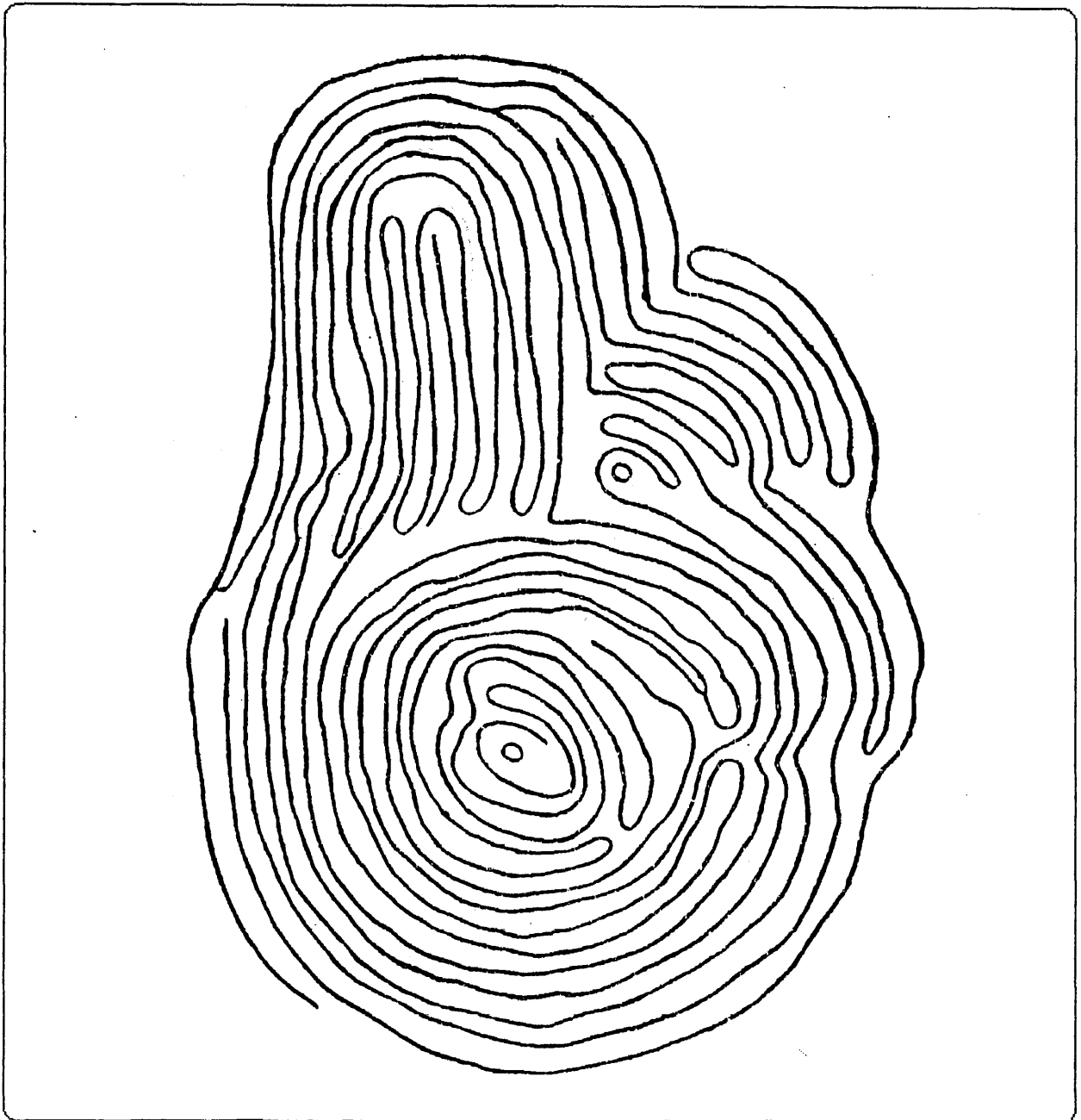


**The role of indigenous knowledge
in/for Environmental Education:
The case of a Nguni story
in the Schools Water Action Project**

Lynette Masuku



Cover: Zulu Labyrinth

The cover of the thesis is a picture of the process of *tshuma sogexe* (tracing a labyrinth) which was commonly played as a war game amongst warriors of earlier times.

The depiction resonates with my experiences of the study, reflecting as it does interweaving webs that characterise indigenous processes. It also reflects my engagement in the research process of puzzling out puzzles of the intangible, in the ways of education of old, within a continuous stream of consciousness reaching into the present.

I am grateful to Adams and Griggs Booksellers/Publishers - Durban, for permission to reproduce it on the cover of this study.

**THE ROLE OF INDIGENOUS KNOWLEDGE IN/FOR ENVIRONMENTAL
EDUCATION: THE CASE OF A NGUNI STORY IN THE SCHOOLS WATER
ACTION PROJECT**

A thesis submitted in partial fulfilment
of the requirements for the degree of
MASTER OF EDUCATION
of
RHODES UNIVERSITY

by
LYNETTE SIBONGILE MASUKU

January 1999

ABSTRACT

In March 1997 an indigenous knowledge story was included by the Schools Water Action Project (SWAP) partners in a resource pack for Water Week educational activities. This research developed as the result of an interaction between myself and some of the schools while we investigated water quality within Howick in the KwaZulu Natal Midlands. An interest in understanding the role of indigenous knowledge in/for environmental education developed. Some of the teachers and students involved in the water audit were requested to share their views on the role of indigenous knowledge in/for environmental education. From here the study broadened to also include interviews with elderly community members and environmental educators involved in materials development processes.

This post-positivistic case study documents the views of a small sample of interviewees using the SWAP story entitled *Sweet Water* as a spring board towards a better understanding of indigenous knowledge within the school context, with a particular aim to inform educational materials development processes. The study displayed that a link which exists between indigenous knowledge and environmental education needs to be brought to the fore. This is likely to happen with the blurring of boundaries between home and school as learning contexts, a process which student interviewees emphasised, along with the need for respecting values that award respect to the environment. Elderly community members were of the view that they have a role to play in addressing educational problems such as interpersonal and intercultural respect. However, the study also raised several issues around the complexities surrounding indigenous knowledge processes, including its appropriation, commodification and reification.

