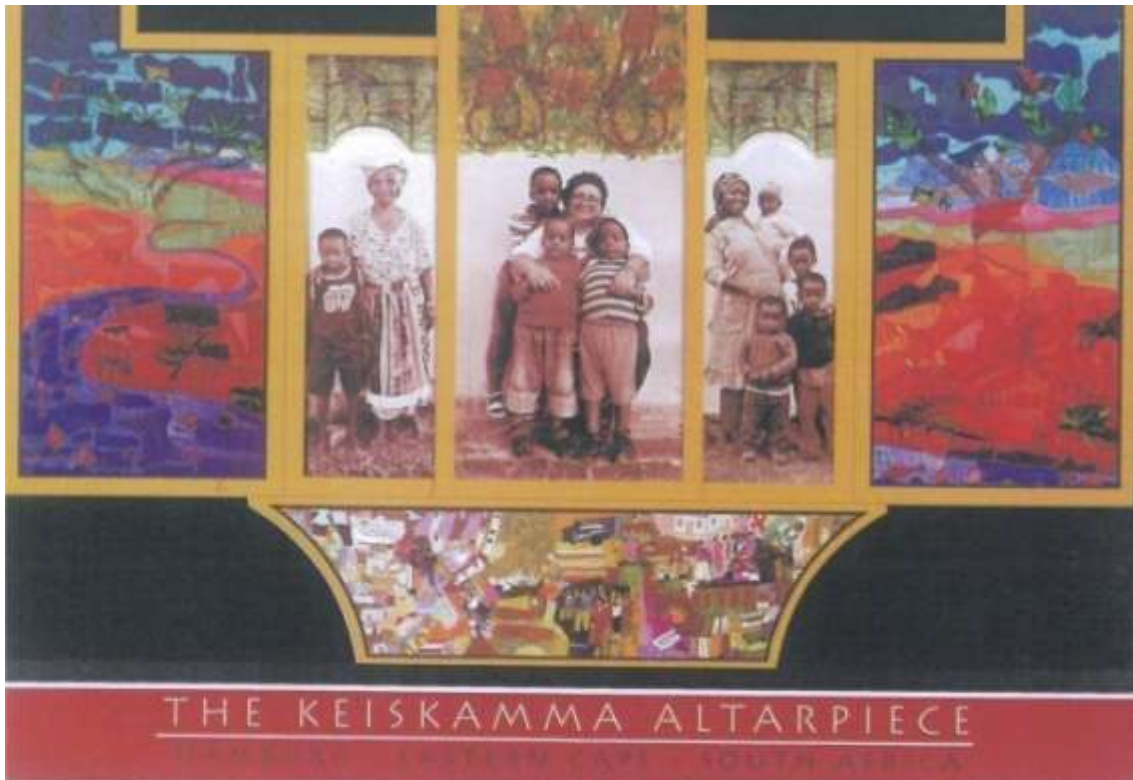


Figure 4.17 The Keiskamma Altarpiece: inner panel

Source: Post card

Altogether it took more than 130 women, and several men, to create the Keiskamma Altarpiece over a period of six months, whose final size is 4.1 metres in height by 6.8 metres in width (the exact dimensions of the Isenheim Altarpiece). The formal unveiling of the Altarpiece took place in July 2005 in the Anglican cathedral in Grahamstown. The event was attended by members of the community, a number of AIDS patients, and virtually all the women who worked on the alterpiece (Bayrd, n.d.).

Over the years, the crafts and creative skills of the Hamburg community have earned respect and recognition both locally and internationally. From the publicity created from the tours of the Tapestry in South Africa and the Altarpiece in North America, the Keiskamma Art project has grown, battling to keep up with incoming orders (my observation). The Art Project now runs under the leadership of Nokwanda Makubhalo, Noseti Makubhalo and Caroline Nyongo, assisted by Jackie Downs and Tanya Jordaan, young Fine Arts students (The Keiskamma Trust: Art Project: History, 2004). Besides gaining an income from the embroidery, villagers are able to market their beadwork and homemade toys in the Art Studio.

Started in 2000, the Keiskamma Trust is an umbrella non-profit organisation established to instil skills development and income-generating activities in the village of Hamburg. Beside the Keiskamma Art Project, the Trust had grown to include other projects, which include:

- The Keiskamma AIDS Treatment Program (KAT), headed by AIDS counsellor Eunice Mangwane, raises funds to provide anti-retroviral (ARV) drugs to AIDS stricken community members who have no other access to such medicines. KAT simultaneously runs HIV/AIDS education and support groups, which link to the Art project and the Garden project, which run a weekly soup kitchen, and where possible, provide clothing and some financial assistance. As the program is the only ARV site in a large area, many come from far to receive treatment. Eunice and her team have observed an increased uptake of Voluntary Counselling and Testing (VCT), as well as a noticeable reduction in the stigma towards HIV positive people, and thus they are presently starting between five and ten new patients on the ARV treatment per month. The KAT project was awarded money from PEPFAR (President's Emergency Fund for Aids Relief in Africa) for ARV therapy. The health centre provided 24-hour nursing care and, together with a network of trained community health care workers and community members volunteering their time and resources (many women bring vegetables from their gardens to support the kitchen), the project is a continuing success.
- The Keiskamma Gardening Project was established to support the farming of vegetables, herbs and aloes by members of the community. A vegetable garden has been established in the grounds of the health centre to provide resident clients with fresh vegetables. Several women attended a gardening workshop in Port St. Johns to begin a nursery and there are plans to run nutrition and healthy eating workshops.
- With funding from the Amathole District Municipality, the Heritage initiative is a poverty alleviation and skills transferral scheme, which includes the villages of Hamburg, Ntilini, Bodium and Bell. Old buildings from the 1856 German settlers have been renovated to serve as a cultural centre, museum and tourist information centre.
- The Early Childhood and Youth Development Project sources funding to renovate existing crèches and offer training, resources and food to day-care facilities in and around Hamburg.
- Linked to the above project and with the help of two British students, who have ties with the Capoeira Group in Oxford, the Keiskamma Capoeira Group has been formed by the youth of Hamburg, who practice twice a week. A form of martial art, Capoeira involves dance, rhythm and play providing young adults and children with a worthwhile activity to build confidence and community spirit.

In 2004, the Trust reached out to include the adjoining villages of Ntilini and Bodiam. Dr Carol Hofmeyer, Mrs N. Mei and Mr Kincaid sit on the Trust Board of Trustees (The Keiskamma Trust: The Trust, 2004).

4.3.3.2.2 Unemployment

In 1999, the rapid appraisal surveys and subsequent household affordability surveys conducted by Afesis-coplan reported that unemployment was estimated as 80% (including pensioners) with state pensions being the most common form of livelihood (46%) (Hollard, 2004). These surveys further reported that the largest percentage of households, of which the average occupancy was seven, had a disclosed income of less than R500 per month. The most important networks in the town in terms of participation by households were the burial society and the grocery club (members pooled purchasing powers for groceries and school uniforms).

In the Hamburg area, high levels of poverty make the sale of marine resources particularly attractive to impoverished communities, despite effects to improve policing and impose heavier sentences. The Keiskamma River and coastline still play a very central role in the livelihood of the local people. Subsistence fishing and rocky shore harvesting supplement the diet of many and occasionally provide a small income when sold. With few local sources of income and the small-scale farming typical of the region unable to meet the needs of the population, a huge burden is placed on the natural resources of the area. Wood from the local indigenous forests is chopped for firewood and the continual removal of oysters, alikreukel and abalone (among others species of intertidal life) is denuding the coastline. Abalone poaching, with its quick cash rewards, is attractive to many despite serious risks of fines, imprisonment and drowning. Small scale enterprises are dogged by lack of infrastructure and access to potential markets. However, the beauty, rich history and long-term, settled nature of the population give Hamburg enormous potential for development (The Keiskamma Trust: The Trust: The Hamburg Community, 2004), particularly within the tourism industry.

4.3.3.2.3 Local economic development

Several development initiatives and marketing drives aimed at bringing in both local and international tourists, have been initiated. In a protracted municipal planning exercise that

spanned the years 1998 – 2002, local government was afforded the opportunity to unlock the potential of its natural, economic and social assets through a series of inter-connected sector plans that would jointly comprise the Integrated Development Plan (IDP) for the Eastern Cape area (Hollard, 2004). Intended as exciting, locally-owned commitments to ‘developmental local government’ Hollard (2004) contends that many of these plans quickly deteriorated into a faltering bureaucratic process aimed at little more than legal compliance. In 2000, a proposal to promote tourism as a key component of the Local Economic Development Plan for Hamburg and the surrounding Peddie District was presented to the Amatole District municipality, by Afesis-corplan. A number of activities were undertaken as part of the Local Government Transformation Project for community-based tourism in Hamburg between 2000 and 2003. These included the development of a canoe trail and training of guides; development of a tourism booklet detailing the historical, cultural and natural features of the area; development of women’s catering groups to provide services to tourists; creation of a tourism website and brochure; and a number of tourism promotion activities and marketing. Unfortunately, the sustainability of the project waned and no significant increase in tourism was recorded (Hollard, 2004). There is presently no individual Spatial Development Plan for the town of Hamburg; however, it is ‘supposedly’ part of the fish River Spatial Development Initiative (Wolhuter, 2004).

4.3.4 Marine utilization

An attempt is made below to outline the history of marine utilization in the Keiskamma area, and how, due to the increasing dependence on marine resources and associated over-utilization, Marine and Coastal Management attempted to intervene.

4.3.4.1 Outside influences on resource utilization and impact on social dynamics

In the mid-1970s, white people collected oyster in the Hamburg area. They taught some of the local harvesters how to wade and swim and then hired them to collect oyster for them. Between 1992 and 1999, a diver, Alwin Dryver, had a permit to collect abalone from the Ciskei coast. He, too, trained a number of local harvesters how to wade and swim in order to find abalone for him.

It was due to these outside buyers that the monetary value of these resources was realised by the subsistence harvesters and from that time on both oyster and abalone have been collected

and sold to white visitors as a source of income. High levels of poverty in the area make such activity particularly attractive to the impoverished rural community despite efforts to improve policing and impose heavier sentences.

An exemption abalone fishery instituted by MCM on the Hamburg area has had far reaching effects, as explained below (Godfrey *et al.*, 2005):

By the mid-1990s the abalone resource in the Eastern Cape was under increasing pressure as a result of poaching, as has been the case in the Western Cape. One important difference in stock utilization in the Eastern Cape has been the involvement of large numbers of rural people wading from the shore without diving gear as a means to access the resource. By 2000, unregulated poaching had become widespread along the entire Eastern Cape coast, placing the stock under a critical threat.

In response to this situation, the Hamburg community in the former Ciskei was selected by MCM as a pilot site for an experimental exemption abalone fishery in 2001. The goals of the exemption fishery were to create a co-management situation and provide the community with long term territorial user rights (TURFs) for a small-scale commercial operation once the fishery was proven viable. In return, the community would assist in monitoring, control and surveillance. About 137 people were given exemptions from the MLRA (1998) to collect three abalone per day on weekdays during the open season (five to six months). A fishing committee was established to represent the exemption holders. Exemptions were re-issued annually until the 2003/4 season, with slightly modified conditions. Fishing rights (115 exemptions) for abalone were subsequently issued to the Cebe community in the southern Transkei in 2003/4 for a six month period. The management of these fishing rights was administered by the Subsistence Fisheries Management Unit (SFMU) within MCM as part of the policy to legalise the activities of subsistence fishers and the setting up of fishing committees was contracted out to extension officers.

Owing to the depletion of inshore stocks, the use of professional divers was endorsed, but with the provision that they would have to operate under strict conditions. The divers were employed by the buyer to harvest abalone on behalf of the rights holders. Despite allocation of exemptions, there was little knowledge of the abalone stock status. As a result, there was no way of determining whether the fishing effort was too high or low. MCM therefore issued a tender for a diving and monitoring survey to be carried out in the Eastern Cape region, but the awarding of

this tender was subsequently delayed by a year. The Department of Ichthyology and Fisheries Science at Rhodes University (DIFS) was awarded the tender at the end of January 2004, two months after the exemption fisheries for the current season had commenced. From their findings it was clear that the scale of the abalone exploitation in the rural areas of the Eastern Cape had been underestimated in the past, and cumulative impacts over the past two decades had led to a situation where most areas are now overexploited. The interviews conducted by the DIFS team with the different stakeholders identified a number of serious issues and concerns regarding the implementation of the exemption fishery (Table 4.1), which showed that the goals of the fishery were not met (Godfrey *et al.* 2005) and have in fact resulted to a general distrust of MCM and social tensions within the community.

Table 4.1 Major issues and concerns raised by different stakeholders

Issues & Concerns	Particulars	Outcome
Permit Allocation Process	<ul style="list-style-type: none"> - Permits issued before proper co-management arrangements were in place in the community - Poor notification of registration process - Traditional fishers not properly identified - Allocation criteria not clear to everybody 	<ul style="list-style-type: none"> - Many established fishers didn't get permits - Many non-fishers got permits even from inland - People with other sources of income received permits
Choice of Buyers	<ul style="list-style-type: none"> - Unmediated lobbying of buyers to ill-informed rural people - Payment process not explained properly Approval of a second buyer in Transkei 	<ul style="list-style-type: none"> - Some permit holders didn't get an income because buyer not recognised by MCM - People ended up with a buyer they didn't choose - Unhappiness over money received for abalone - Forensic audit was required to investigate possible misconduct over payments in Hamburg
Use of Professional Divers	<ul style="list-style-type: none"> - No screening of divers (employment of known abalone poachers) - No informing abalone committee and elected monitors of where and when they would dive 	<ul style="list-style-type: none"> - Offloading of legal catch en route to processor - Compensation divers for bad diving days - No trust of exemption holders - No active participation of exemption holders - No reduction in illegal wading yet divers allowed to partake in fishery
Abalone Committee	<ul style="list-style-type: none"> - Not regarded as representative by everyone - Not capacitated to operate properly 	<ul style="list-style-type: none"> - Created rules that were in conflict with the aims of a TURF (e.g. permit holders were required to stay away from the coast).

Raised Expectations		<ul style="list-style-type: none"> - False hopes created over potential income - Diver training not realised - Raised expectations from non-fishers with permits - Misconceptions over size limit - Majority expect permits to be issued again
TURF Boundaries	<ul style="list-style-type: none"> - Unclear - Too large - Not formulated according to wards or traditional demarcations 	<ul style="list-style-type: none"> - Created conflict with neighbouring communities - Not possible for exemption holders to patrol whole area - No sense of ownership over resource
Link with Illegal Fishery	<ul style="list-style-type: none"> - Illegal buyers still operating in the communities - Middlemen have provided diving gear - High prices paid by illegal buyers 	<ul style="list-style-type: none"> - Incentive to continue poaching - Some exemption holders are involved - Areas are systematically denuded by sophisticated illegal networks - Compliance measures unable to cope
Poor Management	<ul style="list-style-type: none"> - Management plans instituted in piecemeal manner - Permit formulation weak - Management & research measures not co-ordinated - No ongoing engagement with all stakeholders 	<ul style="list-style-type: none"> - Recommended TAC not set - Established mechanisms not used (e.g. sealing of bags during transport) - Lost data from fishery and confiscated catches - Misunderstandings between stakeholders

Godfrey, B.P., Raemaekers, S. & Britz, P. (2005: viii).

In February 2004, Eugene Swart, an MCM inspector, estimated that due to the influence of a virtually limitless Chinese market, frozen or fresh abalone would realise between R465 and R600 a kilogram on the black market, while dried abalone fetched between R1300 to R2000. Over a period of two months (January and February 2004) the Port Elizabeth team confiscated 4436kg valued at R4.3 million (Hollard, 2004). With local stocks of abalone depleted, groups of Hamburg harvesters are forced to move as far as Kei Mouth, where in one instance they were arrested with 260 unshelled abalone. In Hamburg and the nearby village of Ngqinisa, illegal poaching of abalone continues, constituting the livelihood strategy for many (not always poor) residents.



Figure 4.18 Ngqinisa harvester with abalone



Figure 4.19 Abalone with alikreukel catch in Hamburg



Figure 4.20 Emptied abalone shells at Ngqinisa

4.4 Conclusion

This chapter provided a brief overview of the local socio-historical, -economic, -political and -biophysical context of the Keiskamma area, as a continuation of the contextual profiling started in Chapter Two. This provides a valuable background to the narrations of harvesting experience and practice described in Chapter Five, as well as the relational explanations provided.

CHAPTER FIVE

Presentation and interpretation of case stories of Hamburg and Ngqinisa villages within the critical realist framework

5.1 Introduction

This chapter provides a presentation and interpretation of the case stories of Hamburg and Ngqinisa villages within the critical realist framework. The interpretation of the case story narrations of the Hamburg and Ngqinisa harvesters, as well as my observations, is divided into three layers, correlating with the ontological domains of the empirical, actual and real. Through the use of this framework, I was better able to engage with the situated construction of meaning and experience of the marine harvesters, while at the same time deepening my ongoing contextual profiling work. The process of narrating and representing their harvesting practice and experiences, as well as understanding of context, by way of telling stories and taking photographs, allowed the research participants the opportunity to navigate through, research and reflect on what is conscious and unconscious (habituated dimensions or *habitus*) in their knowledge and practices.

The three-layered presentation and interpretation of case stories is however presented in four main sections in this chapter. The first and second, present the stories of context and harvesting practice as narrated by the research participants during the focus group and individual interviews (the *empirical* domain), as well as the contextual and historical explanations of these (the *actual* domain) for the case studies of Hamburg and Ngqinisa respectively. By using the thought operation of retroduction (see section 3.4), an attempt is made to advance beyond the harvester's descriptions of their practices and experiences, and reconstruct or clarify the conditions or prerequisites for these to be as they are. In the third section, an attempt is made to interpret and describe the main structural mechanisms that lie behind and give rise to these experiences and events (the *real* domain) in the contexts of both Hamburg and Ngqinisa. Section four presents two examples of these retroductive explanations, which serve to highlight some of the possible connections and relationships between these ontological domains. It was in working through these complexities and relationships, my interpretations and those of the research participants, that learning spaces and possibilities emerged.

5.2 Stories and Observations (Hamburg) – EMPIRICAL DOMAIN

The following section details the stories of context and harvesting practice narrated by the research participants of **Hamburg** during the various focus group and individual interview sessions, as well as the narration of my observations made in context. This provides insights into how the subsistence harvesters of Hamburg experience and view their world, and thus falls within the empirical domain of the analytical framework of this study.

5.2.1 Resource dependency and livelihoods

According to Mr. Mangwane (HMCM) most of the people that live in Hamburg rely on the marine resources in one way or another. He speculated the approximately 200 people in Hamburg harvest shellfish to feed their families and sell to tourists as a source of basic income. The dependency on coastal marine resources was explained by Respondent 3 (HI2) and justified against the backdrop of one simple statement - “Life is hard and expensive now, the cost of living is too high”.

During the focus group interviews (HF1 & HF2) it was explained that there are very few permanent jobs available in Hamburg, besides temporary cleaning work in the white residences and holiday homes, and the occasional poverty relief project, and thus many of the youngsters that stay in Hamburg after finishing matric or dropping out of school, had nothing to do. Youngsters that do leave Hamburg in search of jobs in the surrounding cities and towns, leave their children in the care of their parents or grandparents. Therefore many of the elderly people, particularly women, have large extended families to support on their pension or disability grants.

Within most households the women have become the breadwinners, having lost the men to illness or the promise of work in urban areas. “We are widows, we have no husbands. We are suffering” (HF2, R2). Respondent 6 (HF2) pointed out that – “these resources are very helpful, especially to those families where there is no father”.

It is interesting to note that during the discussions in the focus group sessions the research participants made little to no specific reference to HIV/AIDS, its impacts on the community or how it influences their daily lives. During my interview with Dr Carol (HHis2) however, she argued that HIV/AIDS has had a huge impact of the livelihood of many families in Hamburg.

Those who return from working in the cities or on fishing boats, are often infected and so infect their partners in Hamburg. Therefore many young people have died, leaving their children to be supported by pensioners and the food and money brought in from the sale of marine resources. During her second individual interview Respondent 3 (HI2) answered a direct question by explaining that the community accepts HIV/AIDS as a big problem and that they were no longer scared of disclosing, and for this reason many people receive treatment from Dr Carol. She went on to recall that in her youth the white man that owned what is now Mrs Mei's shop, used to make and sell cheap coffins so they could bury their dead the very next day, but now even the poor people have to cover the cost of sending their dead to the mortuary while they wait for the expensive coffins be made and brought to Hamburg.

5.2.2 Food security and health

As mentioned in chapters one and two, shellfish forms a major source of protein for many rural communities living along the coast, and the village Hamburg is no exception. Respondent 1 (HI1) explained that she harvests three days before and after every spring low tide (approximately twelve days a month) to collect oysters, mussel, alikreukel, octopus and limpet to feed her family of eight and sell to white people for money. Respondent 3 (HF1) explained that the dependency on marine resources for food has a long history in Hamburg - "Long ago our families depended on the sea, mussels were feeding the whole family, we would prepare it with maize meal" (HF1, R3). Respondent 3 (HF3) explained that she had learnt how to prepare a meal of seafood from her mother and grandmother – "we go collect oyster, alikreukel and mussels ... take them home, boil them, after sometime take them out and wash them ... pour oil into a pot and start frying, when it's done we will eat. We depend on this". Respondent 6 (HF3) added to this saying that they were born eating seafood, "... our mothers would go and collect seafood when there was no food at home to feed us. We depend on the sea for food at our houses". Respondent 2 (HF2) also referred to this comparison between the past and the present:

With today's high cost of living, the collection of seafood provides when food is limited. In these days we are told to collect five *amaqongwe* (alikeukel) ... Our mothers before in the olden days, they cook *amaqongwe* (alikeukel) and fried them for us when we were hungry. We eat them with bread.

She added that in their youth their mothers collected only for subsistence, not for sale, and how thereafter the resources became even more helpful in that the sale of them allowed them to buy

other foodstuffs. Respondent 6 (HF2) explained that today seafood is collected mainly to sell and that the resources are only used as a source of food on occasion, when they eat what they can't sell. This is, however not always the case, as shown when Respondent 5 (HF1) was asked how often her family ate shellfish, to which she answered that they eat shellfish the entire week around each spring low tide. This would mean that shellfish forms a major part of their diet for at least two weeks out of every month. Respondent 15 (HF3) explained that her children fried mussels before they go to school for breakfast, because mussels make them strong.

The search for food in the sea was often described as unpredictable and unrewarding, and thus if a bounty was found, it was fully utilized. This opportunism was clearly reflected in a story told by Respondent 7 (HF1):

... long ago when we were still young, five of us went to harvest at Umtana River ... whilst walking next to the water we saw a huge fish. We tried to put it on our heads but didn't manage. All five of us had to carry it at the same time ... on the way we had to stop and rest ... at home ... it was chopped into pieces, so each one of us would get a piece. We really enjoyed it, we went to harvest mussels and got something else, we were very happy.

It was observed that the practice of collecting marine resources was also dangerous, the women often venturing deep into the wave crash zone, being washed back and forth against the sharp rocks.



Figure cluster 5.1 Harvesting: a dangerous activity

During the numerous visits to the research participant's homesteads it was observed that all of the participants owned livestock of some sort. Most had free ranging chickens, while a number owned cows and pigs. These animals were seen as assets and cared for as sources of milk and eggs. It was explained that the livestock were only slaughtered for meat on very special occasions, such as marriages, funerals and during rights-of-passage rituals. Thus eating animal meat was seen as a luxury and seafood was considered to be the only source of protein readily available.

To supplement their diet of starch and predominantly seafood protein, many of the women took pride (particularly the elderly women) in describing the variety of vegetables that they grew for their families. Respondent 1 (HI1) explained that she grew everything, "cabbage, carrots, turnips, beans, potatoes, beetroots and others", and only sold the excess. Respondent 2 (HI1) also rattled off a long list of vegetables that she grew and explained that she only grew for the family, and that the excess (if any) is given to her neighbours. The first day I interviewed Respondent 2 individually, I found her sitting on the floor of her house peeling a huge pile of sugar beans. Later in the year I was lucky to receive a bag of peas from her as a gift offered with great pride.

Besides the sea providing a source of protein, its water and marine resources were described to provide other health benefits, as Respondent 5 (HF3) explained – "I also depend on the sea, not only by its food. I also use water as a laxative product ... to clean my stomach and have a good complexion". Respondent 5 (HF2) also explained that her mother used to mix one cup of fresh water with one cup seawater and make them drink it to "clean their stomachs".

In addition to the purgative properties of seawater, the group took great delight in describing, and illustrating with elaborate hand motions, the aphrodisiac and fertility properties of marine resources. As Respondent 5 (HF2) explained - "*Ingwane* (octopus) is very important if you are not able to have children – take *ingwane* and *isenene* (red bait), you mix them with another thing from the forest, make a bottle and drink, you will get a baby". Respondent 17 (HF3) confirmed this when she said that octopus was considered to be an important medicine for pregnant women. Respondent 5 (HF2) had gone on to explain that abalone and oysters are very helpful if a man is "weak in sex", as they can "make him strong" if he eats them. Respondent 6 (HF2) also explained that when chopped into pieces and soaked in water, *iqongwe* (alikeukel) is drunk to counter the same problem. To which she added that oysters if eaten raw could counter infertility in women.

Besides the benefits of strength, sexual stamina and fertility, shellfish are believed to increase their beauty - “here at Hamburg we are beautiful, fresh, because of these resources” (HF2, R2), and attractiveness – “... if your boyfriend dislikes you, take *ingwane* (octopus), he will come back to you” (HF2, R5). It was also explained that the coastal environment itself brings out beauty – “...the visitors come here and in two weeks you will notice then they become fresh and beautiful” (HF2, R5). Remedies from other sea creatures were also mentioned – “for medicine, I use seal fat for ear infections and for adults, two teaspoons for asthma and treating wounds” (HI1, R2).

5.2.3 Income

From one statement I understood the extent to which the harvesters of Hamburg value the marine resources – “there is richness here in Hamburg, we have the sea” (HF3, R3). Although white mussels and prawns were sold to white visitors from as early as the 1950’ and 60’s, the true monetary value of the sea was first shown to the subsistence harvesters of Hamburg in the mid-70’s when the white visitors to Hamburg taught them how to swim and paid them to collect oyster for them. Respondent 1 (HF4) explained that they were paid “one cent, one cent, one cent” per oyster, receiving approximately thirty cents a day. From 1992 to 1999 other women were paid to collect abalone for a white man, Alwen Drywer, who was running an abalone export business from his house in Hamburg. Respondent 2 (HF4) explained that he’d started paying them two rand per abalone, and then four rand each, by the time he left in 1999. As the demand for particularly abalone grew, word spread fast about the easy money beneath the waves. The commercial potential of marine resources was fully realised in Hamburg in 2001 when MCM awarded 137 abalone exemptions to the people of Hamburg (see section 4.3.4.2), in an attempt to mitigate the widespread unregulated poaching of abalone in the Eastern Cape (Godfrey, 2005). According to Godfrey (2005:8), the exemption holders were paid R120 per kilogram of processed abalone meat. Considering that these exemptions were handed out again in 2003, there is foundation for Dr Carol Hofmeyer’s (HHis2) belief that there was, and still is, no employment or poverty relief project available that could possibly compete with that amount of money. Especially when one considers that illegal buyers of abalone, who are well known by the Hamburg harvesting community, pay up to R250 per kilogram for abalone today (Godfrey, 2005).

Besides the financial incentive to poach abalone, the sale of other species, particularly oyster and mussel to white residents and visitors, has long been seen to be an important source of

income to most subsistence harvesters. This income is used to buy other foodstuffs, bread, mielie meal, cooking oil etc., and household necessities such as paraffin, soap, toilet paper and vegetable seeds. “When we don’t have money, we sell it to white people, then we will use some of the money to buy things ...” (HF3, R3).

Besides household groceries, this income is also used to support the education of their children. Respondent 3 (HF1) explained that in her family they grew up depending on the sale of shellfish to buy school books – “Every time after school we would go and collect shellfish and after we would sell it ... for 10 cents a dozen ... 10 cent then had a bigger value ... we would buy material (cloth) for uniforms and someone would sew it ... we would sell again and buy school shoes and books”. Respondent 8 (FH3) mentioned the same scenario:

After school ... we would be given knives to go and collect seafood ... an older person would come too to show us how to harvest. We would sell and pay school fees, buy underwears for us ... and buy books ‘til we were old. We are worried now that there are sea rangers who chase us, because we really depend on the sea for food and for getting money (FH3).

This reflected the trend to prioritise the sale the resources collected, using only what is left over for food. In order to maximise the sale of resources without contravening the daily limit stipulated in the marine harvesting regulations (Marine Living Resource Act, 1998) the following strategy is practiced:

Because 25 (oysters) are not enough, I take it home and keep, then go again the following day for another 25. Then when there are 50 of them, I then start selling. I sell it by the dozen and I charge it at R10.00 per dozen. I sell them to the white people’s houses and with the money I get, I buy food for the house and also to cover school needs for my children (HF1, R2).

Another strategy utilized in the past was for the women to take their children along on the harvesting expeditions, as explained by Respondent 9 (HF3) “... so that we can take more, enough for everyone at home ... I would collect five and the child would collect five, so that I can have a dozen to sell. Now that we have guards, we don’t go often and also not taking someone from the house to help”. Today only youngsters 18 years and older are allowed to hold a permit and thus harvest. I asked one of the women, towards the end of the third focus group session, where she kept her catch from the first day, and how she kept it fresh for sale. She explained that - “we wrap them and tomorrow we will wash them with sea water” (HF3, R18). It was also

observed during my visits to some of the research participant's homes, that most of them had fridges, with one or two owning a freezer as well.

It was later added that the money made from the sale of shellfish was used by some to pay for their burial societies (HF3, R7) and buy medicines from the local clinic. However, this income is not always used to benefit of the family. According to Gaby Neuss (personal communication, March 29, 2006), the owner of the Oyster Lodge Backpackers in Hamburg, many of the women who sell marine resources to her backpacker clients, walk straight across the road to the local liquor store and buy alcohol with the money. This was confirmed through my observation on the 26th of April 2006, when two women came to the backpackers attempting to sell their undersized oyster catch to the visitors staying there. Both women were already intoxicated, and once they'd been paid R20 from the sale of the two dozen oysters, they walked into the liquor store, to reappear each carrying a brown paper bag.



Figure 5.2 Intoxicated women selling oyster



Figure 5.3 24 undersized oyster sold to backpackers client

From the narrations of the research participants and my observations early in the research process, I assumed that the marine harvesters only sold mussel and oyster to white residents and tourists visiting Hamburg. After the fourth focus group session however, where the participants created and narrated their photo-series posters, I observed one of the women selling her catch of oyster to a black gentleman who had just arrived in the village. When I asked her about it after the transaction, she explained with much mirth that seeing the man as an obvious visitor to the village, it was simply her explanation about the fertility and sexual stamina properties of oyster, which had motivated him to buy 12 oysters. She continued by saying that they seldom sold to black people, and that she had just been lucky that time.



Figure 5.4 Harvesters showing their oysters for sale



Figure 5.5 Black man buying oyster, Hamburg

5.2.4 Relationships that influence resource use

5.2.4.1 Relationships with compliance officers and community monitors

On the whole, the relationship between the subsistence harvesters and the Marine and Coastal Management (MCM) compliance officers (and the nature conservation staff and police that assist them) is one shrouded in fear and resentment. Most of the focus group participants remember their mothers collecting enough resources to feed the family, and in their youth collecting as much as possible to sell to the white residents and visitors in Hamburg to gain a steady income. This however all changed when towards to the end of 2005 a permanent MCM compliance office was established in Hamburg and the three MCM compliance officers (assisted on occasion by the Nature Conservation officers) began patrolling the Hamburg coastline more regularly, enforcing the intertidal harvesting regulations set out by the Marine Living Resources Act (1998).

Respondent 2 (HF2) explained that in the past their fathers worked and the “security guards” did not chase their mothers. Respondent 9 (HF3) described the current scenario as people being chased by the guards across the beach and even through the coastal forest, and thus people are now afraid to go to the sea. Respondent 4 (HF2) explained that she knew the legal number of each species one is allowed to collect, after which she emphasised that if you collect over the

designated amount “the security” will catch you! Respondent 16 (HF3) further explained that even after collecting the correct quota over a period of two days, so that she has enough to sell, she is still scared that the rangers will catch her – “... even then I should hide that from the rangers, because they will arrest me if they see me with that number of oysters”. Respondent 17 (HF3) added, “even today we saw them, and today we haven’t harvested over.”

During an interview with the MCM compliance officers, Mr. Mpani and Mr. Mangwane, on the 15th of June (HMCM), they were asked what procedure they followed on the occasions when they found harvesters who did not hold permits or had over-harvested their quota for the day. They explained that if it was the first time they are caught, they would give the harvesters an information brochure, explain the regulations and give them a warning. If however, they are found contravening the regulations again, they are fined according to the number of items over the quota and undersized per species. When I asked them to give me an example of such a fine they seemed unsure and said that they would look it up in their guidebook. They did however explain that if they catch people harvesting at night the harvesters are immediately fined R300. If they are found with abalone in their possession however, they are immediately taken to jail (HMCM).