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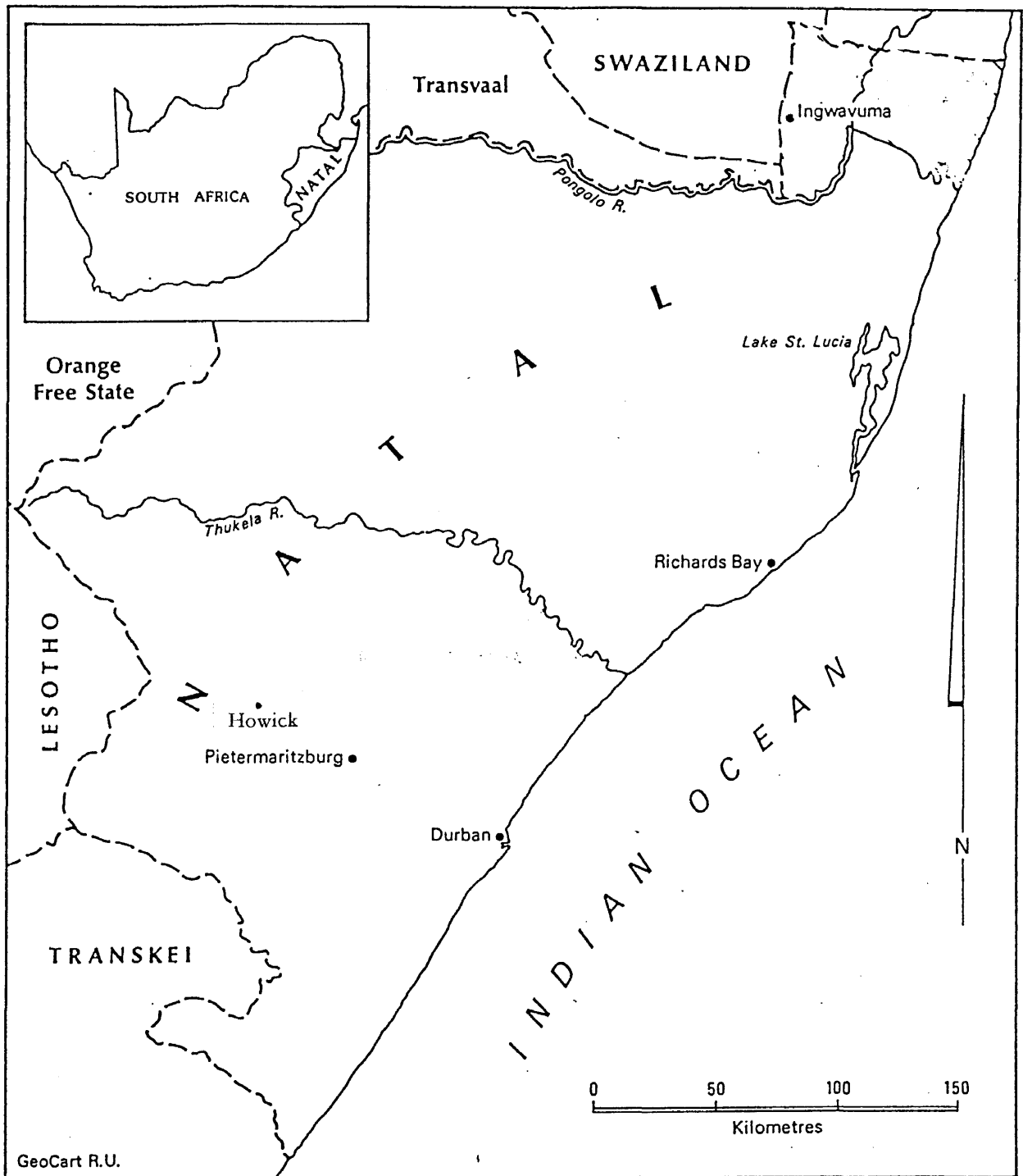
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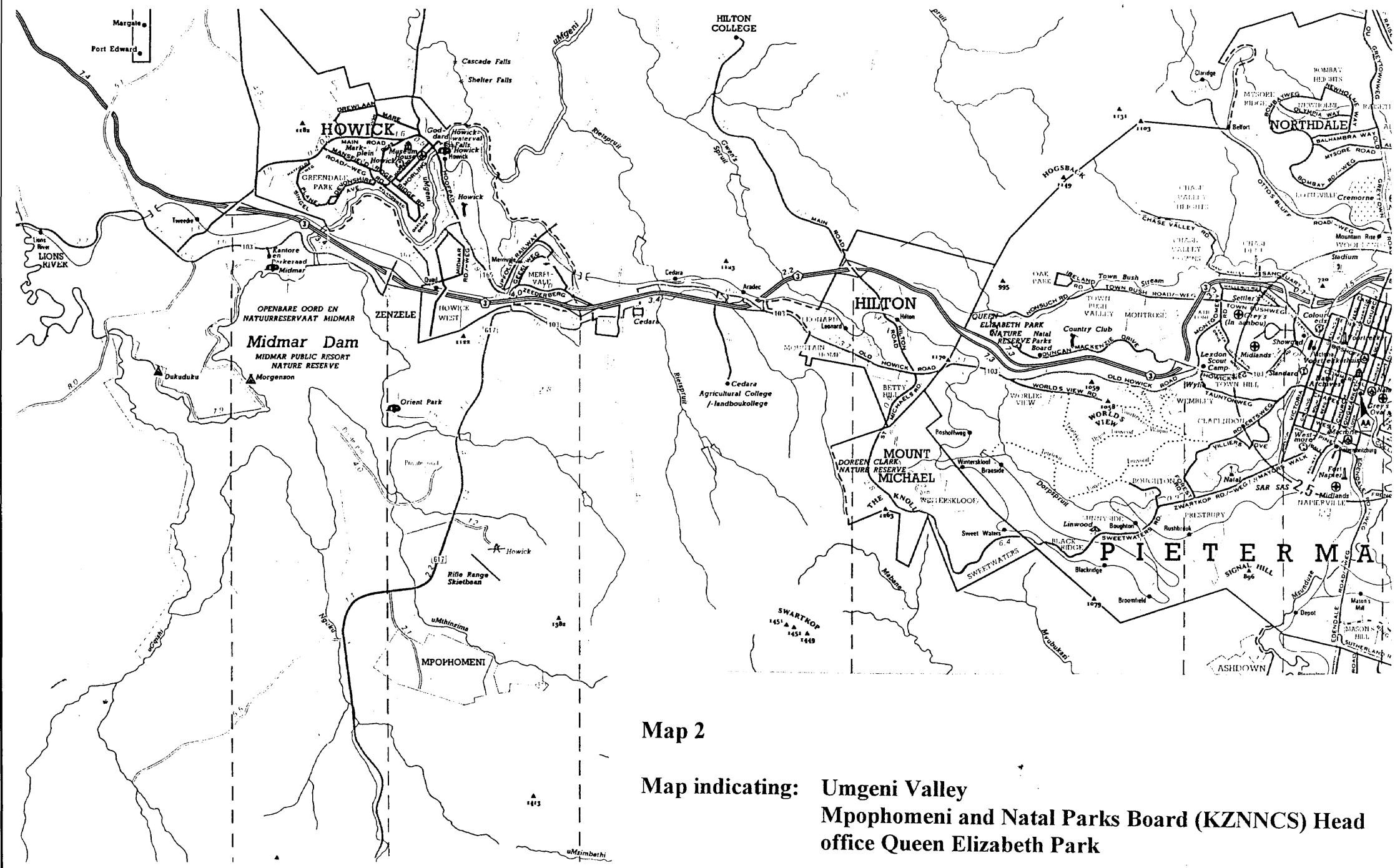
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I wish to express my sincere gratitude to the KwaZulu-Natal Nature Conservation Service (KZNNCS), my employer for its support during the period of this study. I am also grateful to the Human Sciences and Research Council for funding this research project.

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Masuku! Nhlane,

Thunda bathole bafokazana basemzini, mthondo weThuse

Mlondo oncama owavela eGudunkomo kaZulu

Mgabhi ka Langa

wabonakala ngophondo ukucwebezela,

wabonakala ngomsila ukushikizela

luhaqa lukaNgengela,

Zwide ka Langa.....

I am grateful to my parents for their encouragement. My husband and friend, Hugo, and my daughters, Phumzile and Qiniso, were extremely patient, understanding and tolerant when I disappeared to Rhodes and into the messy room at home with pile of books and sheets of print all around me.

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To my supervisor **Eureta Janse van Rensburg**, I wish to express my sincere gratitude for her remarkable guidance during the preparation of this thesis and if I knew the history of her surname I would recount it !

CHAPTER ONE

An orientation to the study

1.0 Introduction

My knowing very little about indigenous knowledge and environmental education developed into a gnawing desire that set me off into an exploratory journey for better understandings. The process of inquiry and the understandings which emerged are reflected in this study.

This is a small scale case study which has its geographical location in Howick. It provides the opportunity for the KwaZulu-Natal Nature Conservation Service (KZNNCS) to engage with the understandings of its Howick neighbours. I work as an environmental education officer within the Biodiversity division of the KZNNCS, a provincial nature conservation institution. My work entails supporting the institution's community conservation programmes, such as education initiatives of schools neighbouring protected areas. This is carried out through working with community conservation officers who are based in the different regions of the province. Their work centres around the development and maintenance of good relationships between the Zulu communities neighbouring the KZNNCS protected areas and the KZNNCS. The lack of a good understanding of peoples' way of life by my organisation in areas that are today recognised as protected areas is occasionally pointed out as one of the sources of conflict around conservation issues (Masuku 1997). Understanding how protected areas' neighbouring communities perceive environmental education, and their views on ways to continuously link indigenous ways of life to develop meaningful education programmes, is in my view a priority. I believe that an enquiry process of these perceptions and views can enable us to develop indigenous knowledge environmental education materials that are responsive to situations of which we have a better understanding.

1.1 Rationale

Exploring and coming to better understandings of the role of indigenous knowledge within environmental education processes is the purpose of this study with an eventual aim of informing educational materials development. Attempts at introducing and/or acknowledging indigenous

knowledge have been observed around conservation education servicing agencies and science education related programmes in the KwaZulu-Natal province from as early as 1986 (Keogh 1997, pers.comm). Some environmental education practitioners, wanting to introduce indigenous knowledge related issues and concepts in their programmes, lacked clarity on the nature and status, of the role indigenous knowledge would play within the wider context of their work. The earlier indigenous knowledge resource materials development processes were thus not informed by understandings of a socially critical orientation towards environmental education because they were mainly 'about' the environment (see appendix 2). The advice to seek out solutions to present day environmental problems, in indigenous knowledge, (WCED 1987:114-115, Davis 1993, UNESCO-UNEP 1978) need not be approached uncritically. The World Bank was one of the institutions that promoted the view that some of the solutions to environmental problems were to be founded in indigenous knowledge practices. Some educational approaches, debates and resource materials for indigenous knowledge to support learning and wise management of complex ecological systems have displayed these weaknesses:

1. the artificial oppositional placing of scientific versus indigenous knowledge (Glick 1964 in Milton 1996:273);
2. sweeping generalisations on the wisdom of pre-industrial cultures (see Kubukeli in Normann, Snyman & Cohen 1996:75) which entailed;
 - the stereotyping of the so-called 'indigenous' and populist notions and perceptions of indigenous knowledge that are problematic such as the assertion that indigenous people do not consider land as something that could be sold for money (see Davis 1993:1-6);
 - a myth that non-industrial cultures are ecologically benign (Milton 1996:107) is perpetuated without a critical reflection of how the so-called harmonies of the past existed (O'Donoghue 1997).

These problematic perceptions are the side tracks that intersect with this exploratory research journey. Linking these less than useful interpretations of indigenous knowledge to an educational approach aimed at attitude change could cloud the positive educational transformation discussed in 1.0. Perceptions of the environment as a tool for changing others are still prevalent and promoted by some teachers, pupils and community members and cannot be ignored (Janse van Rensburg 1995:118-129). I acknowledge that the richness of stories for environments which have been marginalised need to be shared within environmental education (Bak 1995: 57-63). The

silence and the desire to hear these stories has encouraged me to draw out this richness through the context chosen for this study rather than promoting or disputing some of the limiting understandings I mentioned. Environmental education materials with new and better insights about indigenous knowledge could inform future resource development processes that are relevant within local environments. Varied environmental problems might be understood and solved with solutions provided by local understandings enriched by global trends.

When my predecessor Mba Manqele left the position I presently occupy in 1996 she had developed indigenous knowledge materials which shared the conservation wisdom behind some of the practices of the Zulu people in draft form. The desire to further develop these resources fed a growing interest in me on indigenous knowledge that I had developed while working with environmental groups using the ideas behind the principles of permaculture. I worked very closely on the Sweet Water story draft with Rob O'Donoghue, my colleague and the co-ordinator of the Biodiversity Education division programme and Kim le Roux from Share-Net. When this story was used together with the Schools Water Awareness Project (SWAP) materials and I became involved in working with teachers on water quality investigations, I developed a curiosity to understand the links that were being made by the teachers and students with regard to indigenous knowledge and environmental education. The understandings that were going to arise out of such a study I wanted to share with other resource developers and work with teachers to develop resource materials that illuminated indigenous knowledge aspects within environmental education processes.

1.2 The aims of the study

The study uses an indigenous knowledge story on water as a 'springboard' from which to explore the role of indigenous knowledge and wider implications in environmental education processes within the school context. The specific processes to facilitate this understanding are:

1. to explore within a small sample, teachers' and pupils' perceptions of indigenous knowledge, bearing in mind that perceptions are not rigid,
2. to determine whether this sample of teachers and pupils think there is a need to integrate indigenous knowledge in their lessons,
3. to explore what elderly people think of the role of indigenous knowledge in schooling

4. to explore and develop some guidelines for the development and use of indigenous knowledge teaching resource materials for meaningful learning.