The marine harvesters have been and are still made aware of the harvesting regulations on a regular basis. According to the research participants most of Hamburg’s marine harvesters have attended one or more of the numerous meetings called by the MCM officers to explain the regulations, especially in 2001 and 2003, when they were handing out the abalone exemptions.

Besides the surveillance and awareness raising by the MCM compliance officers the harvester’s catches are often checked and recorded by community monitors, which have been employed by the Sustainable Coastal Development (SCD) group and appointed within the marine harvesting forum. In the event of these monitors finding harvesters contravening the regulations, the collectors are told to put their over quota or undersized catch back into the sea. When asked how often the MCM or community monitors checked their permits and catches, Respondent 18 (HF3) stated that it was everyday, the whole month.



Figure 5.6 Community monitor checking a catch

5.2.4.2 Relationships with other harvesters

During the time of full and new moon many of the women leave their homes to meet up with other harvesters on their way to, or in the dune forest above the beach, where they dress into “diving clothes” before walking down to the rocks to collect resources together during the spring low tides. Respondent 1 (HF1) explained that when she prepares to go harvesting she gathers her diving clothes into a bag and meets up with others as “lots of times they go as a group”. On every occasion that I joined the women on their harvesting trips I was struck by their quiet respect for one another. As they spread out over the rocks, each person selects their first tidal pool. If an elder woman chose the same pool as another, the younger would stand aside.



Figure 5.7 Group of harvesters changing into their diving clothes, Hamburg

While they harvested, a degree of unity in purpose was observed, as they moved and collected from one set of rocks to the next. Individuals seemed to support and look out for one another whenever possible. This was evident on several occasions when individuals were observed signalling to one another, warning each other of approaching compliance officers, and one occasion when a pair of women were observed working together to hide their over-quota catch.

On the other hand, there is also an apparent competitiveness between harvesters, as pointed out by Respondent 6 (HF1) in her explanation that few large alikreukel are found in the rock pools anymore because “the first person to see them, will get them, because they are easy to get”. If they are caught by a monitor with an over quota or undersized catch then they have to put them back – “for the others”.

It was recalled by many of the research participants that in the past marine resources were often exchanged for other food stuffs with neighbours and other harvesters, “if sometimes you are short of mielie meal ... (or) not having oil ... you exchange sea resources ... to those who are having” (HF2, R8). Sometimes resources were also exchanged for material used to make clothing. Respondent 8 (HF2) explained that the friendly barter of resources for goods continued until the white people came and bought the resources from them, providing money to buy the groceries needed by the family, instead. This sale of resources has continued until today, making the traditional custom of sharing rare. Goodwill is still an important aspect of their relationship with one another however, as explained by the women during their focus group discussions, where it was mentioned that they often talk among themselves about how to solve day to day issues, especially those arising from the communities’ unemployment problem.

During the first focus group session, the research participants were asked whether men also harvested marine resources for food. The jovial reply highlighted that it is mainly bachelors that collect marine resources and that the sea does not discriminate between men and women, “... in the ocean there is no woman or man, it is only when we come out of the water that someone notices the difference. But it is mostly women”. Respondent 18 (HF3) went on to explain that men preferred to collect resources when the weather is hot, ...”they are scared of the cold, they are like children”. During my field visits to the Hamburg shore, it was only on one occasion that a man was observed collecting marine resources, which turned out to be shingle-worm, used as bait for line fishing.



Figure 5.8 Man collecting shingle-worm



Figure 5.9 Shingle-worm catch

Harvesting is often a family affair as those who are old enough to hold permits often harvest with their mothers, sisters, aunts and nieces. As mentioned before (section 3.2.4) there was a family group of three sisters, as well as a mother and daughter team within the Hamburg focus group, and therefore many of the stories told were on behalf of a family, rather than as individuals. The story told by Respondent 7 (HF1) mentioned above (see section 5.2.2) is a clear example of the corroborative harvesting effort of one family. Respondent 1 (HI1) explained that her daughter had started harvesting under her guidance since the age of four years old, and that they still harvest together today. She continued by emphasising that harvesting is seen as a family activity that must be passed down generation to generation, and therefore her grandchildren often help them collect during spring low tides.

Unfortunately relationships with others in the community in general were not seen to be as positive. Respondent 1 (HI2) explained during her follow-up interview that in recent times there is a lot of distrust within community. Crime has led to people hurting one another. People are afraid to walk around at night and children can no longer be left in the care of neighbours, “because everyone is now the enemy ... children get stolen, raped and abused” (R1, HI2).

There was little reference to competition with harvesters from other communities, except for the following: While reflecting on a picture of people harvesting, Respondent 12 (HF3) explained that people from other communities often came for two weeks at a time to collect seaweed from their shores (see section 5.4.3.3). She explained that at first, they were confused and as a group they had to ask the strangers why they collected seaweed. It was explained that the seaweed was used to make the clothing they wore, which put them at ease.



Figure 5.10 Woman collecting seaweed from Hamburg shore

5.2.4.3 Relationships with white people

Hamburg has a history of interaction between white and black people around marine resource harvesting. According to Dr Carol Hofmeyer (HHis2), Hamburg was a thriving holiday resort in the 1950's, 60's and 70's, frequented by many white people (particularly from Peddie) and renowned as a fishing destination. Respondent 3 (HF1) recalled her mother selling white mussels to the whites, as well as prawns, which they regularly ordered. During this time, she remembered her mother only collecting white mussels to feed the family, nothing else, and later, it was explained that it was the white people who had taught them how to collect other species of marine resources – “I was learnt from these people ... from then, I know how to collect oyster” (HF4, R1). Respondent 1 (HF4), one of the elderly women in the group, explained that in 1975 there were white people who taught some of the harvesters how to swim into deep water and collect oyster – “they teach us how to collect and dress like: trouser, sock, gumboots or takkies, and swim until the water cover us and we collecting underneath, taking oysters”. She explained that later (between 1992 and 1999), some of the younger women were taught by another white man, Alwen Drywer (see sections 4.3.4.2 and 5.2.3), how to swim deep and collect abalone.

As described above (section 5.2.3), the shellfish (particularly oyster and mussel) collected today is sold to the white residents and visitors in Hamburg, and what it not sold is used as a source of food. The white people are therefore viewed as a source of money, not only as consumers of seafood, but also as the providers of employment (see section 5.2.1).

Dr Carol in her interview (HHis2) described her relationship with one particular harvester family, who are notorious for harvesting undersized oyster and mussel and buying alcohol after selling them,

... the whole family ... absolute drunkards ... they cut absolutely everything off the rocks ... I bribe them to stay off the rocks. So, they weed my garden and collect rubbish for me, but if I ever, ever see them on the rocks, then their job with me stops forever.

Her attempts to help this family and conserve the marine resources has also affected her relationship with other white people, as she claims to not to speak to anyone who buys resources from that particular family.

The elderly women in the focus group reminisced about a time when there were what seemed to be very strong bonds between black and white people in Hamburg. Respondent 2 (HF2) explained that, "long ago the white people loved us. They used to share with us, stay with us". She then explained that due to the high crime rate in the village most of the whites avoid them now, "... but now there is a lot of crime. The whites are scared of us, they see us as giants" (HF2, R2). As mentioned above (5.2.1), Respondent 3 (HI2) recalled the white shop owner who made cheap coffins, and explained that he also helped them when they needed money, "(He) used to even buy chickens, eggs, milk and vegetables from the community. If you needed a bit of money you could sell to him. It was better in that time".

Besides the crime associated with black people, whites appeared to be afraid of living with black people living with HIV/AIDS, as Dr Carol explained (HHis2) during her description of her struggle to establish the hospice in Hamburg: After six months of negotiation and "fighting" to get a lease for the property, some of the white residents said that they would be willing to help finance and build the hospice, as long as it wasn't in Hamburg. They would help build it in Entilini, the neighbouring village. It was in reaction to this resistance, that "... the black community said that they take pride in and take care of (their) AIDS patients and ... want it in (their) village" (HHis2).

When it came to the harvesting of marine resources, it became apparent that the blacks distrusted and feared the whites in some respects. Dr Carol (HHis2) recalled that in the past she used to walk down to the beach through the dune forests every morning, noting the tracks of harvesters. When there were big arrests of harvesters collecting illegally, many accused Dr Carol of informing the police, "which I never did" (HHis2).

Respondent 3 (HF2) explained that besides the fear of being caught, fined and jailed by MCM officials or police for poaching abalone, many people have stopped poaching because they fear the "... dangerous white poachers". Besides this apparent fear of the white poachers many of

the rural harvesters resent them, as they feel that they, the poor black harvesters, are the ones caught, jailed and fined by the compliance officers, instead of the rich white men who also poach abalone, and get away with it in their fancy diving equipment and fast boats.

5.2.5 Changing social practices and power relationships

The most obvious social practice that appears to have changed in Hamburg is the transfer of harvesting knowledge from adults to children through practical demonstration. Just as the harvesters had been taught by their mothers and grandmothers about the health benefits of sea water and marine resources (R5, R6, HF2), so to had they been taught when and where to find, collect, and sell resources, and how best to cook them. Respondent 8 (HF2), explained that she had been taught how to harvest by her mother, but that it was her grandfather that had taught her *when* to harvest, “when the moon is full ... the sea is quiet during this time”.

In the past, children were taught how to collect on the rocks as they helped their elders harvest and carry their catches. With their children helping, mothers were able to collect and carry larger quantities to feed the family, and secure an income from their sale. Respondent 2 (HI1) mentioned that her mother had taught her to collect seafood from as early as five years old. This ‘learning by doing’ method of passing on harvesting knowledge has waned, as the marine legislation dictates that children under the age of 18 years are unable to hold harvesting permits and thus are no longer permitted to accompany their parents on harvesting trips. As Respondent 3 explained - “Sometimes on weekends I used to go with my children to the sea. I gave them these resources to carry for me, but I stopped that, because of the security guards” (HF2).

Respondent 5 (HF1) explained that this law prohibiting children from harvesting is a new government rule, strictly enforced by the sea rangers, because children collect everything, “even the small ones that are not supposed to be collected” (HF1, R5). When asked whether this meant that their children were not being taught how to collect correctly, she simply replied that their children are not allowed to go to the ocean when people harvest. Respondent 6 (HF1), one of the elderly women in the group, explained that some of their children now had jobs, some having become teachers, others, policemen, “... those are the children we used to put on our backs when they were toddlers ... we would leave them on the sand ... harvest ... put our babies back on our backs, and go door to door selling white mussels” (HF1, R6). It was explained that children are now taught about harvesting from home and when they are old

enough, bought permits of their own so they too could harvest legally. After explaining how she'd learnt how to harvest from her mother and grandmother Respondent 6 (HF1) added that today they are still trying to passing on that knowledge to their children, hoping they will teach the next generation. Respondent 3 (HF1) explained that when she was a child they only collected white mussels, nothing else, which they sold to pay for school expenses and which fed the whole family. She continued explaining that sometimes the white people would place orders for prawns, which they would collect on their own. There appeared to be an explicit desire for the harvesters involved in this research to pass on their knowledge about marine harvesting from one generation to the next. As expressed by one of the youngest in the focus group during her narration of the poster picture story she and the other women had created:

... we are teaching our children about sea animals ... how to look after sea animals ... you have no right to collect the small animals. Collect the big ones, give a chance to small ones to grow, so that next time they will be in the size to collect (PN2, HF4).

Not all the children taught in this way continue to practice harvesting however, as Respondent 3 (HI2) explained – "... only the eldest (22 years) of my children is interested, has received an exemption and collects with me".

As mentioned before, there has been a long history of white people teaching and paying the local harvesters how to collect resources with commercial value for them (refer to sections 4.3.4.2 and 5.2.3). Although this is still done today on a small scale, with white residents ordering oysters for their own consumption or mud-prawns for their recreational fishing, people have started paying the harvesters *not* to harvest seafood (see section 5.2.3.3 above regarding Dr Carol's support of a harvester family).

The social dynamics in Hamburg are also changing, in that there is an apparent loss of respect and leadership of the community elders. Dr Carol (HHis2) described what she'd heard about the lack of elder leadership in Hamburg: During the time of the Homelands Administration, Sebe, the former president of the Ciskei, used to come to Hamburg and stay in a big house for his holidays. She had heard from the elderly people that although they resented him giving many of his body guards and other employees properties in Hamburg, they still enjoyed his visits, as he would just sit under a tree and ask people as they passed by what was going on in the community. However, towards the late 1980's, young supporters of the ANC rose up and rebelled against Sebe. They started riots and burnt the houses of Sebe's supporters. Many of the young people were arrested and imprisoned, to be released shortly thereafter when the

coup de'tat, which overthrew Sebe, took place. According to Dr Carol, the saddest thing that resulted from this youth rebellion, was that the old people, the real leaders of the community, lost their credibility. Many young people have since represented the community, but according to Dr Carol, few have had any real leadership calibre and abilities. Since then, the old people have been very cautious to speak out on behalf of the community. This was observed within the research process to some degree, in that although the elder women were comfortable with the telling of harvesting stories in a group setting, they were cautious to show leadership or voice their opinions, unless they were in their own households. This social dynamic changed during the exchange excursion to Coffee Bay, when the eldest women in the group chose to represent and lead the group in a campaign to motivate their communities to establish a harvesting committee and start managing their seafood resources in a sustainable manner.

5.2.6 Contradicting perspectives and practices associated with access

During the first focus group session, the group was asked whether they had noticed a change in the availability of the seafood they utilised, whether it was increasing, decreasing or had remained the same. Respondent 3 (HF1) explained that shellfish were like the human population, instead of decreasing, they are increasing. She reasoned that this was because they, the harvesters, are dedicated to adhering to the conditions stated on the harvesting permit, collecting only the big ones, not the small. Explaining further, Respondent 4 (HF1) stated that if you find a big alikreukel on the rocks today, the next day, there will be another big one in its place - "... they come and move with the waves ...". (HF1, R4). In an attempt to track this insistent belief, the group was asked if there was a comparison between the amounts of seafood found today, with what they found when they were young and selling it for ten cents a dozen. The answer was a simple "seafood has increased" (HF1, R4). Respondent 5 (HF1) then went on to say that the only thing that had changed, again emphasising that seafood had increased, was that their children were no longer allowed to harvest with them.

This perspective (that the seafood had in fact increased since the days of their mothers when it was easy to find) changed a short time later when Respondent 6 (HF1) was describing how the practice of harvesting had changed from her grandmother's time, because instead of collecting in the rock pools, they now have to "dive into the water". By implication, this would mean it has become more difficult to find resources, with those remaining taking refuge in the deeper water. Respondent 3 (HI1) confirmed this when she later explained during her individual interview that

“long ago there were a lot of sea things at the shore, but now there are fewer and big ones are deep”. When asked why they had ‘to dive’ for the resources Respondent 6 (HF1) explained that “... most of the time now on the outside rocks you will find young ones, this is controlled by the water flow, big ones will come out, but some will be taken back into the water”. This perspective was later added to by Respondent 1 (HF2) during the group’s reflection of the photographs I took, as she explained how alikreukel are harvested – “it is not easy to find marine resources now, because they are becoming scarce ... Time before, these resources were easy to be found, especially perlemoen.” This was confirmed by Respondent 14 (HF3) when she explained – “now seafood is scarce ... we used to get it easy, now we have to get in the sea and look for it ...”. She added that she didn’t know why people were not collecting much anymore, but speculated that it was because of the increased law enforcement by the “security guards”. Respondent 6 added that perhaps the reason why so few large shellfish are found “outside the rocks” (in the tidal pools) was because the first person to see them would take them, as they are easy to get. This again implies a great deal of competition among the harvesters for those resources that are available.

In Respondent 14’s (HF3) reflection on a photo, she narrated a story of a women walking over mussel beds, she explained that once the women had finished collecting they would count their catch. When they found a lot of seafood, they would say it is “a lotto” and all of it taken. It would seem this does is no longer a regular occurrence.

As the research process progressed and the participants became more comfortable, not only with me and my intentions, but with each other, they began to admit that the resources were in fact becoming more and more difficult to find. This was further motivated by the introduction of the photographs as discussion catalysts, it that the participants were forced to describe the situation that was depicted in each photo. However, despite this, there was still an unwavering belief that the resources would never be depleted. This was seen to be improbable, due to a common understanding that the resources continue to reproduce and the sea, in its vastness, would always bring more.

According to the regulations set out in the Marine Living Resources Act (1998) anyone who harvests marine living resources is required to hold a permit or exemption to do so. After the women had completed narrating stories from the second set of photos (coded focus group 3) I asked the group a number of impromptu questions. One of which was whether or not they all held permits, to which they all answered yes. They explained that this is an additional hardship

as they were not among those who received free exemptions for mussel from MCM and thus they have had to buy the annual recreational permit (for R65) from the post office in Hamburg (Mrs. Mei's shop) or Peddie. However, during the individual interviews it was reported by one of the middle-aged women that she and a number of the others *had* in fact received the free exemptions to harvest mussel, which they used as well as the recreational permit. Respondent 3 (HI2) explained that the exemption only allows for the collection of mussel and therefore she "likes" the recreational permit cause it allows her to collect "everything" (other species). She reported that her 22-year-old daughter also holds an exemption permit for mussel and thus together they can collect more for the family.

During her follow-up individual interview Respondent 2 (HI2) explained that as an elderly woman she had not qualified for the free exemptions, because she is receiving a disability grant, and thus had to rely on buying recreational permits. During the first set of individual interviews I asked the women whether or not they thought the restrictions on harvesting set by the government were reasonable. Respondent 1 (HI1) was adamant that they were not right because the species quotas were too small from which to make any decent money. Although this statement was in line with what was said by all during the group settings, Respondent 2 (HI1) and Respondent 3 (HI1) voiced a different view in the individual setting, saying that the restrictions were right, because if everyone just took what they wanted there would be nothing left – "... if there was no permit, people would just take too many and there would be none left" (HI1, R2).

A conviction to obeying the law was repeated and emphasised several times throughout the focus group sessions, for the reason that they cannot afford to pay the fines or bail fees if they are caught contravening the harvesting regulations. "We need to obey the rules, because the fines are too much" (HF3, R16). However, in the concluding story of the second focus group session, Respondent 8 (HF2) explained that it is not easy adhering to the bag limits – "we are chased by the security, but we didn't stop it, we try by all means although it is dangerous". Her justification for this was that many of them were not working and thus need the money.

During the individual interviews I asked if any of them had been fined before or been jailed. Respondent 1 (HI1) reported that she had been fined R50 once for an over-catch of mussel and that her daughter had been fined R200, which they had to pay at the police station. Respondent 3 (HI1) explained that long ago, before she knew she needed a permit to collect, she had been fined R250.

They emphasised that they adhere to the bag and size limits specified on the permit, collecting the right number and sizes per day. Because the first priority is to sell their catch, they explained on a number of occasions that they collect the correct quota over consecutive days so that they have enough to sell. A different practice was however observed, when I joined them on the beach (RD 29/3). While observing two women harvesting, I noticed one of them take up the bag she'd just filled (probably the quota for one person for the day) as well as that of her friend, and run up into the dune forest with them (see Figure 5.11 below). She returned shortly thereafter without the bags and after looking nervously up and down the coast, continued to fill another bag, while her fellow harvester did the same. On the same occasion I noticed another woman ripping up bunches of kelp from the rock pools, under which she hid her first full bag of the day and proceed to fill another (see Figure 5.12 below). In all the above cases the plastic bags were dark in colour and thus well camouflaged against the rocks.



Figure 5.11 Woman hurrying to hide bags
in forest

Figure 5.12 Bag hidden under kelp

On more than one occasion harvesters were observed collecting and selling undersized resources, despite their assurance that only the big ones were collected (RD 29/3; see Figure 5.3 above).

In many of the stories told during the focus group sessions it was emphasised that they did not allow their children to collect seafood with them any more in fear of being caught and fined by the “sea security”. However, in Respondent 1’s (H11) interview she stated that during most spring low tides she and her fellow harvesters take their children along to help collect seafood, so that they have more to sell. It was also noted in the photographs taken by the research participants themselves, that young children still assist their parents with harvesting.



Figure 5.13 & 5.14 Photos taken by participant depicting child with harvesting party

As stated in the MLRA (1998) the collection of intertidal resources at night is illegal, and if caught harvesters are fined R300 immediately (HMCM). Yet in Respondent 4's (HF1) explanation that the alikreukel removed were replaced by others, she mentioned that this could be best seen at night – "... they move and come with the waves, like at night, you will find a lot on the rocks".

In general, the participants avoided the contentious abalone poaching issue entirely, but when asked directly, they had mixed stories or perspectives about it. Some admitted to poaching abalone, describing their anxious poaching experience, as Respondent 3 (HF2) described - "Sometimes you saw abalones unexpectedly, you become frightened, because it is so strictly to collect them. You grab them and go home faster. I sell them secretly and I try to hide, even that small amount I get". Although they claimed to abide by the law, they admit to collecting and selling abalone, as it is guaranteed "big" and "fast" money. I asked Respondent 3 (HF4) if the illegal buyers only took the legal sized abalone, to which she replied that, no, they would take any size, even if they were too small. On one occasion I observed two women breast-deep in water at spring low tide, nervously looking up and down the beach. When I approached I noticed one of them slip a number of large items down her shirt before turning round to pose for a photograph to be taken (see figure 5.15 below). I can only speculate that the items hidden in her clothing were abalone.



Figure 5.15 Woman with obviously weighed down clothing

Dr Carol recalled one occasion when she was called to help bail a harvester's family member out of jail for poaching abalone, only to arrive at the police station to discover that the person had already been bailed out by the illegal buyer. She explained that she had been told that this was a common occurrence and therefore the possibility of being caught is no longer a deterrent for the poachers (HHis2). Respondent 3 (HI2) however claimed, during her follow-up individual interview, that no-one collected abalone any more for fear of being caught or killed by the "dangerous" white poachers.

5.2.7 Navigating understandings

In spite of the assumption held by many marine researchers that the unsustainable harvesting practices of rural subsistence marine harvesters is due to them not being aware of or understanding the harvesting regulations, it became evident from narrations of the research participants in this case study that they were in fact well aware of the need to hold a permit to collect resources, where to acquire it and what the bag limits per species were. As Respondent 2 explained - "There is nothing that we don't collect ... but we collect them according to a certain number each" (HF1). Respondent 2 (HF1) continued to explain that the Government had made these rules and that they were written on the permits, "we are supposed to collect 25 oyster, 5 *iqongwe* (alikleukel) and 30 *imbaza* (mussel) per person per day". She added that they buy the permits from Mrs Mei's shop in Hamburg, and that if the shop runs out, they go to the post office in Peddie to buy permits. Besides a clear knowledge of the exact bag limits per species they also appeared to show an understanding of the purpose of size limits. "...You must wait for it to grow, then you can collect it" (HF3, R16) and "...we don't harvest small ones, but collect the bigger ones, as the permit states" (HF1, R3).

The research participants also appeared to understand why their children were no longer permitted to collect with them, evident in Respondent 5's (HF1) explanation that their children take too many and everything, "even the ones that are not supposed to be collected". It was also observed that they used the correct collection implements, screwdrivers, on most occasions, and when asked why, it was explained that it was so that they could only take the ones they wanted. It became clear that the research participants also understood sustainability, with statements like: "these need to be there for future times", "to harvest sustainably means to control collecting this tide, so that there will be more next tide, next month, next year" (R1, HI1), and

... it is right to follow the rules, because that's how we keep them, by limited use, so that they're there for future use and have time to reproduce. If there was no permit, people would just take too many and there'd be none left ... To harvest sustainably is good, although at first we were crying 'cause we needed more, but now we are glad to think of the future (R2, HI1).

The degree to which the research participants understood the ecological aspects of the species they harvested, was however, partial. While reflecting on a photo of an old lady harvesting alikreukel, Respondent 1 (HF2) explained that the woman was looking in the deep places where there is 'green grass', because that was where alikreukel lived. She added that they lived there because they ate "green grass". Although this understanding is correct (as she was probably referring to seaweed), some ecological knowledge was not known or not entirely correct. During the individual interviews each person was asked what they thought each species feeds on. Respondent 1 (HI1) stated that *amaqongwe* (alikeukel) ate plants and sand, while mussels and oyster eat water and green grass. Respondent 2(HI1) explained that mussel and oyster ate only water, small animals and plants, while Respondent 3 (HI1) thought that mussel, oyster and alikeukel ate seaweeds. Although all agreed that the resources had to eat the sea plants, they all admitted that they did not know how they did so.

During the second focus interview the research participants were asked how they thought the resource species reproduced, to which Respondent 2 (HF2) explained that "iqongwe (alikeukel) in winter feels very cold, she needs a boyfriend, they do intercourse, and they produce babies in summer". This was reiterated by Respondent 6 (HF2) who explained that - "in June the 'girl friend' is open on top and the 'boyfriend' on the bottom". However, in some instances some aspects of the explanations were correct, reflected in Respondent 3 (HF2) statement that "...they all produce babies in summer", and Respondent 17's (HF3) explanation that the mother

mussel is short and the father mussel is taller, and that “they reproduce by sexual intercourse, males let sperm into the water and the females catch them when they are open”.

The same question was asked again during the individual interviews, and surprisingly all admitted that they did not know how the resources reproduced, adding “but they do, because I’ve seen the babies” (R3, HI1). Respondent 2 (HI1) explained that she had always wondered how mussel and oyster reproduced because they cannot move, “especially oyster, even the small ones attach”.

5.2.8 Perceived solutions to problems

Throughout the focus group and individual interviews the research participants contended that unemployment was the biggest problem facing the community. As Respondent 15 (HF3) explained – “lots of people are unemployed, so we wish jobs can be created”. When asked what they thought should be done in Hamburg to solve the unemployment and poverty problems, the most common answer was for a ‘seafood factory’ to be established in Hamburg that would process and market their marine resources, and provide jobs for their children. Respondent 16 (HF3) argued that there must be a factory because their children don’t go to college. They just pass matric and stay in the Hamburg community. Respondent 2 (HF2) explained - “We wish to have a factory whereby everybody can get work, even the old women can do sweeping there”. This was repeated by Respondent 4 (HF3) - “If there can be a factory, we would harvest and sell to the factory, so that we can buy food and clothes for our children”. Respondent 13 (HF3) also expressed her wish that there could be a place which markets their seafood.

The research participants were asked again in the individual interviews what they thought could help solve the problems in their community. Respondent 1 (HI1) explained that from a number of discussions she’d had with the other elderly harvesters, they had agreed that they should write to the government to ask for projects that could keep the young ones learning and working, and making money. She suggested that they be taught to “use their hands” to make things to sell to the visitors or how to start a poultry farm where they can learn how to produce, prepare and process chickens to sell them to outside markets. She also mentioned that they could even work for Nature Conservation, learning which plants are useful, and looking after the animals.

Respondent 2 (HI1) explained the biggest problem in Hamburg is that the young people are not working, ...”because parents have no money to take them to tertiary level at school, so parents have to support them with their pensions”. As with Respondent 1 (HI1), she mentioned that she and the other women had often talked about what could be done to help the youth. She argued however that she would like to see projects develop like the one in Natal, ... “where the people are farming mussels, even oyster and *iquba* (abalone)”. She went on to explain that she wants to teach the youth about nature and how to look after it. She concluded that, “they want to keep the young ones busy, they have the plans, but not the equipment, knowledge or money to get started”.

Later, during her follow-up interview (HI2), Respondent 1 expressed her wish for the government to hand out abalone exemption again, because the money that her eldest daughter had received had been so helpful. I asked her whether there was enough abalone left to support this, and in her reply she was adamant that there was plenty, because they have been reproducing since they were last collected by the professional divers in 2003. She added that because of this, they should be allowed to take out five abalone instead of three. Respondent 1 (HI2) also felt that the abalone permits should be handed out again, but was adamant that the quota of only three abalone per person per day should remain, because if they were allowed more, the abalone would “be finished”. Respondent 3 (HI2) explained that she had been one of the lucky few to receive an abalone permit in 2001/3 and that the money had helped build her house. She too believed that there must be many now and that things would “get better” if the government handed out the permits for abalone again, because “then even the community will police and watch for poachers”. However, she was adamant that there should be only *one* buyer, chosen by the *whole* community – “so they can’t cheat ... the community will watch him”.

Little to no specific reference was made to the impact that HIV/AIDS had had on the each family unit and the economy of the community as a whole. However, during most of the interviews it was mentioned that many women had been widowed by ‘an illness’ and that children and other family members had suffered that same fate. It was only Respondent 3 (HI2) who made specific mention at the end of her final interview when she said: “We accept that HIV/AIDS as a big problem in the community and we are no longer scared of disclosing, so people are getting treatment with Dr Carol”.

Respondent 3 (HI2) concluded her final interview by saying that things were slowly getting better in Hamburg. There were some projects, like the CoastCare poverty relief programme and the

Heritage Project, which provided much needed employment. However these projects were only temporary, and so she wished that they could stay longer and provide permanent income for the people of Hamburg.

5.2.9 Apparent insignificance of isiXhosa cosmology

According to Fatman (2003a) the marine resource harvesting that takes place in Hamburg is driven by a strong cultural belief in the 'river people' or 'mamlambo', spiritual beings linked to the ancestors of the Xhosa people, which live under water. She proposed that this cosmological belief influences and directs the harvesting practices, in that if the river people are respected by the harvesters adhering to certain directives and harvesting methods, these beings would ensure the continued provision of abundant seafood resources. Some of these directives include a belief that only certain people are permitted to collect, and that young or small seafood specimens cannot be collected and eaten, for fear of the consumer's spirit being weakened. If these directives were indeed followed they would serve to limit the extent of exploitation and so provide a degree of resource conservation.

In an attempt to probe or track this cultural belief and its effects on the way in which the research participants harvest marine resources, I asked the research participants, in the group and individual interviews, to tell me about the 'Mamlambo'. Respondent 1 (HI1) explained the following,

... we do believe in the river people – there are some places where they live that we must avoid. You can just feel it in your body, sometimes big waves will push you when you're harvesting, you see the water turns flat and is 'boiling' and not moving back and forth. To keep them happy, you must avoid them.

Later in her follow-up individual interview Respondent 1 (HI2) explained that if you went to the places of the river people, you would sink and never come back. Respondent 2 (HI1) described the same practice, "...you must avoid the place where they are. To keep them happy you must not go to their places. I don't disturb them". Respondent 3 (HI1), the youngest of the three interviewed individually, simply explained that she had never seen them, only heard about them, and thus does nothing to keep them happy.

The significance of the Xhosa belief in the 'Mamlambo' therefore does not seem to have any direct or specific influence on the harvesting practices in Hamburg, other than an avoidance of areas of particularly deep and rough water.

5.3 Contextual and historical explanations (Hamburg) – ACTUAL DOMAIN

This section falls within the second layer of interpretation and serves to provide further contextual and historical explanations for the empirical narratives of the Hamburg marine harvesters presented in the previous section. This begins retroductive explanation which serves to uncover the mechanisms underlying the experienced and practiced Hamburg.

5.3.1 Legal framework

During the interview with the Hamburg MCM compliance officers, they explained that up until 2005 most harvesters in Hamburg had to buy the annual recreational bait collection permit to legally collect marine resources. With recognition of the subsistence fishery, MCM called numerous meetings with the harvester community in Hamburg in 2005 to invite them to register for annual exemption permits (specifically for mussel at that stage). It was explained that to qualify for these exemptions a person would have to be a known subsistence harvester, be unemployed and not be receiving a social grant or pension. According to Mr Mpani (HMCM), out of all the harvesters that attended the meeting and registered for the exemption, only 25 harvesters from Hamburg came to receive them. When asked why he thought there was such a poor turnout, he mumbled that perhaps the handout date was not properly communicated within the community. He then quickly added that they no longer accepted any excuses from the harvesters for not holding permits, as every year they have the option to register or re-registering for an exemption permit, and if they did not qualify, then they should continue using the recreational permit.

When asked how they intended to monitor the harvesting activity with the exemptions, Mr Mpani (HMCM) explained that two community catch monitors employed by DEAT, take note of the harvesters using recreational permits and/or exemption permits, and make a list. This list is then used each year when harvesters come to re-register, and if it is found that they have not been using their exemptions, they will not qualify for another exemption permit.

During her follow-up individual interview Respondent 2 (HI2) explained that she had been excluded from receiving the harvesting exemption because MCM had thought that she was earning a pension, when in fact she was receiving a disability grant. She strongly believes that the government should rethink the idea of not giving exemptions to old people (receiving pensions), because the old people tend to be the ones supporting large extended families of children and grandchildren, without earning a salary.

Respondent 1 (HI2) explained that she was also excluded from receiving an exemption, because she was earning a pension, but was happy that her daughter had received one. Respondent 3 (HI2) also stated that she been lucky enough to receive an exemption. What was interesting however, is that both Respondent 1's daughter and Respondent 3 (HI2) continued to buy and use the recreational permit alongside their exemption permit. They explained that this allowed them to collect more without getting into trouble with the authorities.

5.3.2 Socio-economic situation

The current socio-economic situation in Hamburg, as with many rural villages in the former Ciskei, has its roots in the past. Rural economies, once supported by white farmers, crumbled under the Bantustan administration (see section 4.2.1), and have limped along ever since with continued reliance on migrant labour to urban centres and temporary contract work. Dislocated village membership and stability was then further fragmented by the impact of HIV/AIDS removing young breadwinners from households. The rural economy of Hamburg is now supported by social grants, limited eco-tourism, poverty-relief projects, and the sale of marine resources. The research participants, interviewed individually, provided details to illustrate this, as described below.

Respondent 1 (aged 62 in 2006), in her first and second interview (HI1 & HI2), explained that her husband had fallen ill and died in 2004 and since then she had supported a household of eight, which included her three children and four grandchildren. She is unemployed and it is her pension (R820) that forms the bulk of the household income per month. The remainder of the household earnings come from the sale of seafood to white visitors, hand crafted bead necklaces and her daughter's R190 child support grant. Therefore, in total, their household of 8 survives on approximately R1070 per month.

Respondent 2 (aged 57 in 2006) explained that she had been widowed in 1989 when her husband died of 'an illness'. Like Respondent 1, her husband had also earned money in Johannesburg and Cape Town, before he came back to Hamburg to make bricks (HI2). She went on to explain that her main source of income was a disability grant of R820 per month, which she supplements with approximately R20 per month in winter and R40 to 50 per month in summer, from the sale of seafood. Despite this meagre earning, she seemed proud to explain that she supported a household of 12, six adults and six children (HI1). She had had four children, three of which had survived to adulthood. With pride she mentioned that all three had found work: one works for CoastCare in Hamburg, one works in Grahamstown and the other is a policewoman in Knysna. Together with the extended family and grandchildren that she looked after, she had adopted three children: two girls (aged 3 and 7 in 2006) who she had taken in when their mothers died of AIDS, and her nephew (aged 14 in 2006) who had been sent by her brother to look after her cattle (and because he had too many children in his household to care for).



Figure 5.16 Respondent 2 (HI1 & 2) with her dependents

Respondent 3 (aged 45 in 2006) explained that she too was widowed when her husband, who was a building contractor in East London, was killed when a wall fell on him. She has five in her household, her three children and her niece (who's mother works in Port Elizabeth) (HI2). She explained that her income comes from a number of sources, which include her working as a temporary domestic worker for the white residents, the sale of shellfish, the sale of crafts (shell decorated flower pots) and a monthly child support grant. She was excited to state at the end of her follow-up interview that she had recently been employed by CoastCare for the next couple of months.

Table 5.1 Approximate average income earned per Hamburg household per month

Respondent	Sale of seafood	Sale of crafts	Pension / Disability	Child support	Temporary employment	TOTAL earned by house hold per month (2006)
1	R20- R50	R20	R820	R190		+/- R1070 for 8 people
2	R40- R50		R820			+/- R870 for 12 people
3	R40	R20		R190	-/+R1400	+/- R1650 for 5 people

From the above table it is clear that it is social grants that serve as the only form of permanent or guaranteed income on a monthly basis. On the whole, there are very few permanent employment opportunities in Hamburg at any one time, with most employment being in the form of temporary and sporadic contract or project-based work. As mentioned by Respondent 3 (HI2) (see section 5.2.8 above), poverty relief projects that provide welcomed employment tend to be short-lived, making it difficult to sustain any progress within the village. This was illustrated in her description of her daughter's predicament – "... my daughter has got a learners drivers licence, but she needs practice driving before she can go for her driver's test. Mrs Mei's son has offered to let her use his car, but wants to charge R100 per day for practice (which she cannot afford). The closest place where she can practice is Port Alfred", which in itself is out of their means.

Both Des Kopke (H His1) and Dr Carol Hofmeyer (H His 2), confirmed that limited tourism, craft-based home-industry, government poverty alleviation projects and the sale of shellfish supported the Hamburg economy. However, what made Hamburg unique among other rural villages in the area and indeed in South Africa, was that many of the Xhosa families own large tracks of land, and have done so since the early 1990s. According to Kopke (H His 1), the fact that activities are based on privately owned land, rather than under communal ownership, made people's efforts on their own behalf far more meaningful and profitable in Hamburg.

5.3.3 Educational background

In general, few of the research participants had completed their schooling, the reasons for which were predominantly because of the loss of their fathers and thus the loss of the household's ability to pay school fees. This is illustrated to a degree by the three examples below.

Respondent 1 (HI2) explained that she did not go to school at all, because in those days female children were not permitted to – "they just had to stay home, get married and have children"

(HI2). She explained that all three of her children had however gone to school, but had had to drop out, because there was no money for school fees when her husband passed away. Her 30-year-old (in 2006) daughter (from whom she had highjacked the interview) explained that she had achieved grade 11, while her siblings had been in grade eight and nine when they dropped out of school (HI1). Respondent 1 added, with pride, that all four of her grandchildren go to school (HI1).

Respondent 2 (HI1) explained that she had dropped out of school very early, because she “didn’t understand, the teachers kept helping me, but my head was too hard”. She was proud to state however, that all three of her surviving children (the fourth child had died of an illness) had completed their schooling, one in Peddie and the other two at the high school in Hamburg (HI2). She went on to explain that all six of the children in her household go to school in Hamburg, “two are at Mxolisi crèche, two are at primary school and two are at high school” (HI2).

Respondent 3 (HI1) explained that she had only achieved grade five at Hamburg Primary, because, as she explained in her second interview, her mother and father were unemployed and thus had no money “to take her further at school” (HI2). She was also proud to state that all three of her children now go to school, the eldest of which (aged 22 in 2006) was in her final year at St. Charles High in Hamburg.

Having not completed schooling themselves, the research participants appeared determined to ensure that their children and grandchildren were given the opportunity to do so. It was repeated a number of times that the marine resources collected supported the education of these children by providing income for the payment of school fees etc., and the provision of ‘brain-food’ to get them through each school day. This was summed up in part of the second poster narration, “... the sea animals developed us, because we are getting money through these animals and are able to buy food ... Our children are going to eat *imbaza* (mussel) and *amaqongwe* (alikleukel) and be able to go to school” (HF4, PN2).

However, even with this determined support young people are left with few employment opportunities when they leave school. Respondent 2 (HI1) argued that this was partly because “... parents have no money to take them to tertiary level at school”, and thus “... have to support them with their pensions”.

Despite the realities detailed above, there is a willingness to teach the youth to conserve the environment. Reflecting on a photo of children in a school setting in the second photo-series poster, it was narrated that "... we are teaching our children about the sea animals, that is nature, how to look after sea animals, that you are not allowed to misuse the nature" (HF4, PN2).

5.3.4 Resource depletion

During the various occasions that I joined the Hamburg marine harvesters on the rocky shore, I began to recognise signs of degradation. At first, I only noticed the large patches of bare rock in the middle of the crash zone, where there would ordinarily have been extensive mussel beds. Only small clumps of mussels remained, surrounded by pink algae crusts. It was only after reviewing Foster's thesis (1997) and the paper by Dye (1992) (see section 4.2.1.4) that I recognised this prolific establishment of pink coralline crusts and algae were indicative of shellfish over-exploitation. Expecting the intertidal communities on the East Coast to be slightly different from those of the Western Cape intertidal communities with which I was familiar, I did not pay heed to the extensive colonies of sand tube-worms present on Hamburg's rocky shore. It was only when I showed my initial photographs of the intertidal zone of Hamburg to Sven Kaehler of the Rhodes University Zoology department, that it was pointed out that these extensive tube-worm colonies were also indicative of a disturbed and degrading intertidal environment, caused by the extensive removal of mussel and oyster beds.



Figure 5.17 Small patches of mussels remaining



Figure 5.18 Patches of bare rock after harvesting



Figure 5.19 Coralline algae



Figure 5.20 Extensive colonies of tube-worm

5.4 Stories and Observations (Ngqinisa) – EMPIRICAL DOMAIN

The following section details the stories of context and harvesting practice narrated by the research participants of **Ngqinisa** during the two focus group and individual interview sessions, as well as the narration of my observations made in context. This provides insights into how the subsistence harvesters of Ngqinisa experience and view their world, and thus falls within the empirical domain of the analytical framework of this study. Due to the delay in finding the isolated village of Ngqinisa (see section 3.2.3) and the misfortune of having the first set of focus group narrations stolen with my voice recorder, the case study of Ngqinisa is substantially smaller than that of Hamburg. As a result some of the sections have been combined.

5.4.1 Resource dependency, food security and health

Reflecting on a photo of himself and his friend harvesting mussels, Respondent 1 (NF1) explained that it was necessary to fill the mussel sack until it was full, because he has a big family and “I have to share equally to all of them”. He then went on to explain that collecting mussels is a dangerous activity, because of the sharp rocks and mussel beds, as well as big waves and advancing high tides. Despite this it was necessary to go deep so that they could chose “... the big ones, the last big ones” to feed his family.



Figure 5.21 Respondent 1 (NF1) collecting mussel



Figure 5.22 Large sack of mussel

Reflecting on a photo of herself collecting alikreukel, Respondent 2 (NF1) explained that she collected *amaqongwe* (alikeukel), *isibebe* (limpets), *imbaza* (mussel) and *ingwane* (octopus) for her family to eat. She explained that on return from the beach she would make a fire to boil her catch. The cooked shellfish would then be removed from their shells and cleaned before they are fried in animal fat and served to her family with pap (maize-meal) or bread.



Figure 5.23 Harvesting alikreukel



Figure 5.24 Collecting limpets

Reflecting on a photo of herself collecting limpets (Figure 5.24 above), Respondent 4 (NF1) explained that she enjoyed collecting limpets especially, because they are 'hard to chew': "I cook *isisebe* (limpets) ... with water ... take out the shell ... and fry, because I like the hardness".

Noting the large quantities of resources harvested (depicted in the photos the participants had taken) and in response to their photo narrations, both Respondent 1 and 2 (NF1) were asked whether they thought the amount of resources they had collected were 'the right amount'. Respondent 1 (NF1) replied, with obvious discomfort, that although the amount in the photo was

not the prescribed limit, it was still not “too little”, and necessary to feed his family. When asked what he thought the limit was, he stated 50 mussels per day (double the quota specified by the harvesting regulations). Respondent 2 (NF1) too explained that the amount depicted in the photo was “too little”, stating that the right number for alikreukel was 10 per day (double the quota specified by the harvesting regulations) and 15 for limpets. Later Respondent 1 (NF1) explained that the quota for alikreukel was 15 per person per day and that the correct size was 3cm – “when the inspectors find you holding *amaqongwe* (alikeukel) less than this size, they take it back to the sea”.

In response to the above narrations, Respondent 3 (NF1) explained that the marine harvesters in Ngqinisa knew that they collected too many resources and that this was against the law, but despite this awareness, they were willing to take the risk and live with the fear of being caught, because they and their families were hungry (see section 5.4.4.1).

This reliance on the sea for food was captured in Respondent 1’s (NF2) poster narration – “sometimes you are hungry, sometimes you want meat to eat, so you go to the sea and collect the resources to eat”. Respondent 2 (NF2) started her poster narration with these words – “this is Ngqinisa village nearby the sea. These people depend on the sea. They get resources from this sea”. From the above it is clear that unlike Hamburg where marine resources are collected primarily to sell, and only eaten if not sold, in Ngqinisa, the majority of the resources are collected primarily for food.



Figures 5.25 & 5.26 Ngqinisa family enjoying a meal of mussels

Unlike the research participants in Hamburg, only two of the participants in Ngqinisa owned livestock. My field assistant explained that he cared for 6 cows, whereas Respondent 1 (NI1, NI2) explained that she owned four cows. Both explained that they very seldom slaughtered their

cows for meat, as they had greater value to pull ploughs and to sell to others in the community when they had young. Live chickens or chicken meat was bought from nearby villages and eaten on special occasions. This I realised when I visited my field assistant's house before a scheduled focus group session. I was welcomed by his daughter, who explained that while Mr Jinja was out gathering the participants, he had instructed her to serve me lunch. I was presented with a piece of chicken and bread, which according to Mr Jinja's daughter, had been especially sourced and prepared for me (RD 23/6). Eating animal meat is thus seen as a luxury and seafood collected was the only source of protein readily available.

As with the research participants of Hamburg, the Ngqinisa participants explained that they grew a variety of vegetables to supplement their diet of starch and seafood protein. Respondent 1 explained that she grew mostly maize and beans to feed her family (NI1), but that she doesn't produce much anymore, because although she has four cows, she had to sell her plough in order to survive (NI2). Respondent 2 and 3 (NI1) explained that despite not having cows, they grew enough maize to feed their families and sell to others in the community. All respondents explained that they bought their vegetable seeds in East London.

In Hamburg, the women described a multitude of medicinal uses for marine resources. The young research participants of Ngqinisa however, explained that they knew little about the use of marine resources for medicines, but said that seawater was used to clean the stomach (NI2: R1, R3), and that seaweed was used to make clothes (NI2: R1, R3) and soap in the olden days (R1, NI2). Respondent 2 (NI1) explained that she collect a range of marine resources "to eat, none to sale or medicine".

5.4.2 Income

Unlike Hamburg there are few white people living in or near Ngqinisa and thus the sale of oysters, mussels and bait to white residents and tourists does not contribute to the income of the people of Ngqinisa. Respondent 3 (NF1) mentioned however that a number of women from the village and the surrounding area gained an income from the sale of seaweed (see section 5.4.4.3).

During the individual interviews the research participants were asked how they generated an income. All three respondents stated that they were unemployed with Respondent 1 (NI1)

explaining that she made money from the sale of shellfish and a child grant. As there are no white residents nearby, that shellfish could be sold to, and shellfish was not something bought by the local black people, I questioned her further about her sale of shellfish during her follow-up interview. She then admitted that she made approximately R500 a month from the sale of abalone, as well as to receiving R300 per month from her estranged husband for child maintenance (NI2).

Respondent 2 (NI1) also mentioned the sale of shellfish as a source of income (together with the sale of maize), but as a follow-up interview was not possible, no further details could be determined. Respondent 3 (NI1) explained that the income for his household came from three sources, the occasional sale of maize, his mother's pension and the sale of shellfish. During his follow-up interview, when I tried to probe this further, he emphasised that it was in fact the sale of line-fish to the people in the neighbouring village that brought in cash and not abalone. The reaction of my field assistant to this answer however, indicated that the respondent was perhaps avoiding the topic. He added that his household also relies on money that his brother brings in from doing odd jobs in the nearby villages. According to Mr Jinja, many of the young people in Ngqinisa rely on the illegal sale of abalone to survive. This was confirmed when I joined him and three research participants on the Ngqinisa beach at spring low tide. I was amazed to note that there was no-one else harvesting, considering the low level of the water, and when I queried this with Mr Jinja, he explained that the others had been in the water for the last two days and nights and were out of the community that day to sell the abalone they had caught (RD 13/4).

The research participants and my field assistant had continued to mention the lack of employment in the area as the biggest problem in the Ngqinisa community throughout the research process. In the past, there seems to have been employment available, as explained by Respondent 3 (Nhis1) during his interview about the history of the area: When the white farmers had left the area, many of the Xhosa families were employed by the government to plant and maintain plantations of Eucalyptus trees. Both he and Respondent 2 (Nhis1) mentioned that they had worked in the "forestry" for many years. Respondent 3 (Nhis1) had then gone on to explain that he had thereafter moved to East London to work on the railway lines until he retired. While there, he had trained as a plumber and was employed by the government once more in 1996 to lay pipes and bring potable water to Ngqinisa and the surrounding villages. Today however, it was felt that there are just too many people in the area and not enough jobs to sustain them.

Again Mr Jinja explained that some young people did venture out of the rural villages to work in East London or Mdantsane. Respondent 1 (NI2) confirmed this when she explained that her estranged husband now lives and works in Mdantsane.

5.4.3 Relationships that influence resource use

5.4.3.1 Relationships with compliance officers and community monitors

Unlike Hamburg, where the harvesters have had to become accustomed to the day to day inspections by the MCM compliance officers and the community catch monitors, the harvesters of Ngqinisa, in their isolation, live with a constant fear of *surprise* visits by the 'sea inspectors' or police. This was clearly illustrated by Respondent 3s narration during the first focus group session:

... when we are coming from the sea we are holding our bags so in that time we are ready for running from the police, because ... the police chase us. We are stealing this stuff according to the law, we are not allowed to collect it, but because we are hungry, we collect it. So, all the time when we are working at home, like now when we go home, we are expecting the police van to come at any time, and then we will run to the forestry (NF1, R3).

Unlike the harvesters of Hamburg, all respondents of the individual interviews stated that neither they, nor anyone in their families, held harvesting permits (NI1: R1, R2, R3). Respondents 1 and 2 (NI1) claimed that this was because they didn't know where to get them, whereas R3 (NI1) explained that he knew people could buy them from the post office in Kidds Beach, but that it was too far away for the people of Ngqinisa to travel. During their follow-up individual interviews, both Respondents 1 and 3 (NI2) explained that their greatest fear was that their children would be caught by the sea inspectors without permits, but that they took the risk anyway because they needed to survive. Respondent 1 (NI2) went on to explain that the inspectors didn't come to the Ngqinisa shore often, because the inspectors from Hamburg "... always go west, they are too scared to cross the (Keiskamma) river, and there are no easy roads ..." and "the inspectors for Kiwane also only come sometimes ..."

Again during the individual interviews, in response to the question whether the MCM officials had come to explain the harvesting regulations to them or not, all respondents answered that they had, but not regularly (NI1: R1, R2, R3). Respondent 1 and 3 went on to explain that the

inspectors met the people on the beach about once a month at low tide to explain the regulations (NI2: R1, R3).

5.4.3.2 Relationships with other harvesters

Despite reference to the barter of vegetables, ploughs, cows and chickens with fellow community members, little was mentioned about how the marine harvesters interacted with one another. Evidence of this came through my observations in that the majority of the marine harvesters of Ngqinisa were young to middle-aged adults of both sexes. During my first visit to Ngqinisa, Mr Jinja led me down the half-a-kilometre to the beach (RD 28/3). On route, we passed to pairs of harvesters; the first, were two young men carrying a gaff and a large sack, and the second, was a young man and woman who showed us the contents of their bag (about 40 alikreukel and limpets, about half undersized).

On a second occasion I joined the research participants and a number of other harvesters on the rocks at spring low tide (RD 13/4). I had joined them half way down the path to the beach, noting that the mixed male and female group walked together, socialising. When we reached the rocky shore however, they separated, the men venturing deep into the crash zone to collect mussel, while the women scouted the tidal pools for alikreukel, octopus and limpet. Thus no direct competition between the sexes was observed because they were focused on different resource species. I assumed at that stage, that this split in harvesting practice between male and female had something to do with the danger involved in collecting mussel in the crash zone, the men willing to take the risk over the women. However, when I developed the photos that had been taken by the research participants themselves, it became apparent that women too ventured into the deep to collect mussel.



Figures 5.27 & 5.28 Young women carrying their mussel catch, Ngqinisa

Of interest however, was that among these photos were some that depicted groups of young men in wetsuits collecting abalone. When I asked Mr Jinja whether it was only the young men in the community that risked collecting abalone, he explained that both male and female alike collected it as a source of income, and with this there was a degree of competition. The fact that women also ventured into the deep to collect abalone was later confirmed when Respondent 1 (NI2) admitted that she collected and sold it, during her follow-up interview.



Figure 5.29 Group of young men preparing to collect abalone

While on the rocks with the harvesters of Ngqinisa (RD 13/4), Mr Jinja explained how few resources were left, compared to 1994 when he had collected them to support his family. He went on to explain that the harvesters from Hamburg regularly came across the river to collect ‘their’ marine resources from ‘their’ shore (RD 13/4). Although it was not explicitly said, he implied that this was the source of considerable tension between the harvesters of Ngqinisa and Hamburg. On our way back up to the village we encountered a sizable herd of cattle on the beach, which stimulated a description of the extent of the Ngqinisa community’s grazing lands. He concluded, with obvious disdain, that besides stealing their marine resources the people of Hamburg often herded their cattle across the river to eat the grass on their lands (RD 13/4).



Figures 5.30 & 5.31 Cattle on beach, Ngqinisa

This resentment for the Hamburg harvesters was again illustrated by Respondent 3 (NI2) when he explained that no-one in Ngqinisa had received abalone permits, like the harvesters of Hamburg, because they had not been informed.

5.4.3.3 Relationships with white people

Respondent 3 (Nhis1) explained that around 1945 most of the people of Ngqinisa worked for the white farmers in the area, ploughing and “planting all sorts of vegetables”. Both he and Respondent 2 (Nhis1) explained that their parents had worked for the white farmers, and how all that had changed in 1950, when the white farmers were forced to move away and the Ciskein government turned their farms into trust lands for the Xhosa families in the area. These families in turn farmed the land using “the machineries that the white people came with” (Nhis1, R2). Respondent 3 (Nhis1) reminisced on those days, explaining how the people of Ngqinisa lived off “caffer koring or corn”, watermelons and lots of milk. He explained that because each family was only allowed to rear seven cows, there was plenty of grass to make their cows very productive – “in the old days there was a dairy here and we used to go across the Keiskamma river to sell the fresh cream to the whites in Hamburg” (Nhis1, R3). He also made reference to the fact that there was once a road through Ngqinisa that led to beach below, which had been built and used by the white farmers on their fishing trips (Nhis1, R3).

As mentioned above (5.4.3), unlike Hamburg, the marine harvesters in Ngqinisa do not depend on white residents and tourists for employment or the sale of oysters, mussels or bait as sources of income. Respondent 3 (NF1) did however mention that a number of women from Ngqinisa and the neighbouring villages collect the “seagrass” (seaweed), which they then sold to white people from Ntsholomqa (Chalumna). Evidence of this was pointed out by my field assistant one day while we were travelling to the nearby nature reserve below Kiwane. He pointed out two large sacks on the side of the road, explaining that they were filled with dried brown seaweed ready to be collected every week by a white man in a truck, who then sent it overseas. He spoke with a degree of resentment, adding that the ladies that collected the seaweed got “peanuts” for it and tended to be old and sick, having to spend long periods of time in the water and travel as far as Hamburg to collect it. When asked who the white man was, he simply replied that the buyers were secret and from outside the communities.

Both Respondent 3 (NF1) and Respondent 3 (Nhis1) felt strongly that the socio-economic problems facing the village of Ngqinisa and its surrounds could only begin to be solved if access to the area was improved to allow white people to enter it (see section 5.4.8). White people were seen as sources of money and the means by which the area could develop and provide jobs to the locals.

5.4.4 Changing social practices and power relationships

As mentioned in section 5.2.5 above, the constant surveillance from the MCM compliance officers based in Hamburg has ensured that children, who may not hold harvesting permits, no longer accompany their parents to collect marine resources and are thus taught about harvesting practice from home, for the most part. The isolated nature of the Ngqinisa village however, makes the enforcement of this law difficult, and so children still take part in the harvesting activities in Ngqinisa. Respondent 1 (NF1) explained that his daughter helped him collect marine resources three times a week, during the weekends and holidays, but “she is not coming ... during the week (because) she is at school”. He continued to explain that she knew exactly how to collect alikreukel and mussel, because he had taught her. He however mentioned that although he had taught her how to swim in the tidal pools, she had been taught to ensure that she avoided the deep places. During his first individual interview Respondent 3 (NI1) explained that he had learnt to harvest shellfish when he was only ten years old, by following his grandparents on their harvesting trips. Respondent 1 (NI1) explained that she had started collecting at the age of 15, learning from the old people. She continued by saying that she had also taught her children to harvest and that they collected with her twice a week. Respondent 2 (NI1) however, had only started collecting at the age of 20 and had learnt to collect by joining her peers on their harvesting trips. Her children now collect with her twice a week. During Respondent 2's (NF2) poster narration she concluded, while reflecting on a photo of the children at Shwele-shwele Primary School, “these are our children, they were taught how to collect these resources from the sea”.

During their follow-up interviews however, both Respondent 1 and 3 (NI2) explained that one of their greatest fears was that their children would be caught by the ‘sea inspectors’ without permits, but that they had to take the risk, because their families needed the food, and according to Respondent 1 (NI2), the Hamburg inspectors “always went west, (because) they are too

scared to cross the (Keiskamma) River and there are no easy roads ... (whereas) the inspectors from Kiwane only come sometimes”.

Considering the above and the historical narrations of the elders of Ngqinisa (Nhis1, section 4.3.2.1) the most significant social change in relation to the harvesting of marine resources is related to:

Young men who were employed on the white farmers lands, planting vegetables, and later in the Eucalyptus plantations nearby or in the urban centres of Mdantsane and East London, making the subsistence harvesting of marine resources very much an activity preformed by the women and children of the village. Today however, with the lack of sustainable employment in the area, the isolated nature of Ngqinisa and the realised commercial value of abalone, many of the young men and women in Ngqinisa source an income from the illegal sale of abalone, instead of seeking out employment opportunities in urban centres. The collection of other resources for subsistence has become the role of young parents of both sexes. It was noted from my numerous field visits to Ngqinisa and from the photos taken by myself and the research participants, that the elderly people of the village no longer took part in harvesting activities. When I asked my field assistant about this, he simply replied that even he had stopped collecting shellfish (in 1994), because it had become too dangerous for him. When I tried to probe this further, he again explained that the young people of Ngqinisa ‘were getting into trouble’.

5.4.5 Contradicting perspectives and practices associated with access

During the individual interviews I asked a number of questions associated with the harvesting regulations. All three of the respondents explained that they believed that the harvesting restrictions enforced by the government were right, and that they should be adhered to in order to conserve the resources on which they depend. Respondent 1 (NI1) felt that the restriction helped “protect the nature of the sea animals”. Respondent 2 (NI1) felt that they were there to ensure that the “animals mustn’t be finished, so they can be able to reproduce another animals”. While Respondent 3 (NI1) explained that without the restrictions “... the sea animals (would) get finished quickly”. All three respondents then stated that they adhered to the quotas specified. Respondent 1 and 2 (NI1) explained that they did so because they didn’t want them to “be finished”; whereas Respondent 3 (NI1) explained that although he often found more than the quota, he left them for next time, so that that sea animal “... family can be able to see another family”.

During their harvesting trips however, it was observed that these sustainability perspectives did not always play out in practice. Although all of the participants used screw drivers and narrow iron bars (implements dictated by the regulations) to collect resources and indicated an understanding of why this was necessary – “to ‘*ukuxoza*’ (pull out) ... the big ones ... you must not take the babies ...”, the quantities of resources removed from the rocks on a regular basis were well over what could be considered sustainable (see figures 5.22, 5.27 & 5.28). When asked whether she had noticed any changes in the marine resources from the days when she harvested with her grandparents, Respondent 1 (NF2) explained that the only change was that they now had to count what they took, whereas in the past they just took what they wanted - the resources themselves had remained the same, neither increasing nor decreasing. Respondent 2 (NI1) expressed her belief that shellfish would never run out, because they keep on reproducing. Respondent 3 (NI1) stated the same belief. However, during a previous focus group session, while describing how to collect mussels with a screwdriver, he made reference to how they now collected the “last big ones”. Although reference was often made to bigger and more extensive resource stocks elsewhere (e.g. “there are still mussels bigger than 5cm left on the nearby shores of Posi” (RD 13/4)), the declining availability of large sizes and quantities of Ngqinisa’s marine resources was never explicitly said.

5.4.6 Navigating understandings

Respondent 2 (NI1) explained that “they can’t take the small ones, because they want them to grow and be ready to be collected. To harvest sustainably means to look after the things and make sure it doesn’t get finished”. Respondent 3 (NI1) explained that “you can only collect the big ones ... so that they can be able to grow and leave some babies”. This was repeated by Respondent 1 (NI1) “you can only collect the big ones, so not to finish them. Give the small ones time to reproduce” and “to harvest sustainably is not to use all of them, think about the following days”. From the research participant’s narrations presented above and in the last section, it is clear that they understand the principles of sustainability, and the necessity of harvesting regulations imposed to limit the exploitation of marine resources. During the individual interviews each person was asked what they thought the harvesting quota was per species per person per day. Respondents 1 and 2 (NI1) provided numbers that were not far from the correct quotas, explaining that they had been told what the quotas were by the ‘sea inspectors’, which visited their shore every one or two months at spring low tide. Respondent 3 (NI1) however, provided numbers that were well above the quota, explaining that he followed the quotas written

on his recreational fishing pamphlet, which he went to fetch to show me. It was an old pamphlet. I explained that the regulations had since changed and the specific quotas for each species reduced, because the resources are decreasing countrywide. I then gave him, and the others, a copy of the new pamphlet.

All three respondents stated that they did not have permits to harvest marine resources, Respondent 1 and 2 (NI1) explaining that this was because they didn't know where to get them, and Respondent 3 (NI1) explaining that although he knew one could buy them from the post office in Kidds Beach, he felt this was too far to travel. I explained that they could buy recreational harvesting permits from Mrs Mei's shop in Hamburg, as well as that many of the harvesters in Hamburg had registered for free mussel exemptions from MCM. One of the research participants then took it upon herself to draw up a list of the subsistence harvesters in Ngqinisa, which I presented to Lusanda Mbola, the environmental officer from MCM.

The research participants were each asked what they knew about how each marine species that they harvested lived. Respondent 1 (NI1) believed that mussel, oyster alikreukel and limpets feed on earthworms and reproduce by having sex. Respondent 2 (NI1) explained that mussel and oyster also ate earthworms, that alikreukel and limpets ate sand, and that she did not know how they had babies. Respondent 3 (NI1) explained that all the resources he collects fed off plankton, and that he did not know how they reproduced.

The meeting scheduled with the Ngqinisa research participants to present the three ecological metaphors, created to clarify how the marine species fed and reproduced, was cancelled due to the flooding to the roads into the village (RD 3/8). These ecological metaphors were thus later explained to the Ngqinisa participants by myself *and* the participants from Hamburg on route to Coffee Bay. This collaborative explanation session, together with the insights gained from the sharing sessions with the Coffee Bay harvesters, led the research participants to develop an understanding of how knowledge of the ecology of the resources can be used to maximise utilization, without depleting the resources (see sections 6.4.1, 6.4.2 & 6.5).

The research participant's willingness to learn and teach was revealed many times during the research process. One interaction, among many, stands out in my mind, which I narrated in my research diary (RD 13/4) as follows:

Before leaving I picked up an alikreukel out of a collection bag that had a baby abalone attached (4cm). I acted ignorant, until one of the harvesters explained that it was a baby abalone and that its small tentacles helped it to move. I then asked them how old they thought it was. In response to shaking heads I explained, through my field assistant, that it was already about two years old, and that it was their slow growth rate that has caused them to become so scarce with collection, and why the law is so strict. Without a word, one of the harvesters carefully took the baby abalone off the alikreukel and gently held it against the under-surface of a rock in a nearby tidal pool until it re-attached.

5.4.7 Perceived solutions to problems

According to Respondent 3 (NF1) the biggest problem facing the Ngqinisa community is that of unemployment, and crime as its consequence. He explained that many of the young men and women are “getting into trouble”, because there are no jobs to keep them busy and bring in an income. As an example, he narrated an incident where on pension collection day the month before, a group of young men were going around late at night robbing the elderly members of the community of their pension money at knifepoint. My field assistant had explained the same problem, which the youth were out of school and work and getting themselves into trouble.

This aspect of violence and fear in the isolated community of Ngqinisa had become clear to me earlier in the month when I had come for a focus group interview with the marine harvesters. Unfortunately the meeting was a complete failure as the research participants, along with the rest of the community, were focused on the two police cars parked outside one of the houses. According to Mr. Jinja, one of the young men had returned home from East London and had a party the night before. That morning he was found covered in blood and his girlfriend was missing. Half way through the very distracted focus group meeting, the research participants ran out of the school and into the maize fields as word spread that the body had been found (RD 5/4).

During Respondent 3's (NI1) individual interview he also felt that the lack of sustainable jobs was the biggest problem facing the community and that the government should initiate projects in the area to provide jobs for the community. In Respondent 3's (NF1) description of the poor state of the Ngqinisa community, he explained that their “... roads are made of gravel ... we got no churches, community hall for meetings, the school is not painted, there is not yard, and no gate. The toilets are not flushed ... rural people are trying, but they don't have facilities”. When asked what he would change in his community to help solve these problems, he explained that they had Kiwane (a neighbouring coastal town) and that if it was developed, there would be jobs

created. In confusion I asked for clarity, considering that Kiwane is not part of Ngqinisa and quite a distance away. Respondent 3 went on to explain that Kiwane was once their “beach land”, but it was taken from them by the former Ciskei government without consulting them. He felt that to help Ngqinisa, they must develop Kiwane into a prospering tourist holiday town, like Hamburg used to be, because this would create jobs for youth of Ngqinisa. He explained further that the potential was already there, seen during every summer when many tourists come with boats to Kiwane, some from as far as Cape Town (NF1, R3). Respondent 3 (Nhis1) suggested a similar solution, but for the development of the Ngqinisa village itself. He felt that the government should help them fix their roads into the area and then re-establish the old road that used to lead down to the beach during the time of the whites – “that road is just rocks now, it used to go down next Mr. Jinja’s house. If they can fix the roads, tourists can get access to the sea here and we can start to make money” (Nhis1, R3).