1.3 Background into the story, environmental education and clarification of key concepts

1.3.0 Background into the indigenous story about water in the SWAP pack

“the universe is made of stories not atoms”

(Gough, 1993:615)

In 1996, the Department of Water Affairs and Forestry, as part of the National Water Conservation Campaign (NWCC), initiated a school and home water audit (Share-Net 1996). They invited people from different institutions to conceptualise and develop educational materials for the campaign and this is how and why a SWAP consortium was formed. SWAP members developed a water quality audit pack. The audit themes centred on quantities of water used for activities at school and home as well as on water quality. The NWCC distributed a thousand resource buckets to schools for the February 1997 national water week. These buckets contained teaching tools on water, which included an indigenous knowledge story entitled ‘Sweet Water’. The water quality audit booklet (see appendix 1) begins with the ‘Sweet Water’ story about early Nguni water collection and storage methods in interaction with ‘scientific’ or schooled understandings of water that comment on the story in italics. The story is used in this study as a ‘springboard’ for teasing out aspects of indigenous knowledge in environmental education beyond the water theme and beyond the use of stories.

The early Nguni water collecting and storage practices in the Sweet Water story are referred to as a story because they are neither individual nor time-bound constructions. The story developed out of a process of environmental education teacher materials development which involved a dialogue between persons sharing different cultural backgrounds.

1.3.1 Environmental education

In this section I give a broad introduction to environmental education. I have done this to avoid throwing the reader into the deep end and instead to walk together with through some of the environmental developments that have shaped the concepts that are central to the study.

I started the inquiry process for this study with a critical engagement with the experiences of other travellers on environmental education exploration journeys. Looking back, to the period when the dominant call to raise an awareness of environmental issues gave rise to environmental education, one is confronted by the remarkable progress evidently presented by the diverse environmental education approaches that are responses to today's complex environmental problems. An approach that I am critical of and which this study does not embrace is one which Hungerford, Peyton & Wilke (1983) promoted. They presented environmental education moralistically as a tool for transforming people's attitudes by raising their awareness of the environmental crisis. This view of environmental education is problematic in that it rests education firmly within the behaviourist theory of learning through a belief that 'skills, attitudes, knowledge and awareness' of environmental problems would trigger off immediate practical environmental problem solving responses. At the peak of this behaviourist view environmental ills were steadily escalating to crisis proportions (see Paxton's *Enviro-Facts* 1993). Hungerford et al. assertion that environmental education was definable and structured was developed to convey factual information *about* the biophysical environment which confined environmental education practitioners' thinking and practice within the parameters of the definition and structure they promoted. As a result a number of practitioners dispensed environmental facts and promoted such an approach as if it was a panacea for all environmental problems. According to Taylor, O'Donoghue and Clacherty (1993) institutions working on environmental concerns including NGOs have promoted a moralistic approach to environmental education.

O'Donoghue & Janse van Rensburg (1995:11) find the Hungerford, Peyton & Wilke approach of teaching 'about' 'the' environment problematic as well, in that it conceptualises environmental education as a product of the 'knowing' that gets transmitted to the "ignorant other out there, who needs to be taught, told or facilitated to learn what the expert knows". The active involvement of O'Donoghue (my colleague and co-ordinator of the KZNNCS Biodiversity Education Service) in partnership with other environmental education institutions have broadened the understanding of environmental education within some parts of KwaZulu-Natal, especially the Midlands, by encouraging environmental education practitioners to see the environment as four interacting dimensions (see O'Donoghue in Fien, Heck & Ferreira 1997).

These dimensions are the biophysical, social, economic and political. When environment is conceptualised as such, environmental education emerges as a process that presents an assortment of exploration tools for critically examining the past role of education and its outcomes with regard to environmental sustainability. This view has been presented diagrammatically as diagram 1.

An awareness of 'environment' as four interacting dimensions and the adoption of an environmental education approach that enhances this broader view is enabled through the richness of the ideas that socially critical environmental education provides. Fien(1993a &b), a proponent of social critical theory who is critical of a limiting environmental education approach, encourages us to become critically reflexive practitioners and teach *for* the environment to enable social transformation to take place. The socially critical orientation of this approach to education is recognisable in that environmental education is viewed as not "value free" but as a response to an environment which is regarded as a social construct. Firth (1996: 12) refers to emancipatory pedagogies such as education for the environment (as understood in Greenall Gough & Robottom 1993) as "a critical understanding of society that seeks to empower students to participate in a democratic transformation of society".

The characteristics that Fien (1993a & b) identifies within a socially critical orientation on the social role of the school advances the broadened view presented by O'Donoghue & Janse van Rensburg (1995) of seeing the environment as interacting dimensions. Fien's (1993:20-21) outline of major characteristics of a socially critical orientation in education within which there are blurred boundaries between "school and non-school resources" and a view of school and society reflecting one another to play a transformatory role by "preparing students to participate in social, political, economic and environmental activities", encourages me to suggest that it is an orientation which could contribute in collapsing the barriers between school and home as teaching and learning environments. I am also encouraged to say that Fien (1993a & b) challenges ideas that are embedded in vocational and liberal orientations to education which have blocked the permeability between school-taught knowledge and everyday life. Fien (1993a & b) further promotes open enquiry-based teaching and lays emphasis upon learning from the community at large. Fien's views about education have considerably influenced the analysis of responses to the research question especially in the discussion of the imposed differentiation between indigenous knowledge and scientific knowledge within environmental education processes. The uncritical compartmentalisation and an emphasis on difference to certain

prominent aspects of knowledge to such an extent that the natural communication between contexts is rejected or shadowed is what I will be referring to as oppositional thinking.

Educational transformation in response to socio-political change in South Africa and an increasing awareness of environmental risks bring a number of environmental issues to centre stage according to Ramphela (1991, in Lotz 1996). According to Lotz (1995) and Schreuder (1995), approaches aimed at transforming an education framework that has contributed so much to environmental degeneration becomes imperative in South Africa. As a consequence education planners are challenged by understandings emerging from environmental education to question their pedagogical approaches (Hughes 1996) so as to link with the outcomes towards which they are working, especially through the 'across-the-curriculum approach to learning' (Fien 1997:11 in Fien, Heck & Ferreira 1997). Bak (1997) and Le Roux (1997) maintain that an emergent socially critical education for the environment could facilitate transformative thinking, enabling solutions through educational processes to ever-escalating environmental risks. Educational transformation towards environmental education is supported by a new constitution (1995), a White Paper on Education and Training (1995) and a draft Environmental Education White Paper (DEA&T,1998). According to Le Grange & Reddy (1997) there is, however, a need to link the new outcomes based education framework for a new curriculum (see Janse van Rensburg & Lotz 1998), to environmental education. Alongside these varied challenges in South African education have emerged concepts and phenomena that have been ignored or treated as unimportant in the past. Indigenous knowledge emerges as one of these.