Interestingly, the women in the focus group felt that the premature death of young parents due to HIV/AIDS, as well as teenage pregnancy, were the biggest challenges in the Ngqinisa community. Respondent 1 (NI1) said little more than “people need to negotiate a way of living” as a solution to the problem. Respondent 2 (NI1) however believed that the government should do door-to-door education in the small rural villages like Ngqinisa to “tell the people the reality (of HIV/AIDS and teenage pregnancy) and solve the problem”. At the end of her follow-up individual interview Respondent 1 (NI2) explained that she did not like living in Ngqinisa as it was today, because of the poverty. She continued to explain that people battled to get out of and into Ngqinisa, because of the poor condition of the dirt roads – “(we) are far from the tar road and a scarcity of transport – the taxi’s don’t want to come cause the roads are so bad”. Thus seconding Respondent 3’s (NF1) suggestion that the key to unlocking Ngqinisa’s potential lay in the upgrading of their roads.

5.4.8 Apparent insignificance of isiXhosa cosmology

In an attempt to probe or track the Xhosa cultural belief in the ‘Mamlambo’ or ‘River People’ and its effects on the way in which the rural people harvest marine resources, described by Fatman (2003a), I asked the research participants, in the individual interviews, to tell me about the ‘Mamlambo’. Respondent 1 (NI1) explained that she did believe in them and that “you can’t look at them, because they change your physical humanity”. She then stated that she did nothing to keep them happy.

Respondent 2 (NI1) explained that she believed that the ‘River People’ protected the sea animals. When asked how they did that and whether she harvested in a particular way to keep them happy, she replied that she didn’t know and that she did nothing to keep them happy.

Respondent 3 (NI1) explained that he believed the ‘River People’ to be beings with human bodies on top with fish tails on the bottom, but that he did nothing to keep them happy. He explained that he was not sure whether they looked after the resources, but knows that “... you can’t see them otherwise you will become deformed or die”.

As with the Hamburg harvesters, the Ngqinisa research participants’ belief in the ‘River People’ did little to direct their harvesting practice.

5.5 Contextual and historical explanations (Ngqinisa) – ACTUAL

This section falls within the second layer of interpretation and serves to provide further contextual and historical explanations for the empirical narratives of the Ngqinisa marine harvesters presented in the previous section. This begins retroductive explanation which serves to uncover the mechanisms underlying the experienced and practiced Ngqinisa.

5.5.1 Legal framework

With recognition of the subsistence fishery, MCM extension officers had been hard at work establishing subsistence local management committees in the Keiskamma area. Villages targeted included Hamburg, Bell, Bodium and Kaizer’s Beach. Each committee was made up of 7 members and 2 community monitors, which met regularly with the marine harvesters from their communities. In 2005, these committees were called to invite harvesters to register for annual mussel harvesting exemptions. Unfortunately, due to the isolated nature of the village, Ngqinisa’s harvesters had been excluded from the above.

Although the research participants reported that MCM officers occasionally met them on the beach to explain the harvesting regulations, it appeared that little had been communicated about how to go about sourcing harvesting permits or exemptions, and little had been done to make these readily available to the harvesters of Ngqinisa.

As mentioned above in 5.4.4.1 the research participants of Ngqinisa are aware that their harvesting activities are illegal (collection without permits and the collection of abalone), and thus live in fear of surprise visits by the 'sea inspectors' or police. Respondent 2 (NI1) explained that she had once been caught by the police and made to pay a fine of R100 to be released from prison.

5.5.2 Educational background

According to Mr Jinja, few of the adults living in Ngqinisa today have completed their schooling. A village elder explained that after the whites were forced to leave the area in 1950, under the Ciskein government, few people from the village were educated, because the closest school was 20kms away (Nhis1, R3). In 1986, the Shwele-shwele Primary School was built in Ngqinisa, but although the original mud building had since been reconstructed in brick, it has never been completed (NF1, R3). Reflecting on a photo taken of the young harvester group that attended the introductory focus group session in this research, Respondent 3 (NF1) explained that all in the photo had been taught in the Shwele-shwele primary school, but few had completed high school. Despite this legacy, the research participants all expressed a desire to have their children go to and complete school. This is illustrated to a degree by the three examples below.

Respondent 1 (NI1) explained that she had achieved Grade 11 at Ziphunzane High School, but had to drop out of school because she had fallen pregnant. She added that all the children in her household (except her sister's baby grandchild) went to school. Her son goes to Shwele-shwele Primary in Ngqinisa, and the others go to high school in the neighbouring village. Respondent 2 (NI1) explained that she had dropped out of Msobomvu Senior Secondary when in Grade 9, and that her daughter now goes there. Respondent 3 (NI1) explained that he left Msobomvu Senior Secondary while in Grade 11, because he had been employed by a delivery company in East London, from which he was retrenched ten years later. He added that his daughter now goes to Msobomvu Senior Secondary.

Even with this determined support of their children's education, young people are left with few employment opportunities when they leave school in Ngqinisa. Respondent 3 (NF1) argued that this was why so many of them were 'getting into trouble'. Those who stay in the area, have nothing to do, some resorting to crime to get money.

5.5.3 Socio-economic situation

The current socio-economic situation in Ngqinisa to a degree mirrors that of Hamburg, its past following the same trend – the exit of white farmers, instability under the Ciskein government, reliance on migrant labour to urban centres, temporary contract work, the impacts of HIV/AIDS and poverty. Unlike Hamburg however, Ngqinisa lacks accessibility, and with it, a suite of socio-economic benefits. These include medical support, employment opportunities from poverty relief projects and tourism, and the trade of not only crafts, but also marine resources to white visitors and residents. The rural economy of Ngqinisa appears to be supported by three main sources: social grants, migrant labour and the illegal sale of abalone. The research participants, interviewed individually, provided details to illustrate this, as described below.

Respondent 1 (aged 37 in 2006) explained during her individual interviews (NI1 & NI2) that her was separated from her husband who worked as a postman in Mdantsane, and sends R300 maintenance payments every month for his children. She continued by saying that there were eight people living in her household – herself and her two children (9 & 16 year old), and her sister with her three children and one grandchild. During her first interview she explained that she and her sister were unemployed and that the income she brought into the household was from a child support grant for one of her children (R190), child maintenance from her husband and the sale of shellfish. As there was no mention of what kind of shellfish she sold or whom she sold it to, I asked for clarity in this regard during her second interview. She then admitted that she received approximately R500 per month from the sale of abalone, which she collects herself. She provided no further details on how her sister contributed to the household's income.

During her individual interview (unfortunately a follow-up interview was not possible) Respondent 2 (NI1) explained that she was 46 years of age (in 2006) and never married. She however had one child who went to the high school in the neighbouring village. She explained that she too was unemployed and that she sourced an income from the occasional sale of maize and shellfish.

Respondent 3 (aged 34 years in 2006) explained during his first and second interview (NI1 & NI2) that he separated from the mother of his 15-year-old daughter 8 years ago, and that she now lives in a village near Kidds Beach. He continued by saying that he had four people in his household: himself and his daughter, his mother and brother (29 years of age in 2006). He is unemployed and the family's income came from his mother's pension (R820), the occasional

sale of maize, odd jobs his brother does and the sale of shellfish. When I questioned him further about the sale of shellfish during his follow-up interview, he emphasised that it was in fact not shellfish, but rather line-fish that he sold to the people of the village. My field assistant's reaction to this answer however, indicated that he was avoiding the topic of abalone.

Table 5.2 Approximate average income earned per Ngqinisa household per month

Respondent	Sale of shell-fish	Sale of maize	Pension / Disability	Child support	Temporary employment	TOTAL earned by house hold per month (2006)
1	R500	R0		R190 + R300	R0	+/- R1000 for 8
2	unknown	unknown		unknown	R0	Not specified for 2
3	unknown	unknown	R820		Unknown	+/- R1000 for 4

Although never explicitly said, the illegal sale of abalone appeared to be the major source of income for many of the young adults staying in Ngqinisa. When asked about this, my field assistant simply said that the secret buyer came every week, so the youngsters left the village once a week to sell their catches.

The 'wealth' of Ngqinisa has waned, according to one of the village elders, who narrated the following:

Today everything is too little, everything is difficult, we are hungry like dogs. The mielies are few, because we don't have any ploughs. Even the milk is too little. Now one man can have up to a hundred cows, others have 20 (in the past each household was only permitted to own seven cattle), so there is not enough grass, so the cows are no longer producing lots of milk. In the old days there was a diary here and we used to go across the Keiskamma River to sell the cream to the whites in Hamburg ...
(N His 1)

As with Hamburg, the context of too many people living with too few employment opportunities has lead to an ever-increasing pressure on the natural resources for survival.

5.5.4 Resource depletion

During my first visit to the shoreline below the village of Ngqinisa, I noticed that there were still extensive mussel and oyster beds, more so than on the shores of Hamburg (RD 13/4). Although

more extensive, the majority of the large adults have been removed, leaving beds of relatively small mussel. This surprised me somewhat, considering the sheer volume of mussels that I observed each harvester collect per harvesting trip (see figures 5.27 and 5.28) in the absence of MCM compliance officers. What did not surprise me however, was that there were fewer and smaller alikreukel, limpets and octopus available for collection. It is speculated that the reduced mussel and oyster stocks in Hamburg is due to the extensive market available for them, whereas their comparatively healthy alikreukel and limpet populations, is due to the fact that few white residents or tourists eat, and are therefore willing to buy, alikreukel or limpet. In Ngqinisa however, the resources collected are eaten, and as alikreukel and limpet are favoured and easier to collect, they have been exploited.

As with the Hamburg shores the establishment of large areas of coralline crusts and extensive tube-worm colonies indicated that the intertidal ecosystem of the Ngqinisa shoreline was disturbed and degrading, due to the removal of intertidal species.



Figure 5.32 Small mussel beds, Ngqinisa

Figure 5.33 Tube-worm colonies near Ngqinisa

5.6 Structural mechanisms – REAL DOMAIN

In this section an attempt is made to draw on the interpretations made in the previous sections to further clarify the mechanisms and structures that have given rise to the social situations described above.

5.6.1 Systems of society and culture

Historically women collected resources purely to feed the family, while the men worked in neighbouring towns and cities to provide money for the households. Today these gender roles have shifted, as husbands have either died of HIV/AIDS or not returned for afar, women have

had to become the head of households, relying on social grants, temporary work and the sale of marine resources for money and the provision of food for the family. The poor rural economy and high unemployment rate in the area has led many of the young men and women that have remained in Hamburg and Ngqinisa, to resort to the poaching and sale of abalone and oysters to support themselves and their young families. Respondent 5 (HF1) explained that the gender roles that defined women being the only ones that entered the sea in search of food have been broken and with the everyday struggle for survival, man and women are equal when it came to the harvesting from the sea. - "When going to the ocean there is no woman or man, it's only when we come out of the water that someone notices the difference". In conclusion though, she quickly added that it was still mostly women that harvested shellfish for food and that few men, beside bachelors, collect marine resources for food. Jokingly Respondent 18 (HF3) explained that men prefer to harvest when the weather is hot because – "they are scared of cold water... like children".

The striking difference between Hamburg and Ngqinisa was that in Hamburg, the practice of harvesting marine resources as a source of food and income, was still dominated by mid-aged to elderly women. Whereas in Ngqinisa, harvesting resources has appeared to have become the practice of young adults, of both sexes, despite reports from the research participants that they had been taught to harvest by their grandparents (R1 & R3, NI1).

The socio-cultural practice of caring for and protecting the children of the community is now seen to be one of the past. As narrated by Respondent 1 during her follow-up interview (HI2) where she explained that they now feared to leave their children alone or even in the care of their neighbours, because of the increase of violent crime in the village.

5.6.2 Cosmology

At the beginning of this research and the review of particularly Fatman's (2003a) contextual analysis of the marine harvesting context in Hamburg and Ngqinisa, I was lead to believe that the Xhosa cultural belief in the 'River People' or 'Mamlambo' had a significant influence of the harvesting practices of these rural communities. As my own contextual profiling progressed and interaction with the marine harvesters of both villages increased, an apparent insignificance was observed. It is speculated that in the context of increasing poverty and resourcelessness and the commercialisation of the marine resources, the marine harvesters of Hamburg and Ngqinisa

have, over time, set aside the cultural directives and rituals that might have in the past limited their access to marine resources out of respect for, and adherence to, the wishes of the 'Mamlambo'.

On the other hand, the belief that marine resources will never be diminished due to the sheer vastness of the sea, has been retained and greatly emphasised, despite the admitted realisation by many that the resources are in fact diminishing. Again, in consideration of the context, access to the resources and the income and food they provide, is paramount.

5.6.3 *Habitus*

Bourdieu argues that people's dispositions (and thus *habitus*), acquired through social experiences, are the generative basis of practices. These practices, both individual and collective, are a product of history, continually carried forward in a process of production and reproduction in everyday life. The historical roots of the harvesting practices of Hamburg and Ngqinisa reach back to beyond the political turmoil of the early 1990's and its consequent disintegration of local systems of resource management practices (see section 4.3.1), as well as draw on a legacy of survival strategies in the wake of a long history of disruption, discrimination and violence. So too, the social justifications for these practices are perpetuated as these rural communities struggle to survive.

As mentioned before, the research participants in general seemed to adhere to a collective perspective that there is an abundance of marine resources available, making the limitations imposed on them by the authorities not only unfair, but also unnecessary. This collective view was still upheld by some, even after recognising the obvious decline in resources through reflecting on *their* photos of, for example, few and undersized specimens and/or degraded rocky shores, and facilitated comparisons between their current harvesting practices and those of their parents and grandparents. It appears that this stems from an historical politics of arguing for greater access to natural resources, which has been perpetuated in the context of continued rural poverty.

5.6.4 Power relations

A number of power relations were observed to be at play around the practice of harvesting marine resources in the cases of Hamburg and Ngqinisa, as well as during the research process.

The most obvious power relation at play in both contexts, but particularly in Hamburg, was that between the black harvesters and the white residents and visitors. Whites were seen not only as the providers of money and employment, but also of skills and resources. When it came to competition for marine resources, this view came with it a degree of resentment and fear, especially when considering white poachers, whose access to greater resources (speed boats, diving equipment etc.) allowed them to collect and get away with more resources and illegal activity (Respondent 3 (HI2) narration at end of section 5.2.2 & section 5.2.3.3). In turn, as narrated by Respondent 2 (HF2) and Dr. Hofmeyer (Hhis2), the white people of Hamburg were said to fear the blacks, because of their association with crime and HIV/AIDS (see section 5.2.3.3).

With regards to gender power relations, the practice of harvesting in Hamburg was observed to be one dominated by women. Although the research participants emphasised that men also collected resources, they insinuated that they seldom did so (see section 5.2.4.2). On the other hand, in Ngqinisa, both men and women were observed on the rocks together. Of interest however, was that they were observed (during the field visits and in the photos taken by the participants) harvesting as separate groups, the men often in the deep water collecting mussel, while the young women collected alikreukel, limpet and octopus in the pools. Harvesting mussel, and abalone, however was found to be practiced by women as well, observed in photos of young women carrying large bags of mussel, and confirmed by the narration of Respondent 1 in her follow-up interview (see section 5.4.3).

In Hamburg, the women that had been taught to swim and harvest by white harvesters, were observed to have hold a degree of authority over the other harvesters due to this skill. Power relations related to age were also noted, the elderly women with many years of harvesting experience were respected and given right of way (see section 5.2.4.2). One old woman in particular, who had been taught to 'dive' by the whites and still had the strength and experience to venture deeper than most, had been given a name by her fellow harvesters that reflected a great respect and association with water.

In Ngqinisa, only one elderly man was seen on the rocks, line fishing with a rod, as opposed to collecting shellfish. Although the reasons for the elders of Ngqinisa no longer harvesting shellfish was not confirmed, it was implied that harvesting was now seen as a dangerous activity practiced by the youth (see section 5.4.5). In Hamburg however, harvesting shellfish was an activity dominated by middle-aged to elderly women. This can be traced to the strict (and more frequent) enforcement of the law prohibiting under-18-year-olds from collecting resources; the fact that there is greater availability of, and accessibility to, employment for young people (white people residing in village & better accessibility by road), as opposed to the isolated village of Ngqinisa; as well as to situation that many of the elderly women had become the providers for extended families in the absence of their adult children. As was revealed during the contextual profiling (see section 4.3.3.2.1) and the narrations of the research participants (see section 5.2.1), this last point can also be traced to the impact that HIV/AIDS has had in removing young adults from the families of Hamburg. It is speculated that the isolated nature of Ngqinisa and the considerable income generated by the sale of abalone, has kept many of the young adults in the village, and so reduced the potential impact of HIV/AIDS in the village, had more been exposed to the urban centres.

Another obvious power relation observed, was one that exists between the authorities, the MCM compliance officers and community monitors, and the marine harvesters. In enforcing the harvesting regulations, the compliance officers have the authority to fine, and even imprison harvesters if they are found contravening the law. In both cases, harvesters spoke of a constant fear of being 'caught' by the compliance officers (see sections 5.2.4.1, 5.2.3.3, 5.2.5 & 5.4.4.1). In Hamburg, where the MCM officers are based and law enforcement frequent, harvesters either collect the legal quotas or have devised ways of 'tricking' the officers into believing that they do (see (RD 29/3 description in section 5.2.6). In Ngqinisa however, the youthful harvesters collect what they need, resorting to running into the coastal bush or Eucalyptus plantations in the event of a surprise visit by the compliance officers. The relationship between the Hamburg harvesters and their community monitors, though tense, is somewhat different, in that the monitors can only request that the harvesters return their undersized or over-quota resources to the sea (see section 5.2.3.1). The fact that they record and report all that they see and find to the MCM officers however, maintains a power gradient and a level of anxiety on the part of the harvesters.

I cannot deny the power dynamics that existed between me, as a young, white, female researcher, and the research participants. Aware of the presence of these power relations, the research process was based on, and introduced as, an opportunity for the research participants

to tell me about and teach me about marine organisms and their harvesting practice, rather than for me to impose my understandings. What was especially obvious at the beginning of the research process, was a concern held by the participants that a connection existed between the authorities and myself. This concern initially informed the narration of stories that were told to justify and promote their access to marine resources (see section 5.2.6). As the research process progressed however, and their trust in my research intentions increased, the stories narrated changed slightly to include the realities of resource decline. The nature of the power relation between myself and the research participants, I believe, changed once more when I presented the ecological metaphors. It was explained that the ecological understandings would prepare them for what they were to observe in Coffee Bay and learn from the harvesters of that community. I explained that during the Coffee Bay excursion I would be part of the group, observing and learning alongside them, and that it would be up to them as a group to share, question and, on return to Hamburg and Ngqinisa, report what they had seen and heard to their fellow harvesters. The group nominated the elder of each group as their leaders and spokespersons, as I became a facilitator and observer of the exchange processes that took place (see section 6.5.2). During the last phase of the research process, where the participants reported back to their communities, I was asked to ensure the involvement of the authorities in the meetings that they had planned.

The power relations that existed between the research participants and the harvesters of Coffee Bay were one observed to be based on 'sharing', rather than on 'informing'. I believe that this had a lot to do with the fact that the Coffee Bay harvesters had themselves shared their stories of context and learnt from the marine harvesters of KwaZulu Natal (see section 3.2.2 & 3.3.10), and so had been in the same situation as that of the participants of this research. Indeed, one of the highlights of the interaction between the groups was when the harvesters of Hamburg and Ngqinisa, shared stories of their context by showing the Coffee Bay harvesters their photographs.



Figures 5.34 & 5.35 Hamburg and Ngqinisa harvesters sharing their contexts with Coffee Bay harvesters

5.7 Retroductive analysis

Below an attempt is made to identify and trace some of the possible causes and conditions, which may lie behind the experiences, understandings and relationships evident in the research participant's narrations of context and harvesting practice, as well as my observations. This retroductive analysis aims to provide explanations of what foundational events/circumstances, structures and mechanisms (causal powers) may have made these experiences possible, as well as insights into what possibilities exist for the emergence of change, given the nature of these characteristics.

It must be pointed out once more (see section 3.2.6 & 3.4.3), that the relationships and explanations presented, are interpretations and are thus fallible, as causal relations are infinitely more complex and dynamic than these explanations may project. Due to this complexity, several causal relationship combinations and sequences were devised to explain the structural conditions for the two case studies, all of which could not be disconnected or separated from one another. For this reason only two examples, one from each case, have been presented. Further hypotheses would need to be developed and tested to explain the complex nature of these structural relationships, which is outside the scope of this study.

Table 5.3 Retroductive analysis 1 – Hamburg example

Causation diagram – Hamburg context	Retroductive explanation
<p>The diagram is a causation diagram divided into three horizontal domains by dashed lines. At the top is the Empirical domain, containing 'Experience / practice' (boxed) and 'Strict enforcement of regulations'. Below this is the Actual domain, containing 'Events' (boxed), 'Limited employment opportunities', 'Fatherless households', 'HIV/AIDS impact', 'Migrant labour', 'Legacy of poor education', and 'MCM office in village'. At the bottom is the Real domain, containing 'Mechanisms & Structures' (boxed), 'Depletion of resources & ecological degradation', 'Bantustan gov. & Apartheid policies', 'Gender roles & societal norms', and 'Habitus'. A vertical red arrow on the right points downwards, indicating the direction of the retroductive process. Arrows show causal links: 'Events' leads to 'Strict enforcement of regulations' and 'Limited employment opportunities'. 'Mechanisms & Structures' leads to 'Depletion of resources & ecological degradation', 'Bantustan gov. & Apartheid policies', and 'Gender roles & societal norms'. 'Habitus' leads to 'Depletion of resources & ecological degradation'. 'Depletion of resources & ecological degradation' leads to 'Migrant labour'. 'Bantustan gov. & Apartheid policies' leads to 'Legacy of poor education'. 'Gender roles & societal norms' leads to 'Fatherless households'. 'Legacy of poor education' leads to 'HIV/AIDS impact'. 'Fatherless households' leads to 'HIV/AIDS impact'. 'HIV/AIDS impact' leads to 'Migrant labour'. 'Migrant labour' leads to 'Food & income insecurity'. 'Strict enforcement of regulations' leads to 'Experience / practice'. 'Food & income insecurity' leads to 'Experience / practice'. 'Experience / practice' leads to '- Women hiding bags of resources under kelp & in forest etc.'.</p>	<p>The practice of elderly women harvesting & hiding several bags of resources per day can be linked to the strict enforcement of the harvesting regulations by the MCM officers stationed in Hamburg, and food & income insecurity in harvester households. The strict law enforcement is due to the revision of marine utilization legislation in light of recognition of subsistence sector and depletion of resources nationwide. Commercialisation of resources introduced & taught by whites has greatly contributed to ecological degradation. Limited employment opportunities maintain a weak rural economy, supported by migrant labour, social grants and the sale of marine resources. Migrant labour has in turn increased the incidence & impact of HIV/AIDS, leaving grandmothers to support extended families, and the practice of harvesting on dominated by women. The Bantustan & Apartheid legacy of exploitation & segregation, perpetuated from the era of colonisation, maintains limited capacity for development. Rural harvesters isolated in their context of poverty & limited transformation opportunities (<i>Habitus</i>).</p>

Table 5.4 Retroductive explanation 2 – Ngqinisa example

Causation diagram – Ngqinisa context	Retroductive explanation
<p>The diagram illustrates a causal chain across three domains. At the top, 'Experience / practice' (boxed) leads to 'Young men & women collecting large quantities of resources'. This is supported by 'Infrequent enforcement of regulations' (Empirical domain) and 'Food & income insecurity' (Empirical domain). Below this, 'Events' (boxed) include 'Isolated location of village' and 'Limited employment opportunities'. 'Limited employment opportunities' is linked to 'HIV/AIDS incidence lower' and 'Migrant labour'. In the 'Actual domain', 'Taught commercial value of abalone' and 'Poor education' are shown. 'Poor education' leads to 'Migrant labour'. 'Mechanisms & Structures' (boxed) include 'Bantustan gov. & Apartheid policies', which influences 'Poor education' and 'Migrant labour'. At the bottom, 'Habit' (italicized) includes 'Depletion of resources & ecological degradation' and 'Gender roles & societal norms (age)'. A red arrow on the right points downwards, indicating the direction of the retroductive process from the empirical to the real domain.</p>	<p>The practice of young men and women harvesting large quantities of resources for food can be linked to infrequent enforcement of the harvesting regulations by the MCM officers – due to isolated location of village. Many youth remain in village and now rely on sale of abalone for household income. Illegal activity & associated dangers have made elderly members of society fearful – harvesting now an activity of the youth. Fewer young people exposed to urban centres – lower HIV/AIDS incidence. Limited employment opportunities maintains a weak rural economy, supported by minimally by migrant labour, social grants and the sale of marine resources. The Bantustan & Apartheid legacy of exploitation & segregation, perpetuated from the era of colonisation, maintains limited capacity for development. Rural harvesters isolated in their context of poverty & limited transformation opportunities (<i>Habitus</i>).</p>

5.8 Conclusion

This chapter provided a presentation and interpretation of the case stories of Hamburg and Ngqinisa marine harvesting contexts within the critical realist framework of a stratified ontology. With the use of the inferential mode of retroduction as a strategy to look beyond the empirical, relationships and connections with the historical and contextual were sought out, so that the

some of the structural mechanisms, that lie behind and give rise to these experiences and events, could be clarified.

In the next chapter, I describe how the concept of a stratified ontology informed the emergence of a research strategy and learning process in the context of marine coastal utilization in rural communities. This leads to a discussion on the possible implications this phased process has for the development of environmental education materials, and finally a reflective critique of the research process and a consideration of possible recommendations for further research.

CHAPTER SIX

Stratified ontology research and situated learning in community contexts

6.1 Introduction

In this chapter, I describe how the concept of a stratified ontology informed the emergence of a research strategy and learning process in the context of marine coastal utilization in rural communities. This leads to a discussion on the possible implications this phased process has for the development of environmental education materials. Finally I provide a reflective critique of the research process and consider possible recommendations for further research.

6.2 A look back at the beginning

At the beginning of this study I was faced with a dilemma. I entered an already established science-based research programme as an environmental educator whose role was to research and determine a relevant and appropriate method of educating rural coastal communities about sustainable utilization of marine living resources, through the development and use of environmental education materials. With this role came an unsaid expectation to promote and motivate a willingness to conserve marine species and sustain functional ecosystems and biodiversity. A tension arose as I began to understand the context of my research, and I began to question how I could approach educational processes that could emphasise the ecological value of the marine environment in a context of poverty, where meeting basic human survival needs is a priority. How could I open up such negotiation? This study thus started with this question: How could I create a learning space and educational materials that could bridge the divide between two 'worlds of knowledge and context' (see section 1.2), the ecological explanation of scientists and conservationists, and the everyday practice of collecting marine resources for survival? Through the literature review and initial contextual profiling, it became especially clear that simply communicating ecological facts and conservation messages into rural resource-use contexts seldom achieved the desired educational goals (see sections 2.8.1 & 3.3.9).

After considering the theoretical possibilities of a critical realist ontology, I was able to propose that through the exploration and analysis of a stratified ontology, the domains of the empirical,

actual and real, and the relationships that exist between them, a methodology for engaging with these two apparently opposing epistemologies could be found. I anticipated that this could then inform the development of environmental education materials, and support learning and decision-making in community-based coastal marine environmental education processes (see chapters one, and three).

As the study unfolded, the development of environmental education materials receded. Although I initially anticipated the contextual profiling and story-telling associated with the photographs to serve only as a starting point for developing educational materials, increasing emphasis came to be placed on the emerging learning processes. The following four sections trace the emerging phases of this exploration, how each one was informed by the critical realist viewpoint and how the spaces for learning, both mine and that of the research participants, were opened through a research process which was also a learning process. It is this research and learning process which forms the focus of this chapter.

6.3 Exploring the Empirical domain

The field-based learning and research processes started with the research participants telling stories of their harvesting experiences. This was not only an opportunity to continue my contextual profiling, but also a means by which the harvesters of Hamburg and Ngqinisa alike could begin to explore, investigate and mobilise their own situated understanding of their harvesting practice and context.

As described in chapter five (particularly section 5.2.6), the initial stories narrated by the research participants centred on a social politics of access to the resources: an insistent emphasis on the abundance of resources available, and the belief that they were in fact, increasing. This formed the basis for their argument that the limitations stipulated by the harvesting regulations were an unnecessary hardship, especially in the context of poverty.

The introduction of photographs, taken by myself and the research participants of their rocky shore environment and harvesting practices, provided a reality congruent platform from which further stories could be told. Serving as stimuli for further story narration, these pictures of context, as well as an awareness that I had seen what was left on the rocks while accompanying them on their harvesting trips, led the research participants to alter their stories

somewhat (see section 5.2.6). This indicates that the use of photographs (as research and learning materials) led to a heightened self-awareness amongst that the research participants and a deframing of contradictions, so that the realities of resource decline came into conversation.

Despite the recognition of resource decline, the research participants were united in the belief that marine resources could and would never be completely depleted. I came to realise through the construction and reconstruction of the empirical narratives, that few opportunities for learning were open to the research participants while they were 'trapped' within the bounds of their own context, within the realm of the empirical. Indeed, this became apparent during the literature review of this study. Wals and Heymann (2004), as well as Engeström (2005) argue that learning can be limited when it is focused on the realm of the experienced or empirical (see section 2.7). When learners focus on the particular (within their own context and practice) their scope of the broader context, with its constraints and possibilities, structures and mechanisms, is narrowed and so too their capacity for critical engagement and decision-making. This realisation was reinforced with the review of Du Toit and Sguazzin's (1999) educational picture-based resource material (used for educational purposes with teachers), where the engagement and critical reflections of the learners remained within their own contexts (see sections 2.8.3.2, 2.8.4.1 & 2.8.4.4). Here the limitation lay in the reaffirmation of the learner's own perspectives, with them being 'trapped' in the self-referential social capital of their own reality, without gaining further or new information and insights into alternative aspects, contexts, environments or knowledge.

In reviewing the educational dimensions of the Sokhulu and Coffee Bay mussel rehabilitation projects (see section 2.6.1), the potential that the interaction between harvesters from different contexts holds for learning, was highlighted. This, together with the above-mentioned realisations, motivated the planning of an excursion to Coffee Bay, which was intended to allow the research participants the opportunity to step out of the situated 'traps' of their own context and experience and explore the context and experiences of another harvesting community, and the realities, challenges and opportunities of complete resource depletion (since I was aware that the Coffee Bay community had experienced complete depletion of their coastal marine resources from the literature review).

However, as Du Toit and Sguazzin (1999) themselves noted in the critical review of their photo-based educational materials, people need to be provided with an *environmental language* which allows them to engage with, interpret and explore other/new issues, problems and potential solutions (see section 2.8.4.3). For the research participants of this study to fully engage with the Coffee Bay marine utilization context and their methods of rehabilitation, they needed to understand the ecology of the marine species in question, and be provided with the necessary ecological concepts and language to do so. As these abstract ecological ideas, within the life experience and context of the harvesters I was working with, were identified as falling within the realm of the real (see section 3.3.1.1, 3.2.6 & 3.3.9), this orientating language had to be introduced in such a way as to connect to and arise from the familiar in the socio-cultural context of the harvesters (their empirical experiences and actual context). The use of *metaphor* provided the necessary socio-cultural description required to bridge the gap between their situated knowledge/logic/capital/ experience (empirical and actual) and the ecological/scientific capital, which in this case existed but was not mobilised in relation to their experience (real).

6.4 Linking context with the real (ecological concepts)

As presented in section 3.3.9, Danermark *et al.* (2002) see metaphor as an abductive strategy of re-contextualisation, where new phenomena are not discovered, but are rather re-described in such a way that the connections and relations between them are highlighted, allowing for a better understanding of already known occurrences. Two ecological metaphors were therefore developed to re-contextualise and re-describe the empirical (observed by the participants through their story-telling and my observation of their context and harvesting) and the real (the abstract ecological facts), so that the associations, relationships and linkages, not given in the harvesters' way of perceiving the world (as indicated in their stories and picture narratives), could be highlighted.

6.4.1 The emergence of ecological metaphors

Thus, in planning for the exchange visit for the research participants to Coffee Bay so that they might engage with harvesting practices and a context other than their own, I realised that they would need further information and orientation to fully utilise the value of the excursion. I realised that for them to understand and make sense of the mussel rehabilitation methods and why they were necessary, they would need to understand the basic ecological concepts of how mussel,

oyster and alikreukel live and reproduce, how they interact with each other and other organisms in the intertidal habitat and how harvesting by people influences the above. Prior to this, as part of the document analysis process (see section 3.3.1.1 & 4.2.1), I had gained a deeper understanding of the ecologies of mussels, alikreukel and oyster and how the exploitation of each impacted on the survival of the others and ecological integrity of the intertidal ecosystem as a whole. At the same time, I had developed an understanding of the various dimensions of the context through ongoing contextual profiling work (see section 3.3), which included the initial harvester story narrations of context and practice during the various interviews, my observations, literature reviews, as well as my interaction with the research participants in context, such as visiting their homes, transporting them back and forth through the village and joining them on the rocks during harvesting trips. It was through this understanding of context and culture (reported in section 3.3.9) that the linkages with the ecological concepts developed.

Central to the Xhosa culture and belief system is the ownership of cattle and thus the necessity of productive graze-lands. Thinking of this, I remembered Foster's (1997) description of how alikreukel feed, 'grazing' algae off the rocks, and how overexploitation of mussel and oyster beds led to associated high-nutrient algae being replaced with hard coralline algae, of poor nutrient value. It was through this connection that the 'grazing metaphor' arose.

Grazing metaphor

In the grazelands there are many types of grass. The sweet grass keeps the cows fat, healthy and productive. But if all the sweet grass is burnt or eaten, only the hard, sour grass will grow and the cows will start to grow small and thin, stop producing milk and not have many young.

It is like this in the sea, where there are many types of plants and animals living together on the rocks. The *iqongwe* (alikeukel) graze on the sweet seaweeds (green and red) that grow next to the *imbaza* (mussel) and oyster communities. When you take out too many *imbaza* and oyster, scraping all of them off the rocks, the sweet sea grass no longer grows and the empty rocks become covered by hard sour sea plants (pink and grey crusts). The *iqongwe* have less sweet seaweeds to eat, and so become thin, do not grow well and cannot reproduce many babies.

It was through the reading of Harris et al. (1998) (see section 4.2.1.3) that the second metaphorical connection, between situated culture and ecological concepts, arose:

Homestead metaphor

People and animals can only reproduce (have young) if they are mature adults. These adults can have many young that will grow to be big and strong, but only if they can welcome their young back to and protect them in a safe, productive homestead. When the young return home, there must be adults there to welcome and protect them. If the homesteads are empty the young ones will move off and not return.

It is like this in the sea. The *imbaza* (mussel), oyster and *iqongwe* (alikeukel) can only reproduce once they have grown up to become adults. This takes about six months for *imbaza* and oyster, and about three years for the *iqongwe*. They let their sperm and eggs flow into the water, where they meet to form tiny young shellfish that can swim. These tiny shellfish need to swim back to the shelter of the communities on the rocks. They can only come back to the rocks if there are enough adult shellfish left on the rocks to welcome and protect them. If people have taken too many *imbaza*, oyster or *iqongwe* off the rocks, then the young cannot find their way back to replace them. Also, if too many of the big ones are taken, then there will not be enough adult shellfish to send their sperm and eggs into the water to make more young shellfish. And so the communities will slowly get smaller and smaller.

6.4.2 Presentation of the ecological metaphors

In keeping with the use of pictures and photographs to support explanation and stimulate discussion, I used a number of pictures of mussel, oyster and alikeukel, as well as photographs of the different kinds of algae (the green, red, brown and pink corallines) and photographs of the denuded coastal rocks of the Transkei (to illustrate that all resources can be completely removed) in the presentation of the ecological metaphors to the research participants. I also made a number of hand-drawn diagrams during the explanations. In Hamburg, my field assistant arranged for all the research participants to meet at a central house, which belonged to one of the research participants. I began by explaining (supported by the various pictures, photos and sketches) on what and how each of the three organisms fed. A food strainer/sieve (from the participant's kitchen) was used to illustrate how the filter feeders (mussel and oyster) 'strain' food particles from the water. This was then followed by an explanation of the grazing metaphor. One of the participants agreed by explaining that she often found 'fat' *iqongwe* (alikeukel) where there was an abundance of green 'grass' on the rocks (RD 2/8).

I then explained how the marine organisms reproduce, which was accompanied by a lot of laughter and chatter. One of the women demonstrated that the release of sperm into the water must be like squirting a water pistol – “psst!”. During the explanation of the homestead metaphor many kept saying “*khosiam*” meaning ‘shame’ (showing sympathy for the lost ‘swimming babies’). The explanations went very well with a great deal of head-nodding and chatter amongst the participants. It was at that point that the third metaphor arose, created by the participants themselves. Throughout the entire session we had been interrupted by a hen chicken trying her utmost to get inside the house to lay her eggs. One of the participants pointed at the chicken and explained that the homestead story was like the mother hen, in that her chicks tend to wander, and would be lost unless the mother chicken was there to call them back to her. It was through this metaphor, created by the research participants themselves, that I could confirm their understanding of the basic ecological concepts. I concluded the meeting by explaining that we were going to Coffee Bay to see how the community there were trying to bring the mussels back to their coastline and hear about their plans for the future use and management of their marine resources (RD 2/8).

Unfortunately the meeting scheduled to introduce the ecological metaphors to the harvesters of Ngqinisa was cancelled due to heavy rains making the roads to the village impassable. However, during the drive up to Coffee Bay, there was a collaborated effort between myself and the harvesters of Hamburg, i.e. in a combination of isiXhosa and English (thanks to the two field assistants present), to explain and clarify the ecological concepts.

6.5 Engaging with the context of ‘others’

According to Wals and Heymann (2004), learning can be viewed as a change process resulting from explication and critical analysis of one’s own norms, values, interests and constructions of reality (deconstruction or deframing), exposure to alternative ones and then construction of new ones (reconstruction or reframing) (see section 2.7). Space for dialogue must be made for new views and perspectives that broaden the realm of possibilities, rather than the mere transmission or exchange of points of view. By explicating and deconstructing the oftentimes diverging norms, values, interests and constructions of reality, it not only becomes possible to analyse and understand their roots (structures and mechanisms) and their persistence (reproduction), but also to begin a collaborative change process in which shared meanings and joint actions emerge (Wals, 2007, Engeström 2005, see section 2.7). Of significance in the reconstruction of common

frames is the creation of recognisable imagery of possible situations that transcend reality as currently perceived by those involved in the learning process. In order for participants to explore and create new frames, they need to engage with one another through exchange, interaction and confrontation (Wals & Heymann, 2004, see section 2.7).

In section 2.7 it is argued that learning arises from dissonance (moving from one's own frame of reference to another), while social learning can be considered to be a collaborative reframing process involving discursive dialogue and cooperation between people positioned within different frames (i.e. interests, values, reality constructions and contexts).

In the next section, I will indicate how the elaboration and application of the metaphors became more practically and reality congruent through engagement with the Coffee Bay harvesters, illustrating a 'learning through co-engagement' process.

6.5.1 Showing and sharing: learning through co-engagement

In Coffee Bay, the research participants and I were led to the rocky shore below the village by Bonele, from Walter Sisulu University (WSU), and four members of the local harvesting committee. There, we were shown where the community had first tried to re-establish mussels on the rocks, with evidence provided by several metal rings protruding from the bare rock.



Figure 6.1 Metal rings in rock



Figure 6.2 Denuded rock in Coffee Bay

One of the committee members explained that the rocks on which we stood were once covered with mussels, and because they were easily accessible, the community had taken them all, leaving the last remaining mussel beds in the dangerous deep water. He continued by explaining

that Gugu and Bonele from Walter Sisulu University (formerly known as UNITRA, and still referred to as such by community members) had come to show them that by using the small mussels that they would ordinarily have discarded and let wash away, they could bring the mussel beds back onto the rocks. He then gave a demonstration of how they had attached PVC piping to rings drilled into the rocks and how small mussels were secured under the piping by plugs of seaweed. He explained that the piping held the small mussels against the rock, allowing them the time and security to re-attach. Once they were attached, then the piping was removed and the process repeated until the rocks were covered in small clumps of mussels, which grew in size until the entire rock was covered by an established mussel bed.



Figure 6.3 Harvester demonstrating how piping is attached to the rocks by rings drilled into the rocks



Figure 6.4 Harvester demonstrating how seaweed is used as a plug to stop small mussels from washing away

A short while later, seven other committee members arrived, in time to assist the Coffee Bay harvesters in their explanation of their mussel rehabilitation project. A question arose from the Hamburg and Ngqinisa harvesters, how it was that the mussels came back if only a few were attached to the rock under the pipes and there were so few mussels left in the deep to begin with. Although the explanation that ensued was in isiXhosa, I saw recognition in the eyes of the group, which was confirmed by a woman from Ngqinisa making eye contact with me and nodding. She later narrated to me that the Coffee Bay harvester, with a scoop of sea water in his hands, had explained that the sea water was full of tiny baby shellfish trying to return to the rocks, as well as food particles on which they fed, and that these could only be seen through the 'eyes of a microscope'. Pointing to the rocks in the deep water, Bonele explained that there were

still mussels in the deep, producing babies, which would be attracted to the ones re-attaching under the PVC piping (the 'seeds'). Once these 'seeds' were attached, they created a 'home' into which the tiny shellfish in the water could attach. He further explained that the rocks on which they stood had been fully rehabilitated with a healthy bed of mussels, and how these had unfortunately been completely scraped from the rocks again during the December holiday season. He concluded that they fully intended starting the mussel rehabilitation project again, but that next time they had to ensure that the whole harvesting community were made aware of and become involved in the development of the project and associated management plan to re-establish the shellfish communities and harvesting them sustainably.



Figure 6.5 Coffee Bay committee member explaining that seawater containing food and baby mussels can flow through the piping



Figure 6.6 Bonele pointing out that there are still productive mussels in the deep

Two of the Coffee Bay community harvesters added that with the support of Bonele and Prof Gugu Calvo-Ugarteburu from Walter Sisulu University ('UNITRA' to the community) , they had come to work with the Marine and Coastal Management (MCM) officials assigned to their area to establish their harvesting committee and develop their mussel rehabilitation project, and that it was through the strengthening of that relationship that they planned to develop their marine resource management plan for their coastline.

These matters were further elaborated on at the local primary school where the entire group met after lunch. Each of the Coffee Bay harvesters briefly introduced themselves and explained how they had come to be part of the harvesting committee. A number of them explained that they had gone to KwaZulu Natal to learn from the harvesting committee there how to develop their mussel rehabilitation project, monitoring and management plans. The two community harvest monitors

then explained that they had been nominated through their Coffee Bay harvesting committee, trained and employed to check and record the catch sizes, weights, species etc. collected by the community, and that this information was to be used to inform their management plan. One of the harvesters from Hamburg then explained that they too had a committee which had been started with the help of Coastal Development, and that they also had two community monitors employed to check their catches.



Figure 6.7 & 6.8 Coffee Bay community monitors explaining how and why they record the sizes and numbers of shell fish catches

The question then arose from the Hamburg and Ngqinisa harvesters whether the Coffee Bay harvesters had permits to collect resources. One of the committee members explained that they all held permits and that they had been given these by MCM free of charge once they had registered for them. The Hamburg and Ngqinisa group became very excited at this response, explaining that they had to buy recreational permits at the post office for them to harvest legally. Their attention then turned to me with the question whether I could arrange for them to get free permits too and find the necessary funding for them to start a similar mussel rehabilitation project. I explained that the free permits of which they spoke were in fact the same exemptions that Coastal Development and MCM had told them about already and that they would need to register as marine harvesters, as the Coffee Bay harvesters had done, to receive them. With regards to finding funding, I explained that through my research I could only open the doors for them to learn from and meet with the people that could help them. Bonele then added that for them to start a similar project, all the marine harvesters of Hamburg and Ngqinisa would have to get organised as a community, led by a committee that could submit a proposal to the Department of Environmental Affairs and Tourism / MCM to ask for support. He concluded by saying that the government had the money and support that they needed, but that they had to

show that they, as a harvesting community, were committed to making such a project work for the long term.

With these words of encouragement, the marine harvesters of Coffee Bay, Hamburg and Ngqinisa spent several hours discussing harvesting issues and comparing contexts. The harvesters of Hamburg and Ngqinisa supported their explanations of their harvesting contexts with the photographs that they and I had taken.



Figure 6.9 Ngqinisa harvester sharing stories of her context



Figure 6.10 Hamburg harvesters taking notes of Coffee Bay harvester's narration

The essence of social learning for sustainability, according to Wals and Heymann (2004), is the transcending of individual and group frames and the arrival at a plane where the various groups and actors involved find each other and create enough 'chemistry' to feel empowered to work jointly on the challenges they all face. I believe such a learning interaction took place between the harvesters of Hamburg / Ngqinisa and Coffee Bay, which was mediated by stories of problems and their solutions within the context of harvesting marine resources.

Having heard and been shown the practical details of how the harvesting community of Coffee Bay was trying to rehabilitate the shellfish communities of their coastline and how they monitored resource harvesting so that it might be sustainable, the harvesters of Hamburg and Ngqinisa left the gathering at the local primary school full of questions on what was possible in their contexts. Many of the questions were answered that evening in their backpackers room by Prof Gugu.

6.5.2 Reflecting on reality and possibilities for change

That evening Gugu, Bonele and two of their students met with the Hamburg / Ngqinisa group in their room at the backpackers. With a slide-show of photographs on her lap-top as visual stimuli, Gugu narrated (translated by one of the students) how and why the initial mussel rehabilitation project had succeeded and then failed, what satellite projects had arisen from it (community food gardens and the Eco-schools mussel project etc.) and what was planned for the future to manage the harvesting of marine resource in Coffee Bay. The Hamburg / Ngqinisa harvesters had several questions, most of which centred around how they could be supported to register for exemption permits, establish a functional harvesting committee, source funding for the equipment needed for a mussel rehabilitation project, arrange training for committee members, and develop a management plan for the continued use of their marine resources. Gugu answered these questions with great optimism, emphasising repeatedly that it was up to them to ensure that their communities and all who would be involved in this initiative were properly informed and organised. If they could do this, she explained that she would send a number of her committee members to Hamburg to provide training to set up the rehabilitation project and re-seed their rocks with mussel beds. However, getting permits and finding funding was out of her hands that they would have to approach MCM and Sustainable Coastal Development (SCD) for these.



Figures 6.11 & 6.12 Discussions of possibilities in backpacker room with Gugu and her students.

When Gugu and her team had left, the group stayed up until the early hours of the morning discussing their plans to set up meetings with all the relevant stakeholders and community members. It was agreed that each group would arrange separate meetings with their

communities to present what they had seen, heard and learnt during their visit to Coffee Bay and that I would provide support in the form of a photograph slide-show which could be used as visual stimuli during the presentations. The oldest woman from the Hamburg group was nominated to be present at the Hamburg meeting, while Mr Jinja was nominated for Ngqinisa. He declined his nomination saying that he was too old for such things. The elderly woman from Hamburg (hereafter referred to as 'Mother') argued that as an elder he had a responsibility to guide his group in this journey, and that if she could do it, so could he. It was then agreed that two of the younger Ngqinisa harvesters in the group would narrate the story of their visit and explain how they brought the mussels back, and that Mr Jinja would introduce the proposal to start a similar project to their community. The significance of these decisions made by the two elders to lead their respective groups in reporting back and presenting a proposal to their communities is highlighted in section 5.2.5, where shifts in the social power gradient of the area are discussed.

6.6 Narration of understanding back into context

6.6.1 Hamburg initial report-back meeting

An initial report back meeting was held on the 22nd of August 2006 in the Hamburg community hall. The Hamburg research participants, lead by their elder and Noseti, had invited members of their harvester community, as well as the local law enforcement officers. Those who attended included the two Hamburg community harvest monitors, the two Hamburg MCM compliance officers, two representatives from the local Eastern Cape Nature Conservation office, Daniel Socyeni (the ward councillor), Serge Raemaekers (Rhodes University Ichthyology and Fisheries Science) and a number of marine harvesters.

After I briefly introduced myself and my research study, I introduced 'Mother' as the spokesperson for the research group from Hamburg that visited Coffee Bay. My role in the remainder of her presentation was a technical one, operating the projected slide-show (photographs supplied by Prof Gugu of the Coffee Bay mussel rehabilitation project and those taken by me during the excursion) which 'Mother' used as prompts for her explanation of what they had seen, discussed and learnt about marine resource harvesting, monitoring, management and rehabilitation from the marine harvesters of Coffee Bay. As most of the explanation took place in isiXhosa, I had to rely on Noseti to indicate when to change the slide

and supplement 'Mother's' descriptions. In fact, Noseti only translated the last sentence of 'Mother's' presentation to me: "We believe that this project should be duplicated in Hamburg!". This statement, and her presentation as a whole, raised many questions and comments, the answering and minuting (RBM 1, see Appendix I1) of which were only made possible by intermittent translations by Noseti.

The ward councillor explained that he thought that the mussels on Hamburg's shores were finished and therefore questioned how they could start such a project. 'Mother' explained that there were still mussels in Hamburg, and because they had seen that the mussels of Coffee Bay were almost finished, they wanted to start a mussel project to ensure the same does not happen in Hamburg. She again explained that they would use the small mussels, usually discarded during harvesting, and "plough" them back onto the rocks using pipes. He then asked how long it would take for these to grow to harvestable size and whether anyone could harvest them. Between Serge and myself we explained that it would take between eight to twelve months for the seed mussels to re-establish into productive mussel beds, and that the planting and harvesting would have to take place on an interval/phased and rotational basis. The planting of seed mussels would have to take place on different rocks every month and after eight months harvesting could begin on the first rocks. One of the harvesters asked what areas they were going to 'farm' - whether they were only going to plant in Hamburg, or whether they would be allowed to plant all along the coast up to the Fish River. Serge explained that the size of the project area would depend on the community's involvement and how well it could be monitored and managed. The pilot phase of the project would have to be experimental, in that they would start on only one set of rocks, monitor, see how it works and expand only as far it is successful and manageable.

At this point, many in the room requested clarification of how mussels reproduce or 'become more'. Daniel explained that when he was born, his family expected that he should have two or three young of his own when he became a man. If one mussel is planted, would it produce one mussel or more? 'Mother' explained that mussels did not mate together to make babies, that the Coffee Bay people told them, as I had done, that the males pass up their sperms into the water and the female their eggs, and these meet in the water to form tiny swimming babies which swim back to the others on the rocks. Serge added that these babies take two to three weeks to swim back and settle among the others on the rocks, and so yes, the mussels you plant will attract more. 'Mother' continued by saying that these babies in the water are very, very small, and

cannot be seen with the naked eye. She then emphasised that the mussels would not finish as long as there are always some big males and females.

One of the harvesters asked how the harvesters of Hamburg could get the free permits like the ones the people of Coffee Bay had, considering that many people in his community would like to harvest, but cannot afford the R60 permit available to them. I explained that the exemption permits which Lusanda Mbola, from MCM, had already spoken to them about were in fact the same free permits that the Coffee Bay harvesters had received, and that they would have to register their names with her in order to qualify. Daniel asked if these permits would only apply to the mussels that they farm, or whether they would cover the collection of other resources, like octopus and cockles, too. 'Mother' explained that they would be allowed to take other things, but only as long as they kept to the bag limits and harvested sustainably. That was why they wanted the mussel rehabilitation project, so that they would never finish them and they would always be there.

Repeating the question which the councillors had asked earlier, one of the local harvesters asked whether anyone will be allowed to harvest the mussels or whether access to them would only be permitted to those who helped plant them. One of the younger women of the research group answered that everyone would be allowed to harvest as it would be a community project, but that it should work hand-in-hand with a good permit system. The community monitors, the MCM compliance officers and those who are planting the mussels will work together to make sure that harvesters only take the big ones, leaving the small ones to grow. 'Mother' re-iterated what she'd explained earlier, that the people of Coffee Bay, even Gugu, had told them that the marine officers would help them and that they should not run away anymore. She again thanked the community monitors, MCM staff and Nature Conservation officers for coming and asked them to stand with them in achieving this project. She then addressed all present, saying that they should all work together. The whole community must know about this, there should be no fighting, everyone should be transparent, and everybody must know that they are tied to each other.

One of the local harvesters then stood up and explained that he foresaw a problem: the people that are going to plant the mussels are going to have permits to collect those mussels. How are they going to control it when other people with permits come and collect the mussels that they have planted saying that they are collecting from God's own nature? 'Mother' explained that the people that are to plough the mussels are going to work together hand-in-hand with the marine

staff (monitors and MCM compliance officers) to look after the sea. Nobody will take the little ones, everybody will know to take the big ones, no-one will damage the farm. A woman harvester asked what would happen if some people don't want to plough the small ones. 'Mother' replied as follows: "We are going to show them, we are going to tell them". One of the MCM compliance officers then explained, by way of introducing his questions, that he and his colleague patrol the coast from Kiwane to the Fish River: Are the people who plough the mussels going to sit and watch their mussels every low tide? He explained further that he was born in Hamburg, he knows that people will steal mussels at night. What are they going to do if people steal their mussels at night?

One of the other younger women in the research group answered saying that there was no need for such a question. She too had grown up in Hamburg and the mussels have never been finished, that is why they are going to farm them, so there is nobody who will damage the community's mussel farm. She continued by saying that the whole idea needs that support from the entire community! One of the community harvest monitors stood up and voiced his agreement, saying that if they take care of the seafood, then it will never be finished, but if they damage them, it will finish.

Daniel, the ward councillor, seconded by several of the harvesters present, asked who would help them start such a project, as they would need funds for the drills and pipes, support and training. As this question was posed to me, I explained that they would have to get organised as a community, with a harvesting committee that represents them, to plan what they want. With the help of their local MCM and Sustainable Coastal Development (SCD) officers they would need to write a proposal and motivation to the government (Department of Environmental Affairs and Tourism / MCM) requesting funds and support. Daniel then offered to assist by way of providing administrative support from his municipal offices – telephone, fax, photocopies and computer for writing the proposal.

One of the young women in the research group asked me if I could approach the MCM people for funding. Before I could answer, Noseti explained that I was finishing my research at the end of the year and could not help them further than that. I added that I would help them make contact with the necessary people before I left. 'Mother' then explained that Gugu had offered her help and that of the harvesting committee in Coffee Bay, if they could gather the community's support for the mussel rehabilitation project. One of the MCM officers added that if the community could be united and work together with them, nothing could stop them from doing

this. To ensure this, he stated that he would write a report about this meeting and the proposed project proposal to his department to stir interest.

Frustrated, one of the younger women in the research group shouted that they should all stop talking and should move to elect their mussel farming committee. Noseti asked her to calm down and explained that there would need to be a process. I suggested that they call another meeting to which the relevant representatives from MCM and SCD should be invited to hear their story and proposal. This will also allow the attendance of more of the local marine harvesters of Hamburg, as well as those from Ngqinisa. One of the MCM compliance officers agreed, stating that there was to be a big community meeting the following week at which their meeting could be announced. He added that Lusanda herself would be there to meet with those who registered for exemptions, as well as all the other 'sea people'. 'Mother' closed the meeting saying that they would ask all the 'big sea people' to come to their next meeting so that they could present their story to them. They would then give them the guidance they needed. I committed to sending the MCM and SCD representatives email invitations (see Appendix J1).

6.6.2 Ngqinisa initial report-back meeting

The Ngqinisa initial report-back meeting was held at the Shwele-shwele Primary School on the 24th of August, and was attended by approximately ten local marine harvesters and the school's grade seven class. The two younger research participants presented what they had seen and learnt from the harvesters of Coffee Bay, prompted by the photograph slide-show I had used in Hamburg. Mr Jinja then explained how he believed that the Ngqinisa community could start a similar mussel rehabilitation project. As with the Hamburg meeting, this raised several questions about sources of funding and support, as well as permits and access to the farmed mussels. Mr Jinja emphasised that what they had learnt from the people of Coffee Bay was that they would have to be organised as a community, with a harvesting committee that meets regularly and knows what it wants with regards to managing its marine resources, before they could submit a proposal to the government. As most of the proceedings took place in isiXhosa, they were recorded for translation later. However, this tape recording was stolen along with the tape recorder (see diary entry RD 24/8, in Appendix I2).

At this stage I pointed out that the Hamburg community was trying to organise themselves in a similar way for the same kind of project. I therefore suggested that it would make sense to meet

with their neighbours and submit a project proposal for the Keiskamma area, rather than two separate project proposals for the same project. This would not mean joining the Hamburg committee, but rather that the Ngqinisa committee members could attend meetings, inform and be involved in the development of one mussel rehabilitation project for their area. I then mentioned that they had been invited to a meeting to be held the following month in Hamburg, which is to be attended by representatives from MCM and SCD, as well as the local MCM and Nature Conservation officers and community monitors. The harvesters of Hamburg had very similar questions and concerns about the development of a mussel farming project and marine resource management in general, and it was hoped that at this meeting some of these could be answered by the officials. Mr Jinja agreed that this would be very beneficial, as the small community of Ngqinisa was often forgotten when such meetings are called.

6.6.3 Combined meeting

The combined meeting was held on the 12th of September 2006 in the Hamburg community hall. As discussed at the previous meeting, the research participants invited the local marine harvesters and stakeholders, and I invited representatives from Sustainable Coastal Development (SCD), MCM and the Coffee Bay Mussel Rehabilitation Project (MRP) (see email correspondence, Appendix J1). Those who attended included: Lusanda Mbola (MCM Environmental Officer, Subsistence Fisheries Management Unit); Andile Gqutyana and Sheldon Swelindawo (Sustainable Coastal Development – SCD); Kevin Hutton, (Local Management Committee, Bushman’s River); Gideon Gallant (community harvest monitor, Bushman’s River); Bonele Madolo (Walter Sisulu University, Coffee Bay Mussel Rehabilitation Project); Mr Katana (Coffee Bay Marine Committee chairman); Chris Ngxata and Vukile Hobaba (Hamburg community harvest monitors); Hamburg Local Management Committee members; three of the four Ngqinisa research participants that went to Coffee Bay; the five Hamburg research participants that went to Coffee Bay and local marine harvesters from both Hamburg and Ngqinisa. As most of the proceedings took place in isiXhosa the meeting minutes included only what could be documented from intermittent translations by my field assistants (see RBM 2, Appendix I3).

‘Mother’ opened the meeting by way of a brief description of the work she and a small group of marine harvesters from Hamburg and Ngqinisa had done with me since the beginning of the year around harvesting practices and livelihoods and how this had led to their visit to Coffee

Bay. She explained that they had learnt great things from the people there and they hoped to walk the same path as them in starting a mussel farming project and managing the harvesting of their resources as a community. She thanked all for coming to listen to their story and proposal and hoped that the 'big people' present could give them guidance.

Bonele and Mr Katana then explained how and why the Coffee Bay Mussel Rehabilitation Project had started, the establishment of their Local Management Committee and their plans for the future, based on the successes and failures of the past, following a slide-show of photographs (supplied by Prof Gugu) as prompts. 'Mother' then explained what she and the other research participants from Hamburg and Ngqinisa had seen and learnt from the harvesters of Coffee Bay, also following photographic prompts (photos I had taken during their exchange visit). 'Mother' concluded her story by saying that they would like to start a committee for the harvesters of the area.

Lusanda then pointed out that there was already a Hamburg Local Management Committee (LMC), but at this stage the members only represented line fishers, as these were the first exemptions that the government provided (25 line-fisher exemptions had been issued in Hamburg). She explained that two weeks ago, however, she had come to hand over the 27 brown mussel and 54 oyster exemptions that the Hamburg harvesters had registered for earlier in the year (unfortunately only 5 people had come to receive their mussel exemptions and 25 their oyster exemptions). She further explained those who would be involved in the proposed mussel project would also need to hold mussel permits/exemptions, but that they should realise that these exemptions were only for subsistence and not for commercial use. A number of the harvesters voiced their concern about this, explaining that they needed to sell the mussels to buy groceries and pay school fees. 'Mother' added that the exemptions that the Coffee Bay harvesters held for mussel allowed them to sell their catches. How could they be different? Lusanda agreed that she would need to find out how this was possible.

Mr Katana, the Coffee Bay Committee chairman, stated that it was important to remember that everybody who works in the sea, whether collecting mussel, oyster or line-fish, must work together in one committee. 'Mother' voiced her agreement and suggested that people representing the mussel and oyster harvesters should be nominated for the existing committee. She continued by questioning why the harvesters of Ngqinisa, Pozi, Kaizer's Beach etc. could not join the same committee, as they all use the same area of coast. Mr Jinja mentioned that the only thing he was sure of was that they must work together as one, as the government will not

listen to separate committees from the same place. A woman harvester from Hamburg then suggested that they elect the committee of mussel representatives from the group that went to Coffee Bay. Chris, a Hamburg community harvest monitor, agreed saying that two representatives from Hamburg and two from Ngqinisa should be elected to represent them for this project on the committee. After considerable deliberation 'Mother' and one of the three sisters from the Hamburg group were nominated, as well as Mr Jinja and the young man from the Ngqinisa harvesting project.

Bonele then emphasised that it was good that there were people representing each of the marine species harvested, but when it comes to talking about these species and making decisions about their use, these people must represent the needs and concerns of the harvester community as a whole. The young woman nominated to represent Hamburg's mussel harvesters (besides 'Mother') agreed and then asked Lusanda to read out the names of those people already on the Local Management Committee. This led to a considerable debate about how well these people would represent the needs of the community, which was concluded by Sheldon, from Sustainable Coastal Development (SCD), explaining what their duties, as committee member would be, emphasising that they were the communication bridge between the harvester community and MCM/SCD.

The meeting came to an abrupt end as the venue had been booked for another gathering. In closure Lusanda, Sheldon and Andile committed to calling another meeting to consolidate the revised Local Management Committee, focus attention to the establishment of a co-management committee for the area, and discuss the development of a proposal for a community mussel rehabilitation project for the Keiskamma area. Bonele offered the assistance of Walter Sisulu University (on behalf of Prof Gugu) and the Coffee Bay Committee, re-iterating that once the committees and proposal were in place, they would assist with the training and sourcing of funding (see email Gugu to Aaniyah, Appendix J2).

The following month, in collaboration with Sven Kaehler (Zoology and Entomology Department, Rhodes University) and Serge Raemaekers (Ichthyology and Fisheries Department, Rhodes University), a letter was sent to the key stakeholders from Marine and Coastal Management, Sustainable Coastal Development and the Coffee Bay Mussel Rehabilitation Project, to suggest a way forward for the proposed Keiskamma Mussel Rehabilitation Project (involving the communities of Hamburg and Ngqinisa) (see letter dated 16 October, Appendix J3). Unfortunately what became of the proposed process is unknown.

6.6.4 Synthesis of the report-back meetings

One of the main developments that emerged from the various report-back meetings was the creation of another metaphor by the research participants themselves, in order to explain their proposed course of action - gardening/farming the sea by 'ploughing' the small mussels back onto the rocks, in order to be more productive and able to sustain their 'picking'.

Another aspect that stood out was the overwhelming willingness to work together with those who had previously been seen to be the 'enemy', the officials from MCM, SCD and Nature Conservation, as well as the community monitors. This included a willingness to set aside tensions that existed between the neighbouring villages along the coast, so that they might develop a collaborative approach to not only the establishment a mussel rehabilitation project, but also the future management of the coastal marine resources of the area.

Another important development was the way in which the picture-based resources that had developed through the ongoing contextual profiling and the exchange visit were used by both the Coffee Bay Committee, and the two groups from Hamburg and Ngqinisa as a mechanism for supporting communication, co-learning and ongoing deliberations and decision-making.

In terms of social learning and research, providing the research participants with the opportunity to engage with and learn from the social experiences and practices of people from another context (Coffee Bay) allowed them to escape the bounds of their own contextual frames, reflect on their own experience and practice, and so learn new things. According to Wals (2007) learning arises from dissonance, moving from one's own frame of reference or comfort zone to another. Wals and Heymann (2004) explain that learning can be viewed as a change process, resulting from explication and critical analysis of one's own norms, values, interests and constructions of reality (deconstruction or deframing), exposure to alternative ones and then construction of new ones (reconstruction or reframing). In this research, this deframing process took place when the participants were asked to explore and narrate their context, their everyday experiences and harvesting practices, using photographs (taken by them and me) as prompts. The reframing process, according to Vandenabeele and Wildermeersch (1998)(cited in Wals & Heymann, 2004), is a social one, with collaborative learning involving multiple groups located in a multitude of actions, experiences, interactions and social situations of everyday life. Here the research participants were afforded the opportunity to engage with harvesters from Coffee Bay to share and discuss the problems, solutions and possibilities around marine resource use. The

spaces for dialogue and with it, the sharing of these new meanings, unexpected connections and possibilities for action and change between the research participants and the harvesters of Coffee Bay, were made possible by the use of photographs and pictures, which depicted images which were familiar and/or recognisable to both groups.