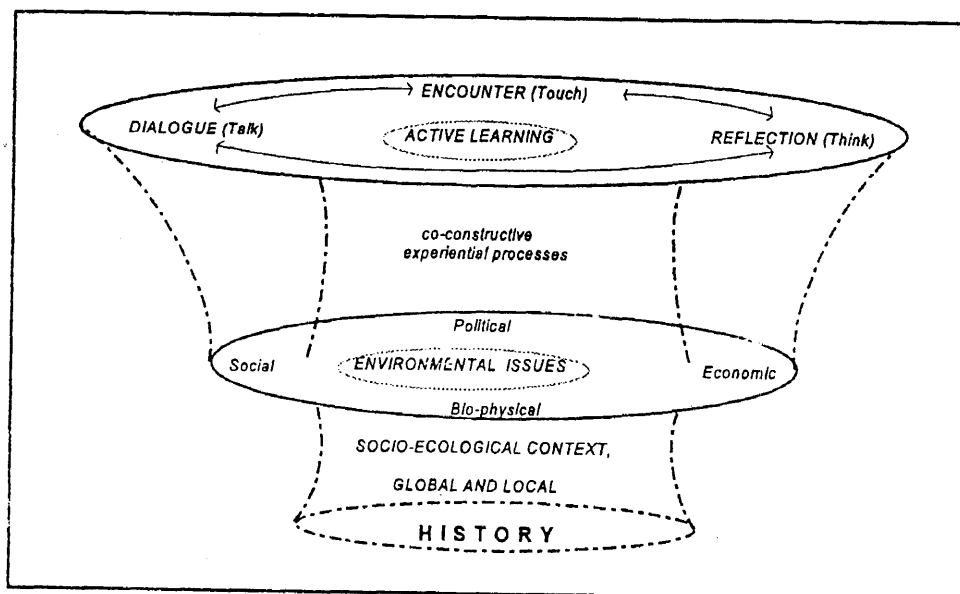
In the continual reference to environmental education in this study I will be proceeding from a view that environment and indigenous knowledge are social constructs in flux and environmental education is a continuous evaluative response of education. In this study environmental education is approached as a re-orientation process where 'encounter, dialogue and reflection' in the environment through 'history, context and active learning' are crucial in making a contribution to sustainable living, as already mentioned. It is within this environmental education process that indigenous knowledge flows.

The chosen view of environmental education takes into consideration that people might see the environment as either ecosystems, problem environments, interacting biophysical, social, economic and political processes, or as historically shaped myths, metaphors and stories that shape our present understandings and concerns (O'Donoghue & Janse van Rensburg 1995). It

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HISTORY, CONTEXT AND ACTIVE LEARNING



To support the understanding of environment I have adopted and refined for the study, data analysis will be conducted in a manner that it is coherent with the post-positivist research perspective (see Goodman 1992) which proceeds from a view that knowledge and meaning is socially constructed.

committed to a dichotomy between indigenous and Western knowledge. This dichotomy has, according to Agrawal (1995:3), already been debated by “anthropologists including Malinowski, Boas, Levi-Bruhl, Mauss, Evans-Pritchard, Horton and Levi-Strauss... to create a demarcation line between indigenous and Western knowledge”. Heyd’s (1996) response to Agrawal is that, “All scientific knowledge is clearly not Western...nor is all Western knowledge scientific”, but he acknowledges the dichotomy’s presence. A discussion of this dichotomy could benefit from Fien’s (1993a&b) perspective on a socially critical orientation in education and how it could enable transformative environmental educational processes explained as opposed to the oppositional thinking whose limitations I introduced in 1.3.1. In this study indigenous knowledge is approached from an understanding that it is:

- knowledge that may contribute to better understandings of our environment as interacting biophysical, social, economic and political processes (O’Donoghue & Janse van Rensburg 1995:2, Masuku-van Damme 1997:26-28).
- a form of knowledge with which to critically engage in order to recognise its potential at improving environmental quality which might have received minimum global attention
- taken for granted everyday common sense ways of reasoning and living, with a potential for environmental problem solving, yet confined to home contexts and hardly shared with wider audiences (Kreisler & Semali 1997:13-15, O’Donoghue 1997)
- processural and responsive knowledge that could be context specific and continually constructed in changing social situations (O’Donoghue 1995, Agrawal 1995)

1.3.3 an instrumental case study

This study is an instrumental (Smith 1997) case study which according to Smith (1997:3) is a study where “the case itself is of secondary interest; it plays a supportive role, facilitating understanding of the issue”. Taylor & Wynn (1984:236) propose that “as a learning technique the case study can be applied as a research tool to improve understanding of a particular ...situation”. It is for this reason that the study is entitled a case of a Nguni story in SWAP. The story has been used to facilitate an in-depth exploration of the role of indigenous knowledge in/for environmental education.

1.4 The significance and limitations of the study

The significance of this study will be to present and open up a dialogue about indigenous knowledge as an environmental education process with which many South Africans are increasingly grappling (see Janse van Rensburg 1995 :113-4). At a small scale it will provide an opportunity for the teachers I have worked with, to examine a concept which is slowly finding its way into schools as it has already happened through SWAP. In South Africa *Curriculum 2005* the new Outcomes Based Education organising framework for teaching stipulates that 'environment' has to be one of the lenses through which teachers need to look, in their organisation of teaching and learning activities (see Lotz 1997, Janse van Rensburg & Lotz 1998). Some of the *Curriculum 2005* specific outcomes which draw the links to environmental education and indigenous knowledge which teachers need to take into consideration (Masuku-van Damme 1997: 26) are;

- Respect the rights of people to hold personal beliefs and values (Life Orientation)
- Acknowledge, understand and promote historically marginalised arts and cultural forms and practices (Arts and Culture)
- Demonstrate an understanding of the origins, functions and dynamic nature of culture (Arts and Culture)
- Demonstrate a knowledge and understanding of the relationship between science and culture (Natural Sciences)
- Demonstrate an understanding of the changing and contested nature of knowledge in the natural sciences (Natural Science)
- Evaluate different economic systems from various perspectives (Economic and Management Sciences)

Interviewing teachers about aspects of indigenous knowledge will be an initial step at critically examining their personal perceptions towards such a concept. From my institutional perspective the study will provide an understanding that could advance and reshape biodiversity education approaches in schools adjacent to protected areas. It will further bring about an understanding of why and how elderly people and their common sense ways of life could enrich education. The gap between formal and less formal knowledge, community and school as separate learning environments which are non-interactive has been referred to as standing in the way to sustainable living (Fien:1993a&b). The study will make a small contribution for materials development processes to meet some of the challenges displayed in some of the specific *Curriculum 2005* outcomes mentioned here.

The time-frame and length of the study as constraints necessitated the selection of only four out of the eight schools which participated in the schools water audit project. The eight schools may have provided much richer data to work through and brought to surface more of the hidden complexities of indigenous knowledge. The focus on the water story as a 'springboard' is another constraint because it channelled my thinking and focus towards one indigenous knowledge resource.