If one considers the above view of learning presented by Wals and Heymann (2004), a key aspect is the critical analysis or reflection on one's beliefs and experiences. Fenwick and Tennant (2004) argue that learning only happens when there is reflective thought and internal 'processing' by the learner, in a way that actively makes sense of an experience or problem and links it to previous learning and experiences. They further explain that the difficulty in individuals reflecting carefully and even critically on their experiences is that they are embedded so thoroughly in their cultures (*habitus*) that they may not be able to distance their thinking from their experiences. Situative theorists such as Greeno (1997), Lave and Wenger (1991), Rogoff (1990) and Wenger (1998) in the post-Vygotskian tradition (which recognises the socio-cultural situatedness of learning) argue that learning is rooted in the situation in which a person participates, not in the head of that person as intellectual concepts produced by reflection. Lave and Wenger (1991) argue that individuals learn as they participate by interacting with the community (with its history, assumptions and cultural values, rules and patterns of relationship) with the tools at hand (including the objects, technology, languages and images), and the moment's activity (its purposes, norms and practical challenges). It is argued that in presenting and discussing what they had seen, heard and learnt in Coffee Bay to the members of their respective communities, linking it with the specific issues, problems and possibilities of their context, the research participants of Hamburg and Ngqinisa refined, deepened and perhaps corrected their knowledge constructions.

In section 2.7 I reviewed the concept of 'andragogy' and the way in which adults learn by considering some of the fundamental pedagogical approaches to science education in formal child schooling problematised by Engeström (2005). Through this review and the research process that followed, I have come to realise that adult education centres around engagement of people in context (with themselves and others), rather than a focus on individualism and assumed general characteristics or abstract concepts. This engagement should focus on context and people's active experience of it, where learners are involved in depicting it (taking photographs, drawing pictures etc.), narrating it (story-telling) and sharing it (with themselves, with others of another context and with members of their own community).

6.7 Implications for materials development

As mentioned in the descriptions above, and in the previous chapters, picture-based resources were the main form of learning support materials used in this research project, as both a source of data and as tools for learning and dialogue. In chapter two I commented on the development and use of picture-based materials in environmental education, noting that picture-based materials provide simple, flexible resources with which to explore individual and collective understandings of the environmental issues within the context of the learner. While overcoming language barriers and poor literacy, picture-based materials have proven useful in the multi-contextual situations that emerged in this research, allowing for shared engagement and meaning-making. In addition, they enabled contextual, deliberative approaches to learning as they provided a recognisable referent for meaning-making of harvesting experiences and practices, as well as probing the underlying causes and mechanisms of harvesting issues and alternatives. In the review of previous work on picture-based materials development for community-based learning (see section 2.8.3) none were found to consider the possibilities of a stratified ontology. The materials developed by Du Toit and Sguazzin (1999) were based on a social-constructivist ontology, while the Enviro-Picture-Building materials (Share-net, Howick) were developed with a less than explicit ontological framework.

Thus, one of the challenges for me was to consider what the implications of a critical realist ontological framework was for learning, research and materials development. Following the insights reported above into the relationship between the ontological research and the social learning processes that took place, I was increasingly interested in how the conceptual abstraction processes (abduction and retroduction) and the stratified ontological framework was able to allow for learning across epistemological divides (which, as mentioned at the start of this chapter was the problematic that I started out with in this research). From this, the following question arose: How can materials guide people to explore and discover the sometimes hidden roots of the observable (i.e. the actual and the real), work through any uncertainties, contradictions, realisations and tensions that may arise, and so learn to plan for and use their agency for enabling future (more sustainable forms of) resource use?

It was through the exploration of context, both by me and the research participants, which involved ongoing contextual profiling throughout the research process that the relationships within and the basis for what is practiced and believed came to light. The exploration and reflexive process within the research journey took form in four interlinking phases, a movement

into, and beyond, the realm of the empirical: The first three phases moved from the exploration and narration of context (through story-telling and use of photos), to the creation and use of metaphor (a level of abstraction), and then to engagement with others in a different, but similar context (further abstraction). From the findings in this thesis, it would seem therefore that this abstraction process provided the necessary distancing, relational tools and conceptual capital with which the research participants (and I) could look back to their contexts and reality (the actual and the real), reflect on and across their experiences (the empirical), and allow them to recognise the fundamental issues within their harvesting context, and thus develop a broader social capital that allowed for extended possibilities for change. As reported in sections 6.4 and 6.5 above, this process of abstraction (through various ways of engaging in dialogue around different picture-based representations of experience, and various experiences), was only consolidated through the narration and deliberation of such realisations back into context, when the research participants described what they had seen and come to understand from their visit to Coffee Bay and the knowledge gained through the research and learning process reported on above (the fourth phases). Key to this process appears to be abstraction: Abstraction in the sense of distancing from the observable in their everyday context AND abstraction in the sense of being able to see beyond the empirical to the conditions and mechanisms of the real (the inner workings of their context and practice).

What then are the educational possibilities for the facilitated abstraction process described above? In considering this question in relation to the research and learning process reported on above, I suggest a number of activities that may allow for a similar process of emergent abstraction to take place, and with it, the opening of learning spaces within rural coastal marine contexts:

- Reviewing the use of photographs and story-telling as a means to provide participants with the opportunity to explore and investigate their situated understanding of their harvesting context. The picture-based materials (photographs of own context) provided a mechanism for enabling the stories of the empirical to be told, expanded and reviewed.
- In-depth, on-going contextual profiling, which is not isolated to the beginning of the process. This allows looking across open reality in context to make sense of the inter-related causal mechanisms beyond the observable. Again, use of pictures (photo-narratives) allows for an expanded understanding of context and experience.
- In gaining an understanding of these relationships, the creation and development of metaphors may be possible, which provide the language and imagery to engage with

ecological concepts. Illustrative pictures (not only photographs) were necessary at this stage to make the more abstract visible and available for interpretation.

- Information sharing with others of a different, but similar context. This allows participants to step out of the situated 'traps' in their context and explore the reality of another harvesting community. Again photo-narratives and contextual stories were combined to assist with story-sharing and dialogical exchange.
- Reviewing how the participants narrate and relate their learning and experience of this information-sharing process back into their context with their peers, and how these understandings are translated into the actions they proposed to take to manage their marine resources more sustainably. Again photo-narratives and experiential story-telling was used to enable dialogical encounters and knowledge exchange.

It is thus recommended that should environmental education materials be developed out of studies like this one, they should be designed in process, as the photo-narratives and illustrations were developed and used as part of an unfolding research and learning process following the main phases of the research and learning process as outlined below. More detail on the kind of materials that could be developed is as follows:

- **Phase 1 (Images and narrations from own context and experience):** The first material in the set designed to support the learners in narrating their stories of context and harvesting practice focussed on the use of pictures and photographs taken by the researcher. These can be used to create capital for building picture-stories of the context and harvesting practice of harvesters in harvesting communities. As shown in this research, they provide stimulus material from which to encourage harvesters to develop their own picture-stories based on their context. Here harvesters need to be provided with a camera and with the time necessary to capture aspects of their context that they feel is significant. Time should also be allocated to working with the harvesters to narrate their stories, and photographs could be annotated.
- **Phase 2 (Images and metaphor to make the abstract more visible):** As shown in this study, the second process of using pictures involves presenting examples of the ecological metaphors which provide the conceptual capital and language with which to engage with the ecological concepts that both inform the harvesting regulations and sustainable harvesting practice, as well as support the understanding of methods of

resource rehabilitation. Again, metaphors that are relevant to each particular context could be created. In this phase, more abstract images are needed to illustrate the metaphors. In this case study, I used hand-drawn illustrations, but scientific diagrams might also be used. It is the imagery and language that the metaphor provides that allows participants to assimilate new information, experiences and observations in such a way that they could then report it back to their peers.

- **Phase 3 (Images and experiences from outside of own context to share alternatives and new practices):** As shown in this study, a third process of using picture-based resources involves reviewing the context of another harvester community where they had already experienced the loss of marine resources due to over-utilization, as well as how they have attempted to rehabilitate and manage these resources. In this case study, pictures from both sites were used to facilitate communication and knowledge and experience-sharing across sites. In particular, pictures of possible actions for change (e.g. the mussel farming practices) appear to be useful since they allow community members to share knowledge of what can be done in own context as alternatives to current practices.

6.8 Reflexivity as a researcher

As described above, this research process became a learning one, not only for me, but for the participants. From their learning and realisations emerged possibilities for change. Reflecting on the proceedings of the three report-back meetings that concluded my study, I recall the tremendous optimism and excitement created in the exploration of these change possibilities. However, since leaving the research site, I have not been able to follow up and see whether the research and learning process had a sustained outcome, or whether the community was able to make use of the experiences to fully implement its plans for change. This remains a problem of community-based research, and of many educational interventions since change in communities is often a much longer term social process, involving complex interrelationships (as shown by the final community meeting documented as part of this research). As shown in the Coffee Bay case study, the ongoing presence of the Walter Sisulu researchers who were working alongside communities for an extended period of time seemed to be leading to positive change-oriented results. Such prolonged presence in the field is, however, not always possible for researchers, as was the situation in my case. From an ethical point of view, however, I feel that I *did* make

every effort to support the community to make use of the social structures that *are* in place to support them, and as such my exit from the research site was probably more ‘reality congruent’ than if I had continued to provide support to the community outside of the educational research role that I played during the research process.

It would, however, be interesting for further research or for longitudinal monitoring purposes to visit the site in future to ‘track’ whether the research and learning process that emerged in this study has had a longer term impact or not, as this would provide valuable data on the quality of the learning experiences generated through the study. I would, therefore recommend this as a potential area for future research.

6.9 Synthesis and recommendations

This study set out to explore the possibilities that a stratified ontology might have for environmental learning and materials development processes. As indicated in the discussions above, this involved processes of ongoing contextual profiling, engagement with increased abstraction and a variety of research and learning interactions using different picture-based materials at different phases of a learning process. At the heart of the study was the process of uncovering the empirical, the actual and the real in the context of a community of coastal marine harvesters whose lives and livelihoods are affected by poverty and a history of inequality, and more recently by issues such as HIV/AIDS. Their stories of existing practice changed as we engaged with picture-based narratives, gaining depth and focus in relation to sustainability issues. The learning processes associated with and emerging out of the research processes were enhanced through abductive use of metaphors and graphic illustrations, and through intra- and inter-community exchanges, again using picture based narratives. Easiest in the research process was the process of documenting empirical experiences (the stories of the women), but with deeper probing and ongoing contextual profiling, I was able to access aspects of the actual (or the events that were shaping and influencing their experiences). More complex was the process of understanding the real, or those causal mechanisms which influence the events and empirical experiences, since these were not always obvious or available in text or narrative. To access this dimension, I needed to make use of retroductive inferences to explore the ‘best possible truth’ or to examine possible causal mechanisms influencing events and experiences amongst the community involved in harvesting. One aspect that was critical here was the availability of ecological knowledge, which had not been actualised in the community context to

assist the harvesters with developing alternative actions and ways of harvesting, or thinking about their harvesting practices. There were, however, other aspects also at play. As shown in section 3.4.3, to assist with the retroductive inferences, I attempted to answer the following questions:

- What structures of traditional society, contemporary society, modernising society and post-apartheid society lie behind certain circumstances?
- Is there a system of social positions or power gradients at play here?
- What in the harvester's social interactions and conversations cause social order and stability to be maintained?
- What are the taken-for-granted assumptions, tacit expectations or common understandings forming the foundation of ordinary social interaction?
- What systems of social control or constraints (norms and rules) make this possible?
- Is this particular action grounded in socially or culturally acquired dispositions (*habitus*)?

Danermark *et al.* (2002) explain that such questions can facilitate the 'thought experiments' necessary for retroduction. What was important to bear in mind in trying to answer the above questions was the fact that these structures and mechanisms occur in an open reality, where they seldom or never appear in a pure form, but are always part of a complex interaction with other mechanisms under more or less specific circumstances. Therefore, they can seldom be identified and explained in isolation, but rather in relation to one another.

Danermark *et al.* (2002) emphasise that the researcher by no means discovers or detects new social events or activities, but rather re-constructs the preconditions for these well-known social situations to be possible. They further maintain that it is only through experience gained through in-depth empirical investigation that well-grounded retroduction is possible. In my experience from this study, this required careful contextual profiling and historical tracing of influences that are present in the study site or context. As indicated in section 3.4.3 of this study, I proposed that some of the aspects of the 'real' that were at play in influencing harvesters practices included factors such as power relations, changes in cultural practices, influences of modernisation, migration and socio-economic hardships, poverty, and changing gender relations.

As there are no fixed criteria from which it would be possible to assess in a definite way the validity of any retroductive explanation, argument or conclusion I make through delving into the

depths of the harvester's reality, they can be seen to be fallible. They are fallible in the sense that I cannot attempt to make claims about absolute truths, as what is deduced are *my* interpretations, which in themselves are contingent (uncertain and dynamic). In turn, it is important to realise that the explanations that the research participants have given about their harvesting experience, practice and knowledge are in themselves fallible and contingent. However, it is through the rigour of the research that these explanations, theirs and mine, provided indicators for what is useful to learn, to understand and to change (if and when necessary). In this study, I drew particularly on the availability of ecological knowledge in the learning process. If more time had allowed, the probing and mobilising of processes in response to power relations and dynamics may have become more important (as hinted at in the final community meetings where complex relations were beginning to emerge as significant to sustainable alternative practices). Danermark *et al.* (2002) propose that through these processes of induction (empirical interpretations), abduction and retroduction (which allow access to the actual and real), we are better able to *explain society*. Since this research project's interest is education, this research process was oriented towards being better able to design and plan for education programmes and materials that reflect ontological depth. As indicated by the discussions in this chapter, this study indicates that this might provide a means for strengthening situated/social learning processes in communities, and in so doing open up an educational space or process within which the educators and research participants can start exploring, thinking about, questioning and talking about harvesting practices and how they would like them to be, thus creating the context for deliberative, situated learning processes, and the emergence of alternative sustainability practices that are situated in, deliberated and owned by communities

6.9.1 Recommendations for further research

In finalising this study, it remains to propose possibilities for further research.

As indicated in chapter one, this study was exploratory in that it drew on a stratified ontology to explore the possibilities for community-based learning and materials development. From the study, I was able to track the central role of ongoing contextual profiling, and four phases which constituted a reflexive educational process in community contexts that were focussed on the practice of mussel harvesting. The study also identified three different ways in which use of picture-based materials supported this process. It is recommended that the four-phased research and learning process be explored in other community-based learning contexts, and that

the three-phased picture-based materials use process be explored alongside the research and learning process, since it was integral to this.

It is further recommended that ongoing contextual profiling (based on the critical realist ontological depth framework) be conducted as *part of* the educational process. Through continuous profiling work by the researcher and research participants alike, the concept of emergent abstraction should be investigated i.e. through the use of photographs as representations of context, further distancing through use of metaphor and illustration, *and* still further distancing from the confines of context through the engagement and interaction with other contexts, culminating with the reflection back on possibilities for own context and the process of feedback into context. The significance of abstraction (using a mix of picture-based materials, metaphors and experiential dialogue) in social learning processes therefore also presents as a possibility for further research.

6.10 Conclusion

An exploratory study of this nature that draws on a theoretical framework (such as the critical realist ontological framework) that is known to require empirical research is not an easy kind of study to conceptualise and to implement, since few other examples of empirical research working with this theoretical framework exist at present (Sayer, 2001). I was not able to identify any other empirical studies that have worked with a critical realist ontology and community-based learning and materials development at the start of this study although, as I was conducting this study, a few studies emerged that were beginning to work with critical realism as an underlabourer in the field of environmental education (Lupele, 2007; Price, 2007), but most of these were at PhD level (ibid). Only one other study that I know of has since been completed using critical realism as underlabouring social theory in environmental education (Pesanayi, 2008). As indicated by the completion dates of these studies, this research project therefore forms part of a newly emerging corpus of research in environmental education that is exploring the possibilities that critical realism, and a critical realist ontology in particular, holds for environmental education in southern Africa.

As shown by this study, I had originally intended to give more attention to the processes of developing materials using this framework, but this was superceded by an emphasis on the research and learning process that unfolded through ongoing contextual profiling and use of

picture-based materials, narratives and metaphor, and the abstraction process reported on above. However, as shown above, the study *did* provide useful insight into materials development, although it was not as originally anticipated (i.e. a recipe or methodology for developing materials using a stratified ontology). As discussed above, the materials development process emerged as being central to the unfolding understandings and situated learning process, illustrating that materials development in itself perhaps ought to be thought of as being integral to, and *part of* an unfolding social learning process rather than something planned before or after a learning process. In this sense, the materials development work was similar to that of Du Toit and Squazzin (1999), working within a social constructivist orientation, but in this case, the materials development process encompassed a different ontological frame which also changed the *way in which the materials were used* i.e. as part of a process of situated learning, which was also a research process.

In concluding this study, I can therefore reflect on this 'not so easy' research journey and say that I was able to explore an educational project that addressed the initial problem that I encountered, namely the 'two epistemologies' problem mentioned in Chapter 1 and again at the start of this chapter. The processes that I engaged, through focussing on the stratified ontology, appeared to be key to enabling me to engage this problem to an extent that communities were able to draw on scientific knowledge, in relation to their experience of harvesting, and to use this knowledge and experience to inform and educate others in their own environment. With more time, I would have liked to further explore the longer term impact, efficacy and implications of this process. I would also have liked to explore the apparent significance of increased abstraction processes in the context of situated learning in communities, but these both remain topics for future research, and are beyond the scope of this study.

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Appendices

APPENDIX A

HF1

HAMBURG – 1st Stories told: 7 February 2006

This was the introduction of the research to the focus group. 10 women harvesters were present. These were the initial stories told:

Speaker 1: HF1, R1

This woman told us that in order to harvest, a person needs to have a permit.

“No-one is allowed to harvest without it. When she is preparing to go harvesting she takes a bag and puts a set of clothes, that she uses when harvesting, because they don’t just collect on the banks, but they dive into the water. Usually this set of clothes is trousers and t-shirt. When she leaves home she will go and pass others, because lots of times they go as a group. They have to pass a forest before they reach the ocean. When they are there they change into the diving clothes and put their bags down, then start diving and harvest.”

She then handed over to the group to continue.

Speaker 2: HF1, R2

“When going to harvest Oysters we walk the same route as speaker 1 mentioned, we do everything she mentioned, like: carry bags, changing clothes and diving. We have to collect 25 Oysters each when we are there. We only collect the bigger ones and not young ones. When we are done with collection we get out the water and we dress back into our dry clothes. Because that 25 is not enough, I take it home and keep, then go again the following day for another 25. Then when there are 50 of them, I then start selling. I sell it by dozen and I charge it R10.00 per dozen. I sell them to the white people’s houses and with the money I get from that I buy food for the house and also cover school needs for my children. We also collect Iqongwe (Alukreukel), and sell a dozen of it at R10.00. Also make a stew at home with it. There’s nothing that we don’t collect we even collect Imbaza (Mussels), but we collect them according to certain number each.”

Bulelwa: Who made the rules? to Speaker 2.

“The Government did, and they are written on the permits, they are supposed to be collecting 25 Oysters, 5 Iqongwe and 30 Imbaza per person per day. In order for me to sell I go for 2 days, there after I will start selling.”

Sian: Where do you get the permits? to speaker 2.

“From Mrs May’s shop in Hamburg at the post office which is part of the shop. Sometimes the shop run out of permits, then people go to Peddie’s post office to buy permits.”

Speaker 3: HF1, R3

“In my family we grew up depending on selling shellfish in order to buy school books. Every time after school we would go and collect shellfish and after we finish we would sell it. Then we sold it for 10 cents a dozen. 10 cents then had a bigger value, people would be happy when they had 10 cents. We would then use the money to buy material (cloth) for the uniform and someone would sew it, and we will sell again and buy school shoes and books. We used to collect (white mussels) only then nothing else. There are people who still collect white mussels. Long ago our

families depended on the sea, mussels were feeding the whole family, we would prepare it with maize meal. Sometimes people, especially white people, will order prawns, then we will go to the ocean to harvest what's been ordered, we will harvest on our own."

Sian: Have you noticed any change with the seafood, maybe getting less or more?

"Shellfish is like people, instead of decreasing they are increasing, because we don't harvest small ones, but collect the bigger ones, as the permit states."

HF1, R4:

Another speaker added: "If you find big Iqongwe on the rock today, when you go tomorrow you will find another big Iqongwe at the same spot. They move and come with the waves, like at night you will find alot on the rocks."

Sian: If you had to compare today with when you were young, when you collected seafood for 10 cents, was there lots of seafood then or less? Have you noticed a change?

"Seafood has increased".

Speaker 4 HF1, R5

"Seafood has increased, the only change is that children can't go now to harvest, only us can go, then we teach our children about it when we are at home. The selling is helping us a lot even now in January we managed to buy books for our kids from the R10s we get from selling".

Sian: Why are children not allowed?

It's because of the new rule and because children collect everything, even the ones that are not supposed to be collected."

Sian: So does that mean that they are not being taught what to and what not to collect?

"They are not allowed to go to the ocean, when people harvest."

Sian: Did the Government make this rule or is it a community rule?

"It is a governmental rule. There are rangers who are on guard, they don't want to see children there."

Rachel: Do men and women go together or is it just women?

"The men also go harvest."

Rachel: But do they go together?

"When going to the ocean there is no woman or man, its only when we come out of the water, that someone notices the difference, but most of the time its women."
(laughter)

Sian: Do men cook it?

"There is few of them who cooks it, but bachelors do."

Sian: How many times a week do you eat it?

"I will say the whole week."

Sian: *The whole week?*

"When there a below tide."

Their story was shared about a family, 3 sisters that come from that family, we are all in the focus group.

Speaker 5: **HF1, R6**

We now have children who have different professions, some teachers, some policemen. Those are the children we used to put on our back when they were toddlers, and go harvesting with them. When we arrive at the beach we would put them on the sand, get into the water and harvest, when we finish we would put our babies back on our backs, and go door to door selling, selling white mussels, all this time our children would still be on our backs.

Sian: *Where / how did you learn to harvest?*

"We've learnt from our grandmothers and mothers, they will take us to the beach and now we are passing on that knowledge to our children, hoping they will teach the next generation.

Sian: *Has harvesting changed from when your grandmothers taught you to now?*

"Yes, there is a change. Long ago they would collect from outside rocks, not diving into the water. Now we dive into the water.

Sian: *Why?*

"Most of the times now, on the outside rocks you will find young ones, this is controlled be the water flow, big ones will come out but some will be taken back into the water. Also when they are outside the water, the first person to see them will get them, because they are easy to get.

Speaker 6: **HF1, R7**

Long time ago, in those years when we were still young, 5 of us went to harvest at Umtana River. When we arrive at the nearest bush we undressed. We went to the water, whilst walking next to the water we saw a huge fish. We tried to put the fish on top of our heads, but didn't manage. All 5 of us had to carry it at the same time, and that was long time ago. We took the fish home, but on the way we would stop and rest. We arrived at home. There it was chopped into pieces so that each one of us would get a piece. We really enjoyed it, we went there to harvest mussels and got something else, we were very happy. (Laughter)

Message ended.....

APPENDIX B

HF2

Hamburg, 2nd focus group meeting – reflecting on photos, 29/3

Translated and transcribed by Bulelwa

Person 1: Photo of old woman collecting alikreukel HF2, R1

“The sea is quiet. The rocks are easy to be seen. Picture of an old women walking amongst the rocks. She passed to big rocks. She crossed a deep place because she wants to get big amaqongwe (alikeukel). She knows very well that the amaqongwe are staying in a place where there is greengrass. They eat this green grass. She collects and put them on top of the big rocks. She finds big amaqongwe there. This place is very – very deep. It’s not easy to find the marine resources nearby now because they are becoming scarce. You can see her going deeper & deeper. In summer it is better because you find these nearer and they are plenty. We become so happy you can hear us speaking loudly “there is a Lotto!” Time before, these resources were easy to be found, especially perlemuni. I don’t know why now they are no longer collecting too much, maybe because of the security guards.”

Person 2: Photo of alikeukel on rock HF2, R2

“These are amaqongwe. They are already collected, they have been placed on top of the rocks. In these days we are told to collect only five of amaqongwe, our mothers before in olden days they cook amaqongwe and fried them for us when we were hungry. We eat them with bread. Our fathers were working at the sea view, our mothers were not chased by the security guards during those days. They were collecting for use not for selling. Before these resources were so helpful, because we sell them and bought uniforms for our kids. Now we are not able to do it because the numbers are limited. You collect only 5 amaqongwe. We are widows, we are not having husbands. We are suffering. Here at Hamburg we are beautiful, fresh, because of these resources. We wish to have a factory here whereby everybody can get work even the old women can do sweeping there. Iqongwe in winter feel very cold, she need a boyfriend, they do intercourse and they produce babies in summer. If you collect a young one you are caught. In olden days we were collecting 30 oysters.”

Person 3: Photo of woman collecting octopus HF2, R3

“Another picture of a woman collecting (Indlengwane) that is shell where crayfish stays. You are not allowed to collect small crayfished (its illegal). When they are big you collect two of them. If you have taken a small one you need to take it back to the water, but it will be eaten by the others. Sometimes during weekends I go with my children to the sea. I gave them these resources to carry for me, but I stopped that because of the security guards. They said they have not permits of doing that, you just go yourself and collect that 5 of amaqongwe today and add to the other one of tomorrow. You collect the 25 of oyster and add to the other one of the next day then you started selling. Sometimes you saw abalones unexpectedly, you become frightened because it is so strictly to collect them, you grab them and go home faster. I sell them secretly and I tried to hide even that small amount I get. These resources produce in summer, they all have babies in summer.”

Person 4: Photo of woman carrying iron bar HF2, R4

“Picture of a woman carrying a bag, and iron bar (ulugxa) for collecting. The sea is quiet , the rocks are out of water. Here this woman is going to find amangquba (abalone) 5, ingwane (octopus) 2, imiqwabulo (chiton) 6, iqongwe (alikeukel) 5, oysters 25, imbaza (mussel) 25. If you collect over the security will caught you. We saw them even today there was a helicopter.”

Person 5: Photo of woman holding octopus **HF2, R5**

“Picture of a woman carrying a crayfish. Crayfish is very important if you are not able to find children – take crayfish and isenene (red bait), you mix with other thing from the forest. Mix them, make a bottle and drink, you get a baby. Also, abalone and oysters are very helpful if a man is weak in sex, it will be very strong if he eat these two things.

Our grandmothers in olden days carry us on their backs, when they were collecting, they leave us nearby the sea sleeping on the sand. When they go back home they fetch water from the sea, they mix one cup clean water and one cup of sea water. They shake us and give us to drink to clean our stomachs. The sea is very helpful, you can see if the visitors came here and stayed for 2 weeks you will notice then they become fresh and beautiful. We must conserve these resources because they are important. If someone collects over limited she/ he must be taken to jail. These needs to be there in future time. These are very useful. Crayfish can help you if your boyfriend dislikes you, you must take crayfish, he will come back to you.”

Person 6: Photo of woman holding alikreulkel **HF2, R6**

“Picture of women collecting amaqongwe. They are big and many and she finds them in one place. Amaqongwe are very good, but before you cook them remove the bottom part of it because it carries too much sand, but if it is white in colour leave it because it is very nice. It is not good if it is green or black. You take these and cook them and pour vinegar (it is very nice). Amaqongwe are having man & woman. Iqongwe is good as a medicine for men (who are weak in sex). You cut it into pieces, pour into a bottle, mix with water and drink it. Oysters are good for women who are infertile. Just open it and put it in a saucer, don't cook it, eat it raw, is very good. Imbaza (mbatyisi) in June its open on top (i.e girl friend) on the bottom is a boy friend. In summer they produce babies, they become more. We can be very sad if we can move from Hamburg to the other place, because we are used in this atmosphere. These resources are very helpful, especially to those families of which there is no father.”

File: Sian 2

“We grow up our parents depending in the sea resources. People were not working they collect these resources and eat. They were not selling because they didn't know about selling of the resources. In these days we collect in order to sell, we collect to eat certain times.”

Person 7 – man **HF2, R7**

“Sometimes we are short of oil you just boil these and remove the shells and eat. After eating you get a stamina/strength. After that you drink water.”

Person 8 – woman **HF2, R8**

“We saw this from our grandfathers. They told us that you go and collect from the sea when the moon is full. They say the sea is quiet during this time.

This sea is very helpful to us. Sometimes you are short of mielie meal, you exchange that mielie meal by the sea resources to those who are having. Sometimes you are not having oil, you exchange. We continued doing this exchange until the whites came and they bought these from us. The money we get we buy groceries for our families. It is not easy now in these days because there is limit. We are chased by the security, but we didn't stop doing it we tried by all means all though it is dangerous. Some of us are not working, we need the money.”