1.5 The study in outline

The study has been structured into 7 chapters. Chapter 2 is intended to provide an understanding of the research process which includes data collection methods and analysis framed within the post positivist research tradition as described by Goodman (1992). Chapter 3 explores earlier socio-political processes in Southern Africa and serves as a wide angle lens into the past, looking into some of the processes that have played a role in shaping our present understandings of indigenous knowledge. Chapter 4 is a reconstruction of activities which developed around an active interest in indigenous knowledge by participant environmental educators around the KwaZulu-Natal Midlands in the late `80s. In Chapter 5 the diverse views on the roles of indigenous knowledge within environmental education processes by research interviewee teachers, pupils and elders in this study are discussed. Issues that have developed to become central to all research interviewees and participants, and have relevance to the research question are then further discussed alongside insights from literature on these issues in Chapter 6. This is a discussion and synthesising chapter, highlighting some of the central emerging understandings that could advance environmental education processes, and in particular guide the development and use of indigenous knowledge teaching materials. The last chapter, Chapter 7, as a concluding chapter, summarises the key ideas which have implications for environmental education and makes recommendations for a way forward with particular reference to environmental education teaching and support materials development.

CHAPTER TWO

The post-positivistic research process and data analysis

2.0 Introduction

The first chapter set the scene and provided the reader with the compass, map and some of the features of important landmarks. This chapter explains in depth how I journeyed in the company of literature, research interviewees, participants and some colleagues to develop the understandings that are continuously unveiled in continuing discussions.

The understanding of the roles which certain concepts play in this study may be influenced by the research orientation, methodology, exploration tools and the method of data analysis that I adopted as the researcher. A researcher's understanding of the interviewees' views on an issue or concept is always subjective and needs the disciplining act that can be achieved through detachment and reflection (Elias 1987). Jenkins (1992:49-52) maintains that Bourdieu saw both "structuralism (objectivism) and on the other hand, existentialism (subjectivism)" as crucial to epistemology. When objectivism is employed in research, the social world should be treated as an object of analytical attention through a process of detachment and distancing, and the researcher must realise that she/he is an actor in her/his social world(s) and so are the research interviewees. According to Jenkins (1992), Bourdieu saw subjectivism as the invisible world of research participants, their thoughts, the world outside their thoughts and the world in which history and social structure are to be found. The common thread between Elias' (1987) and Bourdieu's ideas is in the means to understanding phenomena as well as their theory of social habitus. The views of Bourdieu and Elias sit comfortably within the post-positivist research perspective (as described by Goodman 1992) which emphasise the socially constructed nature of social realities such as educational realities and provide the framework and approach which brought to view the insights discussed in following chapters.

2.1 The post-positivistic research process

Here I discuss why the research process is described as post-positivistic. The research question is then segmented into bits. These bits are explained with regard to their social location to expose the different dimensions from within which the whole question could be looked at. The ideas discussed are post-positivism, post-structuralism, social critical theory, and the process orientation of the study.

The question of this study is shaped and posed within the post-positivistic tradition. My intention is not to predict, explain or generalise, as in a positivist study (see Lather 1991, Goodman 1992) but to explore the meanings people make in my company about indigenous knowledge as a concept and its role in environmental education. According to Popkewitz (1984) a positivistic study would employ an “empirical-analytical approach to social enquiry”, which Lather (1991:8) calls the extending of “scientific methods to the study of society”. This study departs from such an approach and takes on an interpretivist perspective as understood in Cantrell (1993), Goodman (1992), Lather (1991a&b), and Popkewitz (1984). My orientation to the research question is ‘the finding out of roles’ to gain an understanding and influence environmental education processes with regard to indigenous knowledge. The assumption here is that there is a role for indigenous knowledge in environmental education processes. This is not posed as a hypothesis that needs testing.

Indigenous knowledge as a concept can be explained through emerging reflexive discourses sometimes characterised as post-modern. Post-modernity is the contextual perspective which has allowed for the complexities around indigenous knowledge to be brought to the fore. Within a post-structuralist research perspective which is characterised as post-positivistic:

...there is no final knowledge; ‘the contingency and historical moment of all readings’ ensures that, whatever the object of our gaze, it is contested, temporal and emergent (Lather 1991:14).

According to what Lather says here, indigenous knowledge, like all other forms of knowledge is influenced by us changing beings to change always. Lather encourages that in an exploration, understandings arrived at should not be treated as final, because the phenomena with which we constantly deal for instance indigenous knowledge lacks that solidity. Within the post-structural perspective the array of linguistic tools responsive to views about knowledge are given more

attention so that we may begin to use them more critically, for the de- and reconstruction of knowledge than we do in a positivistic study. Lather (1991) advises us not to lose sight of these tools.

In the breaking down of the research question into smaller parts, the reader may notice that the main part is about understanding ‘the role of indigenous knowledge in/for environmental education’. ‘In’ refers to a process orientation, ‘for’ locates the question within social critical theory as described by Fien (1993) when he argues why a values-driven, action-oriented, critical “education for the environment” is crucial in 1.3.1. The directing of education into an active purpose is necessary in South Africa. Issues of transformation, reconstruction, empowerment are as alive as ever and form the socio-political climate in which this study takes place (see Janse van Rensburg 1995). Therefore, this enquiry will help inform indigenous knowledge resource development processes to promote a reflexive education that attempts to develop a multi-voiced and centred discourse as indicated in the SWAP booklet.

The post-positivistic research tradition provides the freedom for the use of varied tools that have ‘zooming-in’ lenses capable of exposing more than the mere surface. Such opportunities encourage that the data generated assumes more of a qualitative nature.

Post-positivistic research is considered as a ‘process’ in this study which allows for considerations to learn from how we make meanings about ourselves as individuals in social space, company and through time. Within a process approach, social space and time are not seen as separate arenas but are understood as interwoven. As the researcher, I also realise that the study is also about me and my orientations towards the research question.

According to Goodman (1992:120) post-positivist research is an attempt:

To understand the meaning that people give to their actions and actions of others who share their world.

I think that sometimes we might not attach or realise the meaning that we give to our actions and those of others. Goodman’s point which is generally articulated in interpretivist research with the realisation that the researcher’s findings are “contested temporal and emergent” (Lather 1991:14) sits coherently within post-positivistic research.

This discussion on the post-positivist research process shares some of the ideas that were influential in pointing me towards the chosen research participants. More of these influential factors are discussed in the following section.

2.2 The choice of the research site and interviewees

The geographical setting has influenced the choice of the schools for this study as Howick is within easy access for the researcher. The need for depth of data has guided me to the choice of a small number of interviewees. The overall case of my gaze being four schools and four elderly community members within the Howick area and materials developers. These schools are Howick Preparatory, Howick Secondary, Injoloba Secondary and Mpophomeni High. My belief that not only the Nguni are holders of indigenous knowledge has also, influenced the choice. These schools form a representative cross-section of South African society. Previously Howick Prep. fell under the model C category (a public school category which exclusively catered for White pupils in the apartheid era) and the majority of the pupils and teachers are White. The majority of Howick Secondary teachers and pupils are Indian. Injoloba Secondary is in the centre of Howick and fairly modern and almost all teachers are Black. Mpophomeni High school is a township school on the outskirts of Howick with mainly Black children and a racially representative group of teachers. They are schools with whom I have been working in SWAP.