APPENDIX C - Photo Series Posters



← Ngqinisa Poster 1

Hamburg Poster 1



Hamburg Poster 2 →



← Ngqinisa Poster 2

APPENDIX D1 – English questionnaire

INDIVIDUAL INTERVIEW

Village: _____

Date: _____

Socio-economic

1. Name: _____ M F Age: _____

2. Highest grd achieved: _____ at _____ School in: _____

3. Married Widowed Divorced Separated Single/ Never married

4. How many living in household: _____ No. of children: _____

5. Occupation: Unemployed _____

6. Spouse's occupation: Unemployed _____

7. Sources of income: Selling shellfish Sewing for Keiskamma Art Project As domestic worker Making crafts Children support Pension Spouse Other: _____

8. How much money do you get on average per month? _____

9. What sea resources do you sell: Oysters Mussel Alikreukel Limpets

Abalone Octopus Seaweed Other _____

10. Who do you sell it to? _____

11. How much money do you make each month from selling shellfish? _____

12. Do all your children go to school? Yes What school? _____

No WHY not? _____

13. What do they do? _____

Harvesting

14. When do you go to the sea to collect shellfish? _____

15. How often do you collect shellfish? 2 days a month 4 days 5 8 10 _____

16. What animals do you normally collect? _____

17. Where do you find these animals? _____

18. Why do you think they are found in those places? _____

19. Which animals do you collect to eat _____;

to sell _____;

for medicine _____

20. When did you start to collect shellfish? _____

21. How did you learn to collect? _____

22. Have you taught your children how to collect? **Yes** do they collect with you?

Yes How often? _____

No Why? _____

No Why not? _____

Legality

23. Do you have a permit to collect? **Yes** Is it Recreational or Commercial

No Why not? _____

24. Where do you get permits? _____

25. Do you think it is right for the government to say that people must have permits and collect a certain number and size? Yes No WHY? _____

26. How many of each animal are you allowed to collect?

Mussel 5 10 15 20 25 30 35 50

Alikreukel 5 10 15 20 25 30 35 50

Oysters 5 10 15 20 25 30 35 50

Limpets 5 10 15 20 25 30 35 50

27. Do you sometimes need to collect more? Yes No

WHY? _____

28. Why do you think they made this rule to only collect a certain number per day? _____

29. Why do you think they made this rule to only collect the big ones, leaving the small ones? _____

30. What does it mean to harvest sustainably? _____

31. Have the MCM officers ever come to explain the regulations to you? _____

32. Have you ever been caught by the officers? What happened? _____

Ecology

33. What do you think the mussels and oysters eat? _____

How do they reproduce? _____

34. What do you think the alikreukel and limpets eat? _____

How do they reproduce? _____

35. Have you noticed any changes in the shellfish since you first started collecting? Yes

No Why do you think this is so? _____

36. Do you think the shellfish will ever run out? _____

Cultural belief

37. Tell me about the River People / 'mamlambo': _____

38. Do you harvest in a special way to keep them happy? _____

Do you eat oysters? _____

General

39. Do you have a vegetable garden? Yes No

What do you grow? _____

Do you sell any of your produce? _____

Does your household own any livestock? Yes No _____

Where do they graze? _____

40. What do you think are the biggest problems facing your community? _____

41. What do you think the people of your community could do to solve these problems? _____

APPENDIX D2 – Xhosa questionnaire

UVAVANYO LOMNTU NGAMNYE

Ilali: _____

Umhla: _____

Socio-economic

1. Igama: _____ M F Iminyaka: _____

2. Ibanga oliphumeleleyo: _____ phi _____ Isikolo: _____

3. Utshatile Mhlolokazi Divorced Separated Akutshaigo/ Akuzangewatshata

4. Bangaphi abantu ohlala nabo endlwini: _____ Inani labantwana: _____

5. Umsebenzi wakho: Akaphangeli _____

6. Umsebenzi womnyeni: Akaphangeli _____

7. Imali eniyifumanayo: Ngokuthengisa ishelffish Umthungo for Keiskamma Art Project

Umphangeli wasekhitshini Unsebenzi wezandla Imali yabantwana Indodla Umyeni

Nezinye: _____

8. Ingaba yimalini oyifumanayo ngenyanga? _____

9. Zintoni izinto zaselwandle ozithengisayo kwesi zilandelayo: Oysters Imbaza

lqongwe Sebebe Ingquba Ingwane Imbambuzi Ezinye _____

10. Uzithengisela kubani? _____

11. Yimalini oyenzayo ngenyanga ngokuthengisa ishelffish? _____

12. Ingaba bonke abantwana bakho bayasihamba isikolo? Ewe Esiphi isikolo? _____

Hayi Ngoba kutheni? _____

13. Benzantani? _____

Ukuvuna

14. Uya nini elwandle ukuya kukha ishelffish? _____

15. Uziqokelela kongaph ishelffish? 2 intsuku zenyanga 4 kane 5 8 10 _____

16. Ngezphi izilwanyana oziqokelelayo? _____

17. Uzifumana phi ezizilwanyana? _____

18. Kutheni lento ucinga into yokuba zifumaneka kwezi nolawo? _____

19. Ngezphi izilwanyana ozikhayo _____ ;

ukuthengisa _____ ;

amayeza _____

20. Wawuqale nini ukuqokelela ezishelffish? _____

21. Wawufunde njani ukuqokelela ezishellfish? _____

22. Wawubafundisile abantwana bakho ukuloba? **Ewe** Baqokelela Kunye nawe?

Ewe Kangaphi? _____

Hayi Kutheni? _____

Hayi Kungokuba kutheni? _____

Ilungelo

23. Unayo imvume yokuloba? **Ewe** Ingaba Yenzelwa ulonwabo or Commercial

Hayi Kungokuba kutheni? _____

24. Niyifumene phi imivume? _____

25. Ucinga into yokuba lilungelo lika rulumente ukuba abantu babene mvume yokuloba inani eli qingqiweyo kunye nobungakanani bezilwanyana enizilobayo? Ewe Hayi Kutheni? _____

26. Zingaphi izilwanyana onelungelo lokuziqokelela kwezi zilandelayo?

Imbaza 5 10 15 20 25 30 35 50

Iqongwe 5 10 15 20 25 30 35 50

Oysters 5 10 15 20 25 30 35 50

Sebebe 5 10 15 20 25 30 35 50

27. Ngamanye amaxesha uye ufune ukuloba ngaphezu kunoku? Ewe Hayi

Ngoba? _____

28. Ucinga ukuba kutheni lento bebeka lomthetho wokuqokelela iigcudwana ngemini?

29. Ucinga ukuba kutheni lento bebeka lomthetho wokuqokelela izilwanyana ezinkulu zodwa niziyeke ezincinci? _____

30. Kuthetha ukuthini ukuvuna ngoqoqosho? _____

31. Ono ofisi be MCM bakha beza na, ukuzonicacisela ngalo mthetho? _____

32. Wakhe wabanjwa na ngabomthetho? Kwenzeka ntoni? _____

Intlalontle

33. Ucinga imbaza ne oysters zitya ntoni? _____

Zandiselana njawi? _____

34. Ucinga iqongwe ne sebebe zitya ntoni? _____

Zandiselana njani? _____

35. Wakhe wabona umahluko kwi ishellfish oko waqalayo ukuqokelela? Ewe Hayi

Kutheni lento ucinga ukuba injalo? _____

36. Ucinga ukuba ishellfish zikhe ziphele? _____

Inkolelo zakwaNtu

37. Khawundixelele okanye undinike umfanekiso ngqondweni ka 'mamlambo': _____

38. Unayo indlela eyodwa yokuvuna ukuzigana nazo zixolile / zigcobile? _____

Uyazitya ioysters? _____

General

39. Unayo intsimi / gadi yemifuno? Ewe Hayi

Ulime ntoni? _____

Uyazithengisa izinto ozifumene egadini? _____

Ingaba ekhaya zikhona iinkomo? Ewe Hayi _____

Zitya phi? _____

40. Ucinga ukuba ngeyiphi eyona ngxaki inkulu nijongene nayo ekuhlaleni? _____

41. Ucinga ukuba abantu bokuhlala bangenza ntoni ukusombulula ezingxaki? _____

APPENDIX E1 – Hamburg follow-up interviews

HI2

Date: _____

1. Name: R1 Age: _____ Status: _____

2. Husband? _____

3. Grd. Achieved _____ at _____ School in _____

4. Why did you leave school? _____

5. How many children did you have? _____

6. Did they all go to school? _____

7. Your daughter said that she had achieved grd. 11. Why need she not finish school? _____

8. You mentioned that during the 'time of the white mussels', you used to take your babies with you... What years was that? _____ Why don't you collect white mussels anymore? _____ Why? _____

9. Does your daughter live with you? _____

10. Your daughter said that there was 8 (4 children) in the household, are all 4 children hers? _____

11. You said that both you and your daughter have recreational permits. Did you know that MCM handed out free exemptions for mussel and oyster this year? _____ Why did you not get one? _____

12. You said that last time that the regulations that the gov. has set is not right because the numbers is too little (30 imbaza, 5 iqongwe, 25 oyster, 7 isibebe). What number do you think it should be? Imbaza _____, Iqongwe _____, oyster _____, isibebe _____?

13. You said that the MCM officers had come to explain the regulations to you. When did this happen? _____

14. Did you or your daughter get abalone permits? _____ Did you get what you expected out of them? _____

15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

16. Last time I asked you and your daughter what imbaza, oysters and iqongwe eat and how they reproduce, and you both said that you didn't know. Do you know now?

Imbaza and oyster: Eat _____ ; Reproduce by _____

Igongwe: Eat _____ ; Reproduce by _____

17. You said that you avoid the places where the 'River People' are. What will happen to you if you don't? _____

18. Mama, please could you tell me the history / story of Hamburg:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

HAMBURG

Date: _____

Follow-up interview

- 1. Name: R2 Age: 57 Status: Widowed
- 2. When did your husband pass away? _____ How did he die? _____

- 3. Where did he used to work? _____
- 4. Why did you never go to school? _____

- 5. How many children did you have? _____
- 6. Did they all go to school? _____
- 7. Did they all finish school? _____

- 8. Do all your children live with you? _____
No, where do they others stay? _____
- 9. You said last time that there was 12 living in your household (6 children). Are they your children and grandchildren? _____
- 10. You said that you had taught them all from a young age to collect and that they collect with you often. Do your children have permits? (*adults or not*) _____

- 10. You mentioned the 'time of the white mussels' once. What years was that? _____ Why don't you collect white mussels anymore? _____
Why? _____
- 11. You mentioned that you sell shellfish to the whites in town and Mrs. Samson. Who is Mrs. Samson and does she buy from you often? _____

- 12. You said that you have a recreational permit. Did you know that MCM handed out free exemptions for mussel and oyster this year? _____ Why did you not get one? _____

- 13. You said that the MCM officers had come to explain the regulations to you. When did this happen? _____

14. Did you or any of your children get abalone permits? _____ Did you get what you expected out of them? _____

15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

16. Last time I asked you what imbaza, oysters and iqongwe eat and how they reproduce, and you both said that you didn't know. Do you know now? _____
Imbaza and oyster: Eat _____ ; Reproduce by _____

Iqongwe: Eat _____ ; Reproduce by _____

17. You said that you avoid the places where the 'River People' are. What will happen to you if you don't? _____

18. Mama, please could you tell me the history / story of Hamburg:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

HAMBURG

Date: _____

Follow-up interview

- 1. Name: **R3** Age: 45 Status: Widowed
- 2. When did your husband pass away? _____ How did he die? _____

- 3. Where did he used to work? _____
- 4. Why did you leave school at grd. 5? _____

- 9. You said last time that there was 5 living in your household, 3 are your children, who is the other person? _____
- 10. You said that you had taught them all to collect, but only one is interested to collect with you often. Does she have a permit? _____
- 11. You mentioned the 'time of the white mussels' once. What years was that? _____ Why don't you collect white mussels anymore? _____
Why? _____
- 12. You said that you have a recreational permit. Did you know that MCM handed out free exemptions for mussel and oyster this year? _____ Why did you not get one? _____

- 13. You said that the MCM officers had come to explain the regulations to you. When did this happen? _____
- 14. Did you get an abalone permit? _____ Did you get what you expected out of them?

- 15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

- 16. Last time I asked you what imbaza, oysters and iqongwe eat and how they reproduce, and you both said that you didn't know. Do you know now? _____
Imbaza and oyster: Eat _____ ; Reproduce by _____

Igongwe: Eat _____ ; Reproduce by _____

17. Sisi, please could you tell me what you know about the history / story of Hamburg:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

APPENDIX E2 – Ngqinisa follow-up interviews

NI2

Date: _____

1. Name: **R1** Age: 37 Status: Separated
2. What happened to your husband/partner? _____
3. Why did you leave school in Grd. 11? _____
4. You said that there are 8 people living in your household, 5 of which are children. Are all 5 children yours? _____
5. Who are the other two people? _____
6. Do all 5 children go to school (you only mentioned Msobomvu last time? _____

7. You said that you earn money from: a child grant – only one? _____
and selling shellfish – what do you sell and who to? _____
8. On average how much do you get per month? _____
9. You said that you started to collect automatically when you were 15 years old. Who did you follow or learn from? _____
10. You said that you have taught your children to collect and that they collect twice a week with you. Are you not afraid that the inspectors will catch them without permits? _____

11. Last time you said that you didn't have a permit cause you didn't know where to get one. Do you know now? _____
12. Numbers – Imbaza _____, Iqongwe _____, Oysters _____, Isibebe _____
13. You said that the MCM officers had come to explain the regulations to you. When did they come? _____
14. In 2001 and 2003 MCM handed out abalone permits in Hamburg. Was there anyone from Ngqinisa who got a permit? Did you/they get what you expected out of them? _____

15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

16. What do imbaza, oysters and iqongwe eat and how they reproduce? Imbaza and oyster:
Eat _____ ; Reproduce by _____

Igongwe: Eat _____ ; Reproduce by _____

17. Do you think the resources have changed since you started collecting? _____

18. You said that you have a vegetable garden. Where do you get the seeds from? _____

19. You said you have cattle. How many do you have and how did you get them? _____

20. Sisi, please could you tell me the history / story of Ngqinisa:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

Knowledge about medicine?

NGQINISA

Date: _____

Follow-up interview

- 1. Name: **R2** Age: 46 Status: Single
- 2. Is the child that lives with you your child? _____ How old is he/she? _____

- 3. What happened to the father of the child? _____
- 4. Why did you leave school in Std. 7? _____
- 5. You said that you get money from selling grown maize and shellfish? What shellfish do you sell and to who? _____

- 6. Do you not receive a child grant? _____
- 7. How much money do you earn on average per month? _____
- 8. You said that you learnt from going with harvesters when you were 20. Who were these people? _____

- 9. You said that you'd taught your child to collect and that he/she goes with you twice a week to collect. Are you not afraid that he/she will get caught by the inspectors without a permit? _____

- 10. Last time you said that you didn't have a permit cause you didn't know where to get one. Do you know now? _____
- 11. Numbers – Imbaza _____, Iqongwe _____, Oysters _____, Isibebe _____
- 13. You said that the MCM officers had come to explain the regulations to you. When did they come? _____ To Ngqinisa? _____
- 14. In 2001 and 2003 MCM handed out abalone permits in Hamburg. Was there anyone from Ngqinisa who got a permit? Did you/they get what you expected out of them? _____

- 15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

- 16. What do imbaza, oysters and iqongwe eat and how they reproduce? Imbaza and oyster:
Eat _____ ; Reproduce by _____

Igongwe: Eat _____ ; Reproduce by _____

17. Do you think the resources have changed since you started collecting? _____

18. You said that the river people protect the sea animals. How do they do that? _____

18. You said that you have a vegetable garden. Where do you get the seeds from? _____

20. Sisi, please could you tell me the history / story of Ngqinisa:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

Knowledge about medicine?

NGQINISA

Date: _____

Follow-up interview

- 1. Name: **R3** Age: 34 Status: Single
- 2. You said that there was 4 living in your household, 1 is your daughter. Who are the other two?

- 3. What happened to the mother of your daughter? _____

- 4. Why did you leave school in Grd. 11? _____
- 5. You said that you get money from selling grown maize and shellfish? What shellfish do you sell and to who? _____

- 6. Do you not receive a child grant? _____
- 7. How much money do you earn on average per month? _____
- 8. You said that you learnt from going with older people. Who were these people? _____

- 9. You said that you'd taught your child to collect and that she goes with you 3 times a week to collect. Are you not afraid that she will get caught by the inspectors without a permit? _____

- 10. Last time you said that you didn't have a permit. You can also get one (besides at Kidds Beach) in Peddie and in Hamburg at Mrs. May's shop.
- 11. Numbers – Imbaza _____, Iqongwe _____, Oysters _____, Isibebe _____
- 13. You said that the MCM officers had come to explain the regulations to you. When did they come? _____ To Ngqinisa? _____
- 14. In 2001 and 2003 MCM handed out abalone permits in Hamburg. Was there anyone from Ngqinisa who got a permit? Did you/they get what you expected out of them? _____

- 15. Do you think they should hand out abalone permits again? _____
What do you think they should do next time to make it work better? _____

16. What do imbaza, oysters and iqongwe eat and how they reproduce? Imbaza and oyster:
Eat _____ ; Reproduce by _____

Igongwe: Eat _____ ; Reproduce by _____

17. You said that the imbaza and amaqongwe shells don't look the same as when you started collecting. What do you mean? _____

18. You said that the river people protect the sea animals. How do they do that? _____

18. You said that you have a vegetable garden. Where do you get the seeds from? _____

20. Buti, please could you tell me the history / story of Ngqinisa:

1/ How did it start – who were the first people here? Why did they come? _____

2/ Which people came after and why? _____

3/ How have things come to be like they are today? _____

Knowledge about medicine?

APPENDIX F – Research diary entry example

28 March – Set up Focus group in Ngqinisa (see journal) RD 28/3

Walked down to the beach with Mr. Jinja. As we walked through the village, we invited people to join a meeting at the school to introduce my research study on Thursday. We passed two pairs of young marine harvesters coming up from the beach: The 1st were 2 young men carrying a gaff and a bag of contents who didn't answer our greeting. The 2nd were a young man and woman who showed us the contents of their bag (about 40 alikruemel and limpets, about half were undersized). They laughed nervously when Mr. Jinja said that they should leave some for others. We walked on the beach – he showed me the rocks where most of the harvesting takes place.

29 March – Hamburg Beach and meeting at backpackers RD 29/3

Was on the beach early 08:40, to catch spring equinox and the associated harvesting activities. The water was the lowest I've ever seen it. There was only one white fisherman. By 09:00 a black fisherman walked onto the beach. As I rounded the 2nd bend on beach, I saw 6 women in the distance, harvesting. Among them was [redacted] and [redacted] (old thin lady from 1st photos). As I approached, I saw that they were tense. [redacted] and her sister (?) were hacking mussels off the furthest rocks. Her sister came to me with a bag of mussels, asking if I wanted more, or oysters, or cockles, and where I lived so that she could sell them to me later. When I explained that I just wanted to look and take a photo, she got nervous and said that she'd come back... She hurried with her bag up the dune (I suspect to hide it) then returned for [redacted]. When they returned, they went to different rocks (and as I saw later) collected alikruemel, limpets, oyster and octopus. [redacted] occasionally put items down her top and not into her bag (I speculate that these were abalone – not to be seen). With time, their tension eased and they asked for their photo to be taken. [redacted] even showed me the contents of her bag (the 2nd for the day). (It seems they all collect 2 bags a day... the first they either hide in the forest or among the rocks and clothing. The bags tended to be dark black/dark in colour – hard to see.) [redacted] used a screwdriver, her sister a crowbar, while 2 other ladies used sharpened 4-5cm wide strips/bars of metal, which they used to wedge rocks up, scrap seaweed aside, dislodge limpets etc. and balance on in the waves.

Although their collection of mussels was rough – chopping off clumps (rather than selecting individuals) they did leave mussels behind/still attached. Is this done consciously? If so, why?

One lady had a surprising amount of large chitons. It was obvious that [redacted] and the sisters had more skill with diving than the others. At one stage she was ducking under the waves.

Later Dr Carol Hofmeyer mentioned that the abalone divers and buyers from Johannesburg had taught these tall, fat 'amazon women' to venture into the deep for abalone. Carol said that she had a lot of the pearly abalone shells at her house and that she would take me to the location of the strandloper midden (I must tell Serge about this). She then explained her plan to develop museums along the coast – one on marine harvesting, others on history, culture etc. and the tourism potential of an interpretive trail through the coastal forest and community here in Hamburg, with community guides telling the stories.

When I was walking back along the beach I met 2 MCM officers and the Nature Conservation officer (woman) on their way up the dunes into the forest. I greeted them and asked what they were about. They said that they were busy checking the people harvesting cause of the low tide. When I mentioned that the low tide was gone and the harvesters with it, they got defensive and tried to leave saying that they had a long stretch

of beach to cover with no vehicle. I asked if I could come interview them later - he immediately gave me Alwin's cell no. saying that Alwin was their supervisor and would answer my questions, but not this week (he's away). Later I chatted with Gaby (the backpackers manager) and she had nothing positive to say about the MCM officers. "They only drive up and down with girlfriends. They often just drive up to the top dunes and look down on the rocks. What can they see the people doing from up there?!" She claims that they enforce laws but don't explain them and are will not work with people – they'd rather 'catch them' poaching....

While I was busy with my focus group at the backpackers (reflecting on the 1st set of photos I had taken), 2 ladies came selling oyster. I declined. Gaby explained that many of these ladies go straight to the liquor store after selling to the backpacker visitors. So much for food security....

30 March – Introductory meeting (see journal) RD 30/3

Before leaving to Ngqinisa (about 08:30) I tried to find the MCM officers at their new offices in Hamburg. There were not signs on the building or fence, and no one around.

About 16 marine harvesters arrived at the Shwele-shwele primary school at 14:00, mostly young men (10) and young women (6). I explained that I was a student wanting to work with a group of harvesters who were willing to tell their story. The main questions were around whether I would tell the police what they were doing... As with the Hamburg group, I assured them that their stories were for my research, not for the police and that none of their names would be mentioned. One woman asked what they would get out of helping me. I explained that all I could offer was sandwiches and drinks at the meetings and a braai at the end of the year. Mr. Jinja said that I should avoid working with that particular woman, because she will cause trouble...

APRIL

05 April – Ngqinisa RD 5/4

On arrival, the community was gathered at a house close to . Apparently some young man that had come to visit from East London over the weekend, had had a big party and was found the next morning covered in blood. They thought that he had stabbed a young girl and they couldn't find the body. The police car left with him shortly after I arrived. The focus group meeting at the school was very distracted and was brought to an abrupt end when they went to join other community members running into the nearby mielie fields...

Mr. Jinja explained that a lot of the youngsters were out of school and out of work and get themselves into a lot of trouble.

As the focus group meeting was a failure, he took me to meet the Nature Conservation inspectors at the nature reserve below Kiwane. It wasn't very useful, as it had not been planned and it was just an introduction. There was a concern voiced in the group that the inspectors will question them if they see them using cameras. I explained that they should just tell the inspectors that they were working with a researcher from Rhodes University and mention my name. If they continued to ask question that they should get my number from Mr. Jinja. On our way to Kiwane, Mr. Jinja pointed out 2 large sacks on the side of the road. He explained that they were filled with seaweed and are picked up every week by a white man in a truck and that it is sent overseas. The ladies who collect it get "peanuts" for it and tend to be old and sick, having to often spend long periods of time in the cold water. Again the buyers are never named – they are secret and from outside the community.

world - what must go together, and what could happen (possibilities) - given the nature of the objects.

ACTUAL - what happens if + when these powers are activated, what they do → Events
eg. labour power + labour
↓
capacity to work due to physical + mental structures
ACTUAL

REAL

EMPIRICAL - Experience (whether necessary or impossible whether we know the real or actual... Independent of the real + actual
→ we know something exist without know why... having to observe the structures + events behind it..

NB Recognise the possibility that powers may exist unexercised/activated → so what has happened (know to happen) does not exhaust what could happen / have happened
The nature of real objects (structure +

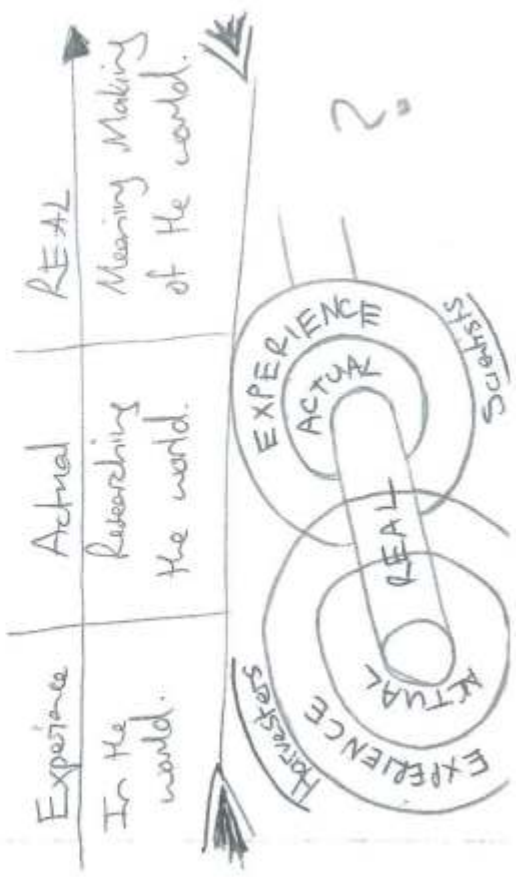
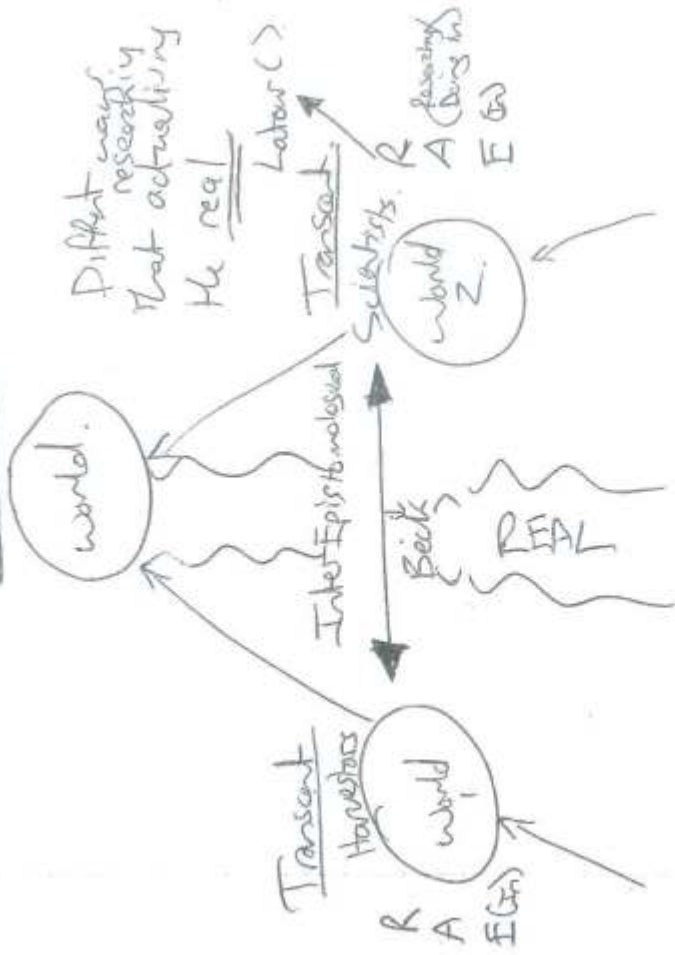
power) at a given time constraints / enables what can happen, but does not predetermine what will happen.
Realist ontologies i.e. allows us to understand the other possibilities or options that could be....

19.13 Causation analysis - most distinctive feature of realism.
whether or not powers are exercised depends on other conditions. Social processes depend on actors interpretation of one another, as much can be unacknowledged or uninvolved
Repeatability not necessary to prove causation
- what causes something to happen has nothing to do with the number of times it happens.

NB IDing causal mechanisms + how they work, discovering if they have been activated or not + under what conditions.
To explain why a certain mechanism exists - need to discover the nature of the structure

Rob's quick thoughts

Intransigent



or object which possesses that mechanism or power.

Regularity (positivist view of causation occur in closed systems where the object possessing causal power is stable intrinsic conditions) + that external conditions in which it is situated are constant Centric conditions. - Unlikely...
 • Open systems - the same causal power can have different outcomes depending on conditions. Sometimes different causal powers can have the same result. - Regularities tend to be short term + the product of deliberate efforts to produce them.

Because events are not pre-determined before they happen (but depend on contingent conditions) the future is OPEN - different possibilities
 NB for agency + choice

Trigids
Comments:

23/9/05

QUESTIONS

- 3 Picture-based packs: Clarify (End of Phase 2: few of packs?)
 Missels: Ecology, Capital, Exports
 Alu.: E, C, E
 Oyster: E, C, E
- OR: Domain 1: REAL, Ecologies
 Domain 2: ACTUAL, Context
 Domain 3: IMPLICIT, The Experience
 3 sp - 3 narratives
 3 sp - 3 narratives

• Too long - cut out repetitions:
 Methodology + methods sections.

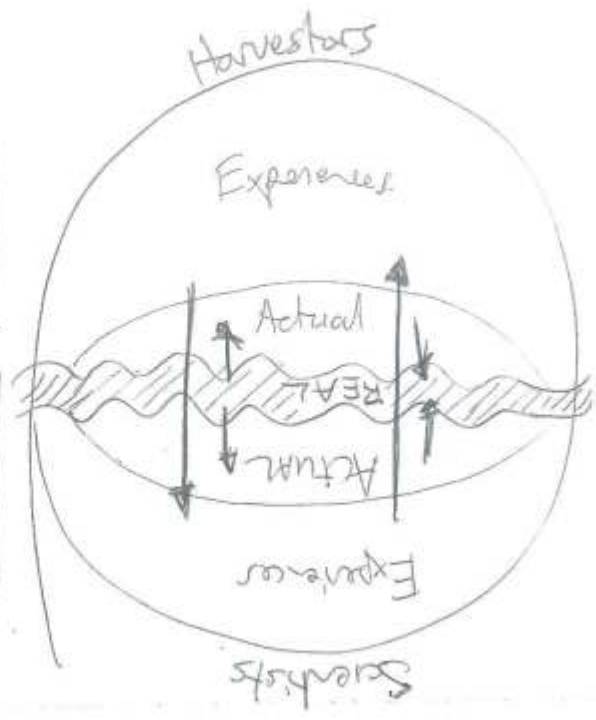
• Methods: Are they data generation methods or educational methods?
 If they are data generation methods, where does doc. analysis fit in?

• Role-plays vs drama → Spontaneous vs predetermined.
 imposed → naturally greater narratives.

- Under Validity + Quality.
 12 narratives... where does that come from?
 Give referent to ones in text that stipulates that...
 /explains

Saul's interpretation.

23/9



Concepting / Scaffolding - thru use of plotter - depict patterns of use/harvesting.
 → Story as framework (history - how things are + how they come to be as they are)

Contingent view of the world -

- ① Epistemologically lead - info-awareness.
- Starting with transmissive bombardment of info.
- ✓ ② Ontologically lead - situate looking at the experiential - stages of practice etc.

1st. Starting with the E.; then Actual, head. Ontology - tending to epistemology

Chapter 1/2 of Pandoras
Latour, B.

Start with the experiential - what are they bringing into - poverty, need for food + money. Now remains Activities - who do the harvest. Structures - whom Agencies - who Harvesting + hope - to use

Scientist = Harvesting +

'Ontological Sandwich'

5/19/65

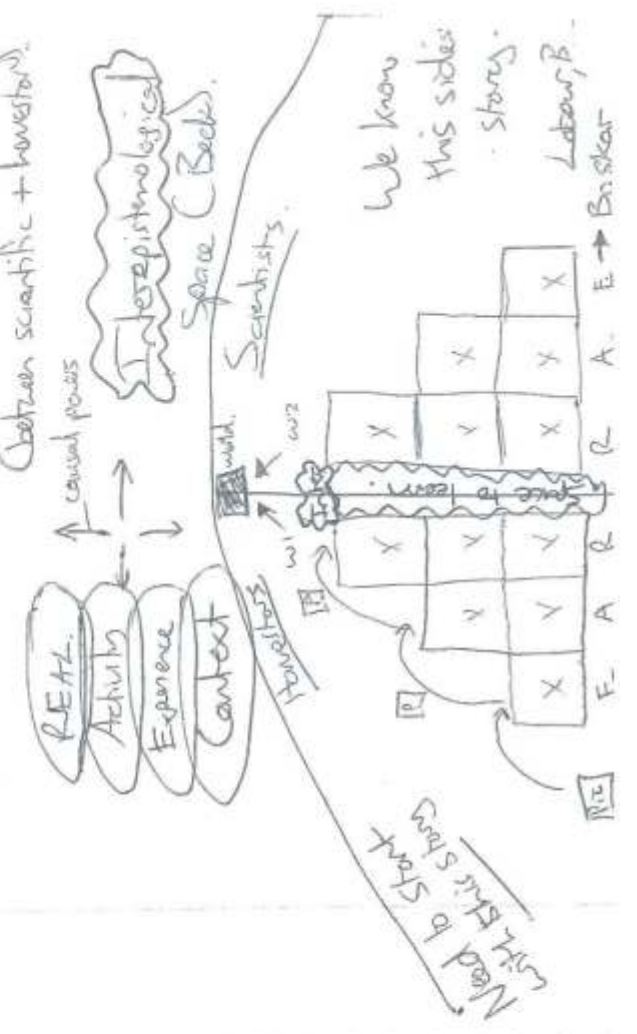
REAL
Structure + Agency
ACTIVITY
EXPERIENCE



Methodological play-out
Need to start with EXPERIENCE
Educational play-out.



Analytical Dualism ... looking at dualities.



APPENDIX H - Modes of inference

Table 1 Four modes of inference

	<i>Deduction</i>	<i>Induction^a</i>	<i>Abduction</i>	<i>Retroduction</i>
Fundamental structure/thought operations	To derive logically valid conclusions from given premises. To derive knowledge of individual phenomena from universal laws.	From a number of observations to draw universally valid conclusions about a whole population. To see similarities in a number of observations and draw the conclusion that these similarities also apply to non-studied cases. From observed co-variants to draw conclusions about law-like relations.	To interpret and recontextualize individual phenomena within a conceptual framework or a set of ideas. To be able to understand something in a new way by observing and interpreting this something in a new conceptual framework.	From a description and analysis of concrete phenomena to reconstruct the basic conditions for these phenomena to be what they are. By way of thought operations and counterfactual thinking to argue towards transfactual conditions.
Formal logic	Yes	Yes	Yes and no	No
Strict logical inference	Yes	No	No	No
The central issue	What are the logical conclusions of the premises?	What is the element common for a number of observed entities and is it true also of a larger population?	What meaning is given to something interpreted within a particular conceptual framework?	What qualities must exist for something to be possible?
Strength	Provides rules and guidance for logical derivations and investigations of the logical validity in all argument.	Provides guidance in connection with empirical generalizations, and possibilities to calculate, in part, the precision of such generalizations.	Provides guidance for the interpretative processes by which we ascribe meaning to events in relation to a larger context.	Provides knowledge of transfactual conditions, structures and mechanisms that cannot be directly observed in the domain of the empirical.

Table 1 Continued

Limitations	Deduction does not say anything new about reality beyond what is already in the premises. It is strictly analytical.	Inductive inference can never be either analytically or empirically certain = the internal limitations of induction. Induction is restricted to conclusions at the empirical level = the external limitations of induction.	There are no fixed criteria from which it is possible to assess in a definite way the validity of an abductive conclusion.	There are no fixed criteria from which it would be possible to assess in a definite way the validity of a retroductive conclusion.
Important quality on the part of the researcher	Logical reasoning ability	Ability to master statistical analysis	Creativity and imagination	Ability to abstract
Examples	If A then B A Thus: B	From an investigation of the attitude of a representative sample of Swedes, draw the conclusion that 30% of the Swedish population is in favour of the EU.	Karl Marx reinterpretation/redescription of the history of humankind from the historical materialist view.	For a ritual to be just a ritual there must exist, <i>inter alia</i> , emotionally loaded symbols and common notions of inviolable/sacred values.

Note:
^a The concept of induction has been used in partly different ways by different philosophers/theorists, and within different disciplines. Here we are talking about induction in the sense of inductive logic. In social science the concept of inductive is also used to describe a certain form of research procedure. We shall return to this research procedure in the next chapter. It is important not to confuse inductive logic with inductive research, since these concepts in part imply totally different things.

Source: Danermark, B., Ekstrom, M., Jakobsen, L. & Karlsson, J. (2002). *Explaining society: critical realism in the social sciences*. London: Routledge. Pp 80.

APPENDIX I1

RBM 1

First report-back meeting of the Coffee Bay Mussel Rehabilitation Project in Hamburg

Compiled by Siân Davies & Serge Raemaekers

On the 22nd of August 2006, a small group of women from Hamburg called a community meeting in the town hall to share and discuss their experiences of a recent visit to Coffee Bay and its Mussel Rehabilitation Project (MRP).