Following Cohen and Mannion (1991) and Cantrell (1993), the choice of other research interviewees and participants was purposive in some cases and in others, out of convenience. Three of the teachers whom I thought would be participants in the study had voluntarily joined SWAP. Only one out of these, from Howick Prep. was available for an interviewee. The fourth teacher from Mpophomeni High school who made herself available for the interviewee had been chosen by the school's headmaster to participate in SWAP.

I had intended to interview a student from each of the four schools who had been involved in the SWAP activities for the study and these were to be selected by the school's SWAP participating teacher. This is the criteria the teacher from Mpophomeni used to select the only two students I eventually interviewed. Students from Howick Prep. could not be interviewed because they had graduated from primary school. A strike took place on the day of the Injoloba and Howick

Secondary schools interview appointments. This was the last attempt to try and interview these schools as previous attempts had also not been successful.

Further participation was opened up to other people who could give background as well as useful insights on what emerges from the case of the four schools. There are also instances where participants have not been chosen, but situations have arisen providing opportunities to raise the questions with which I grapple. The research design can thus be said to have been responsive.

Elderly members' opinions on education are not usually solicited (see Subaroyan and maNyembezi's views in 5.4.6). My reason for soliciting responses from elderly community members is the view that they are senior holders of indigenous knowledge (Mtshali 1994, Ngwane 1999). My consideration of them as valuable holders of indigenous knowledge stems from their having witnessed environmental transformations in their times as well as having lived in a period where tradition/cultural values were still strong. They have lived through times of which younger people lack first hand experience and therefore looking through their lens may provide us with rich, first hand experiences of factors which have contributed to the present state of the environment.

Four elderly members who reside in or within close proximity of Howick were chosen; two White elderly males aged between 60-70, and between 75-80 respectively, an 84 year old Zulu lady and a 78 year old Indian lady. The only participant known to me was the White male aged between 75-80 only through witnessing him deliver speeches. His outspokenness with regard to indigenous knowledge and linking it to environmental education encouraged me to consider him as one who could be an informed participant on most issues raised by the research question. I was directed by a colleague to the Zulu lady a resident on a nearby farm. Her strong views regarding the 'cultural dialogue' between her and her landlord encouraged me to interview him as well. Convenience sampling was carried out when an elderly couple failed to be at their home at the time agreed upon for the interview, I enquired at the local shop for someone I could interview, and was directed to the fourth 78 year old interviewee.

Five research interviewees for the environmental educator group were chosen and their age and sex were not important factors to consider. It was rather the institutions they worked for that were important in highlighting how their perceptions influenced their responses. Three belonged to different nature conservation agencies. Two of these three are deeply involved in

environmental education in the province and the other used to be involved in environmental education in the past and still works within conservation, but with a different responsibility. The fourth educator is a Biology lecturer from a provincial academic institution. Unlike the other interviewees she was not known to me. The fifth educator I selected refused to be interviewed, but provided useful insights while she did so! She works for an environmental rights organisation.

These 'educators' were also chosen because of the active role they played in the province, and nationally, for environmental education. Their activities and influences around the development of indigenous knowledge related materials happens within the newly formed Share-Net, a network formed to respond to the paucity of up-to-date and relevant environmental education materials. Their involvement in the study was thought to provide useful insights into educational processes and the role of indigenous knowledge in environmental education.

An opportunity that arose which considerably shaped the research design was provided by fifteen students who participated in the Rhodes-WWF International certificate course for environmental education. These experienced educators came from different regions in Eastern, Central and Southern Africa and were resident in Howick for a month. They played a role that was not initially envisaged, as research participants. Their visit to the four schools, where a water audit was done, and paying attention to the indigenous knowledge story, provided a useful discussion which challenged some of my pre-orientations to the research question. My attention was drawn to the complexity of the research question through this discussion.

I consider my research supervisor as a research participant. She plays the 'critical research friend' role. I chose her because of her keen interest in the research question and her enthusiastic and dedicated involvement in environmental education in this country. She also knows Howick reasonably well.

Eleven colleagues involved in the masters in environmental education course with me to whom I did a presentation on 'indigenous knowledge and participatory learning activities' provoked a rich informative discussion. I drew upon some of the issues that arose from the discussion on the status of indigenous knowledge, to be discussed in the sixth chapter of the study.

The authors in the literature that informs the study form a special group of participants whose role I have difficulty explaining because they are known to me only through what they have

written. However, the aim of the study being to develop a deeper understanding of a complex idea, the authors were engaged as if 'in a conversation' towards greater understanding, and not in mere debates about the topic.

Lastly, O'Donoghue, my work colleague provided very valuable insights in discussions as the study developed.

2.3 An overview of the research process

On 24 February 1997 I decided upon the theme of indigenous knowledge for the study. My involvement in reworking indigenous knowledge resource materials which had been drafted in July 1994 (see appendix 2) with a colleague encouraged me to explore the topic. While collecting data for the Sweet Water story and other indigenous knowledge resource materials I was involved with the NWCC, in the process that resulted in the 1996 water audit teaching materials development as discussed in 1.3.0.

On 28 February 1997 a workshop for introducing SWAP and to establish a water audit network within the KwaZulu Natal Midlands was hosted at Umgeni Valley and attended by twelve schools. It was at this workshop that my interest in doing research with schools in indigenous knowledge was voiced. From then on a considerable amount of time was taken to fine tune the question and develop clarity on the focus that would be taken and the choice of research interviewees and participants.

In May 1997 I decided that I was going to interview the teachers and students of the schools mentioned in 2.2 who participated on the SWAP project for this study. I had envisaged the study taking on a participatory action research design and the initial research proposal was developed with that idea in mind. I realised the difficulties of such a design when the Rhodes-WWF students visited the school and I became conscious of myself as a researcher. The discomfort experienced by the Mpophomeni teacher elaborated upon in 5.1 could have been part of a lack of confidence in being considered as a research partner on a theme in which she had voiced no enthusiastic interest.

Working with the schools before the research started entailed developing a partnership and a support network for activities of environmental education. I assisted the Mphophomeni and Injoloba schools in starting environmental clubs and provided resources that were relevant to environmental projects the clubs were working on. The projects included tree planting and the use of computers for networking with other schools on issues related to water investigations and in the process helped open up opportunities available locally for doing environmental education.

The educators group was the first to be interviewed. This process started on 13 August up until 28 October 1997. The data from the educators group was the first to be analysed. In February 1998 a research methodology course that I attended threw light on the limitations of time, etc. that had to be taken into consideration within an action research design. A decision to approach the study from an interpretivist perspective as a case study (refer to 1.3.3) was made.

March 1998 was dedicated to interviewing the five elderly community members, two teachers and two students. I also started writing the thesis. I had decided that all data should have been collected by the end of March and to conclude data collection. This was a decision I stood by.