In Attendance

- 'Mother' [] [] [] [] [] and Nozeti (women that went to Transkei).
- Siân Davies (Environmental Education & Sustainability Unit, Rhodes University).
- Serge Raemaekers (Ichthyology & Fisheries Science, Rhodes University).
- Chris Ngxata (Hamburg monitor)
- Vukile Hobana (Hamburg monitor)
- Mr. Mpani (MCM Compliance officer – Hamburg)
- Mr. Mangwane (MCM Compliance officer – Hamburg)
- 2 East Cape Nature Conservation officers
- Daniel Socyeni (Local ward councillor)
- Local subsistence harvesters

Background

In Hamburg, Sustainable Coastal Development (SCD) extension officers (Shawn Kariem and Andile Gqutyana), in collaboration with the Marine and Coastal Management (MCM)/Subsistence Fisheries Management Unit (SFMU) environmental officer (Lusanda Mbola), have established a Local Management Committee (LMC), which at this stage, only includes line-fishermen. To date, they have issued some 25 line-fish exemptions. On the 29th of this month, it is envisaged that Lusanda Mbola will handover the 27 brown mussel and 54 oyster exemptions that had been registered earlier in the year. One of the monitors told us that the brown mussel exemptions would allow the permit holders to harvest other intertidal resources, such as alikruekel, limpet and octopus, as long as they respect the bag limits. Two monitors have been appointed to monitor the area between Keiskamma and Bira. They work from Mondays to Thursdays and are still waiting for transport arrangements to take them as far as Bira. Two other monitors have been appointed from Bodium to monitor the Keiskamma estuary. They all started around March.

Lusanda has also organised a project in collaboration with Dave Kretzer, a commercial oyster farmer operating from the Keiskamma estuary, for 10 to 16 known oyster harvesters to sell their wild caught oysters to the farm at market related prices. This has started in June 2006. (Apparently, there is still some harvesting of abalone among other resources, with a buyer coming every week. In Ngqinisa, many of the young men are still targeting only abalone).

Meeting Proceedings

Siân, Nozeti and 'Mother' (the eldest and nominated leader of the group that went to the Transkei) explained what they had seen from and been taught by the MRP in Coffee Bay, following photograph prompts on the data projector of pictures of the mussel rehabilitation

techniques used in both Coffee Bay and Kwazulu Natal (supplied by Gugu Calvo-Ugarteburu, Coffee Bay Mussel Rehabilitation Project (MRP) leader). They then continued their explanation about their exchange meeting with the Coffee Bay committee members on the 11th of August (5 women from Hamburg, with 2 men and 2 women from Ngqinisa attended). After the explanations, 'Mother' stated that they believed that this project should be duplicated in Hamburg. This raised considerable questions concerning the development of a similar project. *Most of the proceedings took place in isiXhosa; therefore the following only reflects what was gleaned from intermittent translations by Nozeti.*

Q: Question

A: Answer

C: Comment

Q: How can we have the same kind of project in Hamburg?

A: People in Coffee Bay, separate the small mussels they harvest, "plough" them back onto the rocks using the pipes and monitor their resource. They are generating a small income and have permits, which they didn't have to pay for. In Hamburg, people can't afford to buy the R65.00 recreational permit. In Coffee Bay, the subsistence fishermen are allowed to sell some mussels to tourists and get R40 to R50 a "dish". It is mentioned on their permit they are allowed to sell. (Check this with Gugu and on permit conditions).

C: The monitors there are working closely with the committee. So should the monitors here in Hamburg. They should assist the committee to develop the same kind of project as in Coffee Bay.

'Mother' explained that the Coffee Bay people, even Gugu, told them that when the marine officers come to them while they are harvesting, they must not run away. They are the ones that will help them, even teach them what to do with these things – they must work together with them.

She then pleaded with the monitors to please help them so they can get going. She then thanked the ward councillor, the monitors and the marine staff (MCM compliance officers and the Nature Conservation officer) for coming. She asked them to please be with them and help them achieve their aim of getting this project. Seeing them in this meeting gives them hope that they will work together. She went on to say that the whole community must know about this. There must be no fighting, everybody must be transparent, and everybody must know that they are tied to each other.

Q: The ward councillor asked if anybody could assist them in taking this further. He also asked about the financial implications of such a project. "We need someone to assist us and go the extra mile, and who can organise the funding?"

A: We suggested they should sit down as a committee and flesh out arrangements of who should harvest the mussels. Then MCM (Lusanda) should be asked to assist.

Daniel (the ward councillor) asked 'Mother' how long it takes for a mussel to grow to the right harvesting size. Serge explained that it takes longer in winter than summer, between 5-8 months. Siân mentioned that in Coffee Bay it took 8 months, which means that it will probably take up to 12 months in Hamburg, because the water is slightly colder.

Q: Once the mussels have been planted, can anybody/everybody just go and take them?

Serge explained that they must work in regular intervals. If you start with little mussels in month 1, and in month 2 you start with little mussels at another location and so on, then in 5-8 months time you can go harvest from the 1st rocks and then the next month the 2nd rock and

so on. It depends on the number of harvesters on the rocks, but lets say that once every month you go to the rocks and you put the little mussels you harvested underneath the pipes. You can't just do it on the whole area from the start and then expect to harvest them at a later stage – you need to experiment abit with one rock first, see how it works. If it works, then you can expand to the next rock and then the next etc.

Daniel explained that when he was born he was expected to produce 2-3 babies later, so if you plant 1, will you get 1 or more? Serge then explained that baby mussels swim in the water for 2-3 weeks, but when they settle they like to be with other mussels. So yes, the mussels you plant will attract more.

Q: How can we speed up the process of getting similar permits to the ones in Coffee Bay?

Q: In our community there are people who like to go and harvest, but they don't have the R60 for the permit. How can we get those free permits?

Siân explained that is a question that only MCM can answer. One needs to apply to them for permits, your name is registered and then them decide whether you qualify or not...

Q: A lot of people didn't understand exactly how the mussels reproduce and how the mussels under the drainage pipes would grow and multiply.

'Mother' explained that the mussels do not mate together to make babies, the Coffee Bay people told them, like Siân did, that the males pass up their sperms in to the water and then the female passes their eggs up too, then they meet. When they meet together they want to be attached to the other mussels. All the sperm, eggs and babies are in the water. (Serge pointed out that I should have brought my posters). 'Mother' continued by saying that you cannot see these things in the water with the naked eye, because they are very, very small. She emphasised that the mussels won't finish if there is always males and females...

One of the harvesters said that as far as he can understand this project, they need funding, because they have nothing now. If the councillor can help us?.. If they can find a way to do these things, where are they going to find the funding for the drills and pipes etc. Where are they going to get these things?

A: Siân explained that they would have to get organised as a community with a committee that represents them and plan what it is they want. They will then have to write a proposal and submit it to the government, DEAT/MCM. The government has money for such things, but you need to ask for it and explain why.

Daniel then asked: when they grow the mussels, will they only be allowed to collect mussels, or will you still collect things, like cockles and octopus?

'Mother' explained that yes, they will take other things, not only mussels, as long as we keep to our bag limits and harvest sustainable levels. But by doing the mussel project we are trying not to finish them, so they will always be there. Serge then commented that of all the things that they harvest for food, they enjoy mussels the most.

Will it only be the group that plants the mussels that will be allowed to collect them, or can anyone go and harvest? And which areas are they going to use? Are they only going to plant in Hamburg or are we allowed to plant along the coast up to the Fish River.

Nothandile answered that everybody is allowed to harvest as it is a community project and it should go hand in hand with a good permit system. The monitors, compliance officers and those that are planting them are going to make sure the harvesters only take the big ones, leaving the little ones to grow. 'Mother' added that people can still collect there (deep water). You have to watch the people collecting, cause we have to "ukuchiza"(?).

Q: Daniel asked: If the rocks are empty, where are they going to get the first baby mussels.

A: We are going to take the mussels from where they are... They will take the big ones and plant the little ones. He thought that they were finished. 'Mother' explained that there were still mussels in Hamburg, but they are almost finished in Coffee Bay. This is why they want to do this, because they don't want the same to happen in Hamburg.

The ones that are finished in Coffee Bay are the ones that they planted, but they are now picking them from the deep water to put back on the rocks, so they can grow again.

Q: There is going to be a problem in this: The people that are planting the mussels, they are the ones that are going to have the permits to take mussels, how are they going to control it when people with permits to collect mussel come and collect the planted ones saying that they are taking God's nature?

'Mother' answered the councillor: we the people that plough the mussels are going to work together hand in hand with the marine staff (monitors and compliance officers), so that we look after the sea. Nobody is going to take the little ones. Everybody is allowed to take the big ones; no one will be damage the farm. Another woman asked: What happens if some people don't want to plough the small ones. 'Mother' answered: we are going to show them; we are going to tell them.

□ (One of the other women in the research group) added that they were going to call the police.

One of the compliance officers explained that they are searching the coast from Kiwane to the Fish River – are the people who have ploughed the mussels going to sit and watch their mussels until the tides come again? He was born in that area – he knows that people will steal at night. There are going to be poachers here in Hamburg, people stealing at night, what are we going to do if people steal?

□ (Another woman in the research group) answered saying that there was no need for this question, because they grown up in Hamburg, mussels have never been finished, that is why they are trying to breed them, so there is nobody who will want to damage our farm. The whole idea needs support from the entire community.

An old woman started shouting something about her growing up in that area harvesting the resources; that the water and its contents are from God and that people can never make them run out, so we shouldn't be talking about damaging the sea. Nozeti explained that the old lady had left the topic.

The monitor then explained that if we are taking care of the seafoods they won't be finished, but if we damage them, they will finish. The ward councillor then said that the only way he can assist is to give administrative support through the municipal office: telephone, fax, photocopies and computer for writing. He said that he will try to help the people who want to start this mussel project by helping them write a proposal, but there is no guarantee. He then asked to make an announcement: he wants all the students that had finished Std. 10 to come to a meeting the next day, to apply for temporary jobs in Peddie, they want to provide training in agriculture.

'Mother' answered the question about which people can pick and who can't: if we have this project we are going to work together and we are going to control it. If we decide that a person should have 20/30 mussels, then it must be like that. Nobody is taking over.

□ (The second woman from the research group) asked: can't we ask for funding from the marine people (MCM)? Can't Siân go to the marine resources people and ask for funding? Noseti answered that Sian is finishing her research this year and that she will not help them anymore, but that they are going to stay in touch with her. Can't Siân ask before

she goes? Siân when explained that the community should first fully support the project and come up with a rough proposal. She and Serge would then assist in finalising this.

'Mother' added that Gugu said that if we get the community's support, that we could also go to her for help. They then asked Siân for further explanation. She said that her job was to get the community in touch with the right people and that it was up to them to continue...

The marine officer explained that he is new in the department (MCM), but he is very interested in this project. As far as he can see there is nothing that can control them not to do this. They are going to take telephone numbers of Siân, Serge etc. so they can keep in touch, and the community can be united and work together with them. After the meeting the compliance officers said that they were going to report the project proposal to their embassy offices. Siân had taken them to Coffee Bay, where there is a lot of projects, like crayfish. They are selling them so they can buy food and eat. They can take what they learnt in Coffee Bay and can start a project that can keep them busy and enable them to make money. Everywhere in S.A there are projects and the government is helping the people. It takes everybody to stand up and knock at the door. We need this, lets be united and do it. He said that MCM could be the watchdog for the project.

□ (The second woman from the research group) then added that they should then not continue talking; they should move and elect the committee!

Nozeti explained that they can't just nominate the people now – it's a long process, they still need to write a letter to the government - they should all calm down. Siân suggested that they call another meeting, bigger than this one, and invite the right people from MCM and SCD. The MCM officer agreed, saying that there is a community meeting next Wed. where they could announce the big meeting to everyone there.

The monitor explained that the community would be there the next Wednesday for a meeting. He suggested putting a representative from the community on the agenda to Lusanda about this sea project idea. Lusanda will be there at 11:00 to meet the people that applied for cockles, oysters and mussels. He doesn't know who will accompany her, but maybe there will someone to help. Lusanda is one of the people we are looking for. Most of the people at the meeting will be sea people. 'Mother' added that they are going to ask the 'big people' to come there so they can 'vomit' their story to them. They have to give us guidance. She continued by saying that they should send a letter to her office first before she comes, otherwise they'll be wasting time by giving it to her when she comes there.

Siân closed the meeting with thanks to all who attended. She requested that they spread the message about the next meeting, and promised to invite the relevant representatives from MCM and SCD.

APPENDIX I2 – Research diary entry 24/8

12 August – Return from Coffee Bay RD 12/8

We were all by 07:00 that morning and ready to leave by 09:00. On route we spoke again about what they intended to do on their return. Each group would organise a meeting to share with their communities what they had learnt through their experience in Coffee Bay and from what they had come to realise needed to be done regarding their communities harvesting practice through me research. Establishment and development of harvester committees was the next step to plan what they want to do and how to do it i.e. management plan for resource utilization and how they foresee running the project. Then if funding cannot be found locally then they need to write up a proposal to be submitted to DEAT/MCM for their support. Obviously service providers such as Coastal Development and the MCM Environmental and Compliance officer, as well as Nature Conservation need to be involve throughout the process.

I dropped off the Ngqinisa group first and eventually got home by 16:00. NEED TO GET CAMERA BACK FROM [REDACTED]!

22 August – Hamburg report back meeting RD 22/8

I arrived at the community hall by 09:30, to find it open, but empty. After a moment of indecision whether I should start setting up while I waited, I decided to rather go find Nozeti and some of the ladies. On my way I stopped off at the MCM offices to make sure that the compliance officers had been invited to the meeting. They said that they would meet me there... Nozeti was still getting ready at her house and the other ladies were nowhere to be found. When I returned I started setting up the data projector etc. Those who attended: one guy from Nature Conservation, both MCM compliance officers, both community officers (coastal development), the ward councillor, 'Mother' [REDACTED] [REDACTED] [REDACTED] and a handful of other harvesters. Nozeti said that it was unfortunate that so few harvesters arrived, because most of them were harvesting at low tide. Serge arrived and 'Mother' narrated the photos shown with the help of Notandile and the others. Serge then scribed down some of the questions raised etc.

PLEASE SEE MINUTES OF MEETING – RBM 1.

24 August – Ngqinisa report back meeting RD 24/8

I had confirmed with [REDACTED] the day before – she said that every thing was ready and that the meeting would be at the school at 10:00. I arrived at 09:30, noting that [REDACTED] was once again on her way out of the community (she will not be invited to the braai...). I went to speak to Mrs. Jinja as none of the group had arrived yet. She explained that I should realise that they work on African time and that the school only breaks up at 13:30. I said that I couldn't wait that long, because I had to have the vehicle back in Grahamstown for a colleague by 14:00. She said that I should speak to the principal, who I found sitting in his buckie staring into space. I introduced myself again and explained that I was invited to attend a meeting at his school by the community... He grumbled something about making an arrangement. I then went to find Mr. Jinja at his house. He was still getting dressed when I arrived, seeming abit irritated that I was early (it was after 10:00 at this stage). He too said that I should understand that they work slowly out here and that [REDACTED] had not told him when I would be coming. He said that we should go back to the school and see what was happening. I was at this stage abit frustrated by their lack of organisation. On route, Mr. Jinja invited an old man fixing his fence to attend and he joined us. Back at the school we found [REDACTED] and afew elderly men waiting. Mrs. Jinja said that her classroom had been made available for the meeting. As I was fetching the data projector from the car I saw [REDACTED] arriving. [REDACTED] arrived shortly afterwards with the sheet I had requested the day before and the cups and spoons for the tea etc. While we were

waiting for more people to arrive the grade 7 class came into the room asking, “what kind of animal is ingwane (octopus)?” I tried to explain (with a poor sketch on the board) that it was an invertebrate predator, which ate with a use of its tentacles and beak. They then asked whether it was in the mollusca phylum, which surprised me. I said that I couldn’t remember, but that I thought it might be in the Gastropoda... After I had set up the projector they brought in a biology textbook to prove me wrong (this amused the principle somewhat – I wonder if he had set me up...?). By 11:00 Mr. Jinja said that I should start, even though there were less than 10 harvesters present and the grade 7 class (about 15 kids). [] and [] were nominated to narrate the Coffee Bay mussel project and how they bring mussels back and their experience, and then Mr. Jinja introduced the proposal to start a similar project with the Ngqinisa community. As with the Hamburg meeting there was several queries as to where the funding would come from for such a project and who would run it. Mr. Jinja emphasised that what they had learnt from the Coffee Bay community is that they had to be organised to be able to submit a proposal to government. They should have a committee that meets regularly, knows what it wants and who is involved. At some stage I pointed out that the Hamburg harvesting community wants to start the same project and are trying to organise themselves in a similar way. Therefore, it would make sense to link up with their neighbours and submit a proposal for their area, rather than two separate proposals for each of their area of rocks. This would not mean joining Hamburg’s committee, but rather having their own committee for the harvesters in Ngqinisa which attend and, inform and are involved in the happenings in Hamburg and the development of one mussel rehabilitation project. I then invited them to attend the meeting to be held in Hamburg on the 12th of September, where all the necessary stakeholders would be present. We then had tea and I presented the principal and Mrs. Jinja with two trees, which they could plant with the learners on the 1st of September. I explained that the trees would have to be fenced in, to protect them for the cows and goats, and how to bury a bottle with the trees to save having to water them everyday.

Recorded 29 files on Digital – to be combined with the minutes that Serge with me.

SEPTEMBER

12 September – BIG meeting in Hamburg RD 12/9

It was set to begin at 10: 00, but.... Please see the minutes.

Need to keep the MCM and SCD interested – to get hold of Alwin, Sandile etc...

28 September – Meet with Serge, W.Cape NGO in Hamburg & Ngqinisa

APPENDIX I3

RBM 2

Second meeting for the proposed duplication of the Coffee Bay Mussel Rehabilitation Project in Hamburg

Compiled by Siân Davies

Rhodes University, Environmental Education and Sustainability Unit / Zoology Dept.

Background (please refer to minutes of the first meeting)

On the 12th of September 2006 a community meeting was held in the Hamburg town hall. This meeting served as a repeat and continuation of a meeting held on the 22nd of August, organised by a group of harvesters from Hamburg (and Ngqinisa), where they presented what they had learnt from a visit to the Mussel Rehabilitation Project in Coffee Bay on the 11th of August; and their proposal to duplicate such a project in the Hamburg area. There was a tremendous amount of interest voiced at the first meeting, but few of the questions posed, about the development of such a project could be answered by those present. Therefore it was decided to call a follow-up meeting where more of the harvester community could be represented and the necessary stakeholders: MCM, the Subsistence Fisheries Management Unit etc., could be present to discuss a way forward.

In Attendance:

- Lusanda Mbola – Marine and Coastal Management (MCM) Environmental officer, Subsistence Fisheries Management Unit (SFMU)
- Andile Gqutyana – Sustainable Coastal Development (SCD)
- Sheldon Swelindawo- SCD
- Kevin Hutton – Local Management Committee from Bushmans River
- Gideon Gallant – Monitor from Bushmans River
- Bonele Madolo – Walter Sisulu University, Coffee Bay Mussel Rehabilitation Project
- Mr. Katana - Coffee Bay Marine Committee chairman
- Chris Ngxata – Hamburg monitor
- Vukile Hobana – Hamburg monitor
- Hamburg Local Management Committee (LMC) members
- Mr. Jinja, [] & [] – three of the four harvesters from Ngqinisa that went to Coffee Bay.
- ‘Mother’, [] [] [] & Nozeti (Keiskamma Art project) – the harvester group from Hamburg that went to Coffee Bay.

Apologies:

Shawn Kariem – SCD – had to attend another meeting
Gugu Calvo-Ugarteburu – Coffee Bay mussel project leader
Sandile Sibiya - MCM

Meeting Proceedings

The meeting started one and a half hours late, because Sheldon and Andile were delayed, as well as Bonele and the committee chairman coming from Coffee Bay.

Most of the proceedings took place in isiXhosa, therefore it was difficult to keep track of all that was discussed. The main points that I grasped through rushed translations are as follows:

‘Mother’ (the nominated spokes person for the proposed project) opened the meeting with a song and a prayer and then thanked all for attending. She then explained the purpose of

the meeting by way of a brief description of the work that a small group of harvesters had done with Siân since the beginning of the year (based on their harvesting practice and livelihoods) and their visit to Coffee Bay in the Transkei, where they had learnt great things from the community harvesters involved in a mussel rehabilitation project, and hoped to start a similar project in Hamburg...

'Mother' explained that they won't interfere if the community agree/disagree, because they have "isibonda" with them (big people, a king – MCM, SCD?), they can't do things without them and they also have the community. They have to meet with them. They agree with them, although the community disagree with them (with MCM?). She's happy that there were a lot of people there that day that came to listen to what they are saying, it is still what they have said at the first meeting, and the 'big people' present will give guidance.

Bonele Madolo started by telling the story of the Coffee Bay Mussel Rehab. Project, using photographs of the Coffee Bay and KwaZulu Natal projects (supplied by Gugu Calvo-Ugarteburu – project leader) as prompts. He then handed over to the Coffee Bay committee chairman to explain further.

At that point the Hamburg Local Management Committee (LMC) represented only line fishers, because these were the first exemptions that the government provided (25 line-fish exemptions). It is only recently that oyster and mussel exemptions have been issued. On the 29th August Lusanda Mbola called meeting in Hamburg to handover the 27 brown mussel and 54 oyster exemptions that had been registered earlier in the year. Unfortunately only 5 people came to collect their mussel exemptions and only 25 came to collect their oyster permits. After a number of questions about the possibility of the people involved in this proposed project receiving further mussel exemptions and permits, Lusanda explained that the exemptions are only for those using mussels etc. for subsistence and not for commercial use. One of the elderly women said that they need permits to sell the resources that they collect, so they can get money to buy food and pay for their children's school fees. Lusanda explained that they could only apply for small-scale commercial permits for oyster – not mussel. At this stage the Department has issued the exemptions for mussels for subsistence purposes only. The elderly women then stormed out of the meeting saying that she thought MCM would help them with this project, but now she realises that they can't...

(One of the Hamburg marine harvesters) queried – she is interested in this project, but she doesn't have a permit. Those who had abalone permits in the past were not allowed to apply for mussel or oyster permits. How can she get a subsistence mussel permit to enable her to be involved in this project?

Sheldon explained that those that don't have permits can be part and parcel of this project, but it is only those who intend to harvest the farmed mussels for food that can, and must, register their names with SCD and MCM to get permits.

Mr. Katana, the Coffee Bay committee chairman, then said that the important thing to remember is that everybody who works in the sea – whether collecting mussel, oyster or line fish, must work together and be in one committee. 'Mother' agreed, and then added that 2 mussel representatives must join the established line fish committee in Hamburg. There was a considerable amount of chatter about this, so Sheldon stood up and offered to chair the meeting, to ensure that everyone was respected.

'Mother' explained that she doesn't see why Ngqinisa, Pozi, Kaizer's Beach etc. cannot join the same committee, because they all use the same area of coast.

Mr. Jinja said that the only thing he knows is that they must all work together in one committee. The government won't allow them to work separately, with separate committees. It was like that in Coffee Bay – he was adamant that they must work as one. Another women said that she recommends that they elect one of the people who went to Coffee Bay to represent them in the committee. Chris, one of the Hamburg monitors, said that he agreed, and that 2 representatives from Hamburg and 2 from Ngqinisa, which went to Coffee Bay, must be elected to represent them in the committee.

One of the harvesters said that the LMC had elected her to represent oyster collectors in her absence and that she had got a mussel permit instead of the oyster permit that she had applied for. She said that the group should elect another representative to replace her. Another harvester asked whether those who went to Coffee Bay had permits. Sheldon explained that applying for permits was not a problem, but that all those who get involved with this project and pick mussels must have permits. Stella stood up and thanked the chairman for his explanation, then stated that she was a harvester from Ngqinisa, and that she is happy to support the one committee. Sheldon said that he is happy for this project – “you are allowed to start this project, but you must put your names down”. Mr. Jinja tried to voice his concern about Sheldon's comment, but the room went ahead with nominating representatives for mussels for the committee.

From Hamburg, [] (younger woman from research group) and 'Mother' were nominated without objection.

From Ngqinisa, [] (young man from research group) and Mr. Jinja were nominated without objection.

Mr. Jinja initially declined, saying that he wanted somebody younger to represent. 'Mother' disregarded his plea, saying that she was old too and needed his help.

Lusanda said that they needed 4 people to represent each species group: line fish, mussel and oyster, and therefore she needed 2 more people to be nominated for oyster. Bonele said he was happy that there are reps. for each species group being harvested, but when it comes to talking about these species and making decisions for their use, these people must represent the harvester's needs and concerns. This is what the government needs – community reps. that can talk about all these things.

[] (young man from research group) asked whether those that were there from Ngqinisa could give their names for permits. [] (marine harvester from Ngqinisa) explained that they are not separated from Hamburg, because they used to come and give their names for cockles and mussels permits before.

The chairman explained that it is good for the government for communities to unite and work together.

[] (younger woman from research group) asked Lusanda for the names of the people already in the committee. Once Lusanda had read out the names, [] (younger woman from research group) said that she was not happy with one of the oyster representative names – she suggests taking her out and nominating another person.

The chairman briefly explained to them what their duties, as committee representatives would be, emphasising that they needed to communicate with SCD and MCM.

The meeting then came to an abrupt end as the venue had been booked for another meeting, due to start at that time. 'Mother' thanked everyone again for coming and Siân invited those present to join them for tea and coffee at the backpackers across the street.

Unfortunately due to the rushed closure no plans for the future meetings were made. After a brief discussion with the representatives from SCD and Lusanda it was recommended that the revised committee be consolidated and that attention be focused on establishing a co-management committee for the area.

APPENDIX J1 - Email invitation to second Hamburg meeting

Mail :: Inbox: Re: Community meeting - Hamburg - mussel rehab. project?

Page 1 of 1



Mailbox is over quota

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Inbox: Re: Community meeting - Hamburg - mussel rehab. project?
(4 of 63)

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Date: Wed, 23 Aug 2006 17:14:20 +0200 [06/23/2006 17:14:20 SASI]

From: Shawn Kariem <shawn@coastaldevelopment.co.za>

To: Sian Davies <q05c6280@campus.ru.ac.za>

Subject: Re: Community meeting - Hamburg - mussel rehab. project?

Headers: Show All Headers

Hi Sian

This is indeed exciting news. The week starting 11th to 15th September would be a good date for us. I would also like to (if possible) take this opportunity to invite the committee members from Bushman's River to this meeting. They are also interested in starting a mussel farm.

Do you think that this meeting would be beneficial to them and could I bring them along to this meeting? Also would it be possible for the Hamburg fishers and/or yourself to brief the Bushman's River committee (briefly) about your trip to Coffee Bay and in particular information about mussel farming and rehabilitation.

Regards

Shawn Kariem
Sustainable Coastal Development
Tel/Fax 041 484 6967

P.O. Box 17139
Saltville
6059
shawn@coastaldevelopment.co.za

----- Original Message ----- From: "Sian Davies" <q05c6280@campus.ru.ac.za>
To: "Shawn Kariem" <shawn@coastaldevelopment.co.za>; "Pula Lanke" <pula@coastaldevelopment.co.za>; "Lusanda Mbola" <lmbola@sea.gov.za>
Sent: Tuesday, August 22, 2006 5:44 PM
Subject: Community meeting - Hamburg - mussel rehab. project?

[Hide Quoted Text]

Hello all,

The week before last I took 5 community harvesters from Hamburg and 4 from Ngqinisa to Coffee Bay to meet with the subsistence committee and monitors there, as well as Bonile and Gugu from UNITRA. The purpose of this meeting was to allow the Coffee Bay harvesters to share their stories of harvesting, resource loss, training, exemptions, awareness raising and the mussel

APPENDIX J2 - Email from Gugu to Aaniyah

Mail :: Inbox: Request to transfer funds

Page 1 of 1

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Inbox: Request to transfer funds (4 of 21)

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Date: Thu, 23 Nov 2006 00:21:24 -0800 [11/23/2006 10:21:24 SAST]
From: "G.Calvo-Ugartoburu" <gugu@gefafix.urr.ac.za>
To: Aaniyah Ommardien <aomardien@wwfsa.org.za>
Cc: Stan Davies <g05d6280@campus.ru.ac.za>, Serge Raemaekers <s.raemaekers@telenet.be>
Subject: Request to transfer funds
Part(s): Download All Attachments (in .zip file)

Headers: Show All Headers

Alternative parts for this section:

unnamed [text/html] 2.44 KB

Dear Aaniyah,

During August/September there were a couple of exchange visits/meeting between a group from Hamburg and some of the participants on the Coffee Bay mussel project. I have been in contact with Serge and Stan from Rhodes, and it looks like their plans to start a mussel rehab project in Hamburg are moving. The community seems to be keen, Rhodes University has committed some funds towards materials, and the Keiskama trust (www/keiskama.org) has offered to take over the day to day management of the project.

Since our vision for the Coffee Bay mussel project from the beginning was to be a pilot project that then could be used to facilitate similar projects in the province I feel this is a great initiative and we should try to support it as much as possible. Our budget for Coffee Bay included salaries for the monitors, but these have now been transferred to the DEAT SR project, leaving some monsys free (see attached spreadsheet).

I would like to propose that some of this money gets used to pay the salaries and expenses (transport & accommodation) for some of the community members from Coffee Bay to go down to Hamburg, do some training and show the harvesters there the mussel rehab technique.

Please let me know whether you think this is an acceptable idea so I can find out what are the costs involve and work out a budget.

Cheers
Gugu

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APPENDIX J3 – Letter to key stakeholders



RHODES UNIVERSITY

DEPARTMENT OF ZOOLOGY & ENTOMOLOGY;
ENVIRONMENTAL EDUCATION & SUSTAINABILITY UNIT;
DEPARTMENT OF ICHTHYOLOGY & FISHERIES SCIENCE
RHODES UNIVERSITY
Grahamstown, South Africa
e-mail: s.kaehler@ru.ac.za; s.raemaekers@telenet.be

Dear All,

16 October 2006

Mussel Rehabilitation by Hamburg and Ngqinisa harvesters

As many of you are already aware, from the meetings and the email communication which were held in the past two months, the Hamburg and Ngqinisa subsistence fishers have raised their voice with the hope to initiate a small-scale mussel (*Perna perna*) rehabilitation project along their coast, using a similar technique to the one used in Coffee Bay and along the KwaZulu-Natal coast. I refer to the minutes of the meetings for further details.

As an academic institution, which has undertaken several research projects in these target communities, we would like to contribute to this process by:

- Providing the funding for the initial set of materials, including tools like the drills, the PVC pipes, screws & bolts.
- Organise training sessions for the local project partners on the technique to be employed, the purpose of mussel stock enhancement, as well as basic mussel biology.
- Facilitate demonstration sessions on the reefs adjacent to the Hamburg and Ngqinisa villages.

However, several issues and concerns remain unanswered after the initial meetings and emails, but are essential for the sound implementation of this proposed project. These issues include:

- For an unknown reason, not all the local partners involved in the development of this project have received ‘brown mussel exemptions’. It has however been proven that these people are traditional harvesters, with no other source of income.
- The integration of this project within the Local Management Plan:
 - All the current mussel exemption/ permit holders will need to be involved in this project, as this condition will enhance their sense of ownership over the resource and the project, and thus prevent conflict among the harvesters.
 - Only those rocks between the Bira and Chalumna Rivers will be rehabilitated. Most probably, the local project partners will prefer those reefs closest to the community.
 - The Sustainable Coastal Development (SCD) Community-Catch Monitors will need to distinguish between mussels harvested from non-rehabilitated rocks, and those harvested from the rehabilitated beds. This measure will be essential to assess the success of the project.

- A harvesting technique to be used on the rehabilitated mussel beds will need to be established by the Local Subsistence Committee (LSC).
- If this project is to be successful, Marine and Coastal Management (MCM), in collaboration with the LSC, could consider an increase in the bag limit. Surplus catch could also be sold locally, especially during the tourist periods, and provide for an extra source of income to pay for costs like school fees, etc.
- The tools and materials, like the drills, will need to be housed in a safe place, and maintained in good condition.

To answer these concerns and solve the issues mentioned above, we would like to request support from MCM in the following ways:

- The LSC for Hamburg (including the village of Ngqinisa) needs to take ownership of the project and integrate it into their Local Management Plan. This process could be facilitated by the SCD extension officers in collaboration with the regional environmental officer (Lusanda Mbola).
- Those project partners from the local community, who are traditional harvesters, but were for some reason left out of the MCM registration process, should be approached again, and considered for a mussel harvesting exemption/ permit.
- The local MCM Compliance office could provide a safe storage place for the drills and tools, and only allow access to those LSC members, who are trained in setting up the pipes on the rocks at spring low tides.

As a way forward, we would like to engage in a meaningful collaboration with MCM, SCD extension officers and monitors, and the local subsistence harvesters. It is essential for the successful development of this project that all parties commit, and support the project according to their mandates. We therefore look forward to hearing your comments and suggestions.

Kind regards,

Siân Davies, Serge Raemaekers & Sven Kaehler