2.4 Techniques used

The data collection techniques used were:

- i. observation (Anzul in Ely 1994),
- ii. interviews
 - a. in-depth semi-structured interviews, one-to-one basis (Anzul in Ely 1994, Cohen & Manion 1991)
 - b. focus group interviews (Kitzinger 1994, Folch-Lyon & Trost 1981 in Lotz 1996:96) and
- iii. group discussions.

Observations of some interviewees and participants and self were not all drawn out of the interview sessions. Observation and interview can happen con-currently and could be understood

as a process within the research process. Observations of the elderly were drawn from interviews. I will try and highlight the importance of both ways of developing meaning.

2.4.0 Observation

Observations which are discussed are mainly those of the schools and elderly community members. These are discussed in chapter 4 and 5. According to Cantrell (in Mrazek 1993:93), “the purpose of observation is to give the researcher direct first-hand experiences with the phenomena under study” an idea supported by Anzul (in Ely 1994:43). Some of the observations which are related later in the study were shared by some of the fifteen Rhodes-WWF International course students mentioned in 2.2. Their involvement and insights allowed me to stand back and reflect on a research environment that was beginning to challenge my critical thinking skills less. According to Anzul (in Ely 1994) a prolonged presence within a social situation transforms it so much that one eventually gives it less thought.

2.4.1 interviews

Interviews were a useful data collecting technique for this study. Interviews are usually seen as a “principal means of gathering information” to be combined “with other methods in research undertaking” (Cohen & Manion 1991:308-9). In their discussion an interview comes out as a conversation between one or two people initiated by the interviewer for the specific purpose of obtaining research-relevant information.

2.4.1.0 semi-structured interviews

A semi-structured interview uses a flexible research schedule. I had prepared an interview schedule as well as probes to guide me and the intention was to make the interviews more conversational rather than being only a solicitation for responses. The diversity and cultural background of the interviewees encouraged me to be flexible while interviewing, and to follow leads that suddenly raised issues of importance that had not been anticipated, also a feature of semi-structured interviews. The educator participant group was the first to be interviewed. Two of the four educators sometimes surprised and distracted me. Several times they told me that certain questions were irrelevant and as well as asked me to respond to some of the questions I raised. However, I was forced to think of what my pre-orientations towards the questions were,

which I found to be very useful. What dawned upon me, and helped towards answering the research question, was the realisation that the development of knowledge is not through a conscious act of soliciting responses, but that in the talk and sharing of opinions meaning emerges. A point, I carried through the study and was valuable in understanding the research processes which had shaped the development of the earlier indigenous knowledge resource materials discussed in 6.5.

According to Bogdan & Biklen (1982, in Cantrell 1993:96), the advantage for using semi-structured interviews is that “you are confident of getting comparable data across subjects,...”. It is for this reason that I sometimes widely shared a response of an ‘educator’ interviewee within the educator sample group in the course of an interview to check, establish and understand views for clearer insights. This was because all the interviewees within this sample knew each other and had, one way or the other, worked together on the indigenous knowledge resource development process. Since the interviews were soliciting information from a resource process that happened a decade ago, refreshing their knowledge through sharing responses proved to be useful. The interviews had no time restrictions. The longest interview lasted for two hours, while the shortest was fifteen minutes. One educator refused to be interviewed on the grounds that the sharing of indigenous knowledge has to be protected as an intellectual right. She put the interview price at R300 an hour. This discussion was treated as an interview and lasted for at least 15 minutes. The usefulness of this interview was that it highlighted a commodification of indigenous knowledge, the transformation of a process of ‘knowing’ in a particular context into an abstracted commodity that is treated as an object (see a detailed discussion in 6.4.7).

There were also instances of interviews before interviews. A twenty minute interview ensued before an interview could start. My identification documents were checked and my intentions had to be clearly stated. Questions to be asked had to be shared beforehand with the interviewee and I was told to stick to them, which I agreed upon, but in the course of the interview I was able to follow some interesting leads. An assurance that the information given would not be used for politically related matters had to be given. Asking for the interviewee’s name and permission to audio-tape the interview resulted in another fifteen minutes pre-interview. Once a rapport was established I was able to isolate important issues and ask her to expand on them. The main interview lasted for an hour.

2.4.1.1 focus group interviews

According to Kitzinger (1994), Folch-Lyon & Trost 1981 (in Lotz 1996:96) interaction between focus group participants should stimulate an in-depth discussion and reflection on the topic.

Initially, focus group interviews were intended for the teacher participant group to encourage a discussion around the indigenous knowledge concept, using interpretations used by environmental practitioners at an indigenous knowledge conference in 1994. To get the participating teachers to agree on a time to meet was not possible. For this reason a teacher focus group session did not materialise and I decided to interview them individually.

This technique was however, used with two students (of opposite sexes) from Mpophomeni who are members of the newly formed environmental club, who had read and used the Sweet Water story. The discussion was conducted in the Zulu language to encourage interaction. The discussion was lively and rich as both participants were extroverts and good listeners.

2.5 Data analysis

When Garner (in Anzul 1991:140) said, to analyze is to... “tease out what we consider to be essential meaning in the raw data; to reduce and re-organize and combine so that readers share the researchers findings in the most economical, interesting fashion”, I understood. The challenge was to try and make the data I had collected shareable.

Robottom, an Australian environmental education researcher who is considered as having “been there many times before” (Garner in Anzul 1991:143), offered advice on data analysis. The interview data on the educator group was the first to be coded (Miles & Huberman 1994:56) and sorted into themes. In a thematic chart of responses the intention was to create a dialogue, amongst the interviewees and with me to be able to be rigorous in my analysis (see Bogdan and Biklen in 2.4.1.0 above on semi-structured interviews). This analysis was taken further by going beyond the narrative within the many ‘voices’ in the data, giving particular attention not only to what was said and expected but looked out for inconsistencies, noted the unsaid and unexpected, compared and contrasted interviewees views. This initial analysis influenced the set of interviews that followed (Miles & Huberman 1994) and the themes that emerged with students, teachers and elderly community members.

2.6 Evaluation of the methodology

2.6.0 Constraints

2.6.0.1 Time and imposed sequence instead of process

There were a few setbacks with regards to interview appointments being honoured. This was influenced by a rigid plan I had initially made on the sequence of interviews. Initially the focus group for teachers had been planned as the first interview session. When times could not be agreed upon, I did not proceed with the next interviews. Accepting that the focus group session would not materialise took some time so that when the opportunity to interview teachers arose, some of the students whom I would have liked to interview had left the school. Part of the reason for this state of affairs was a feeling that if teachers had to be involved in the research as co-researchers, a good relationship around environmental education amongst us had to develop first. Only when I realised that I was imposing a participatory action research approach onto a situation that was not congruent and dropped the idea of involving teachers as research participants and resorted to interviews still in line with the post-positivistic perspective, was I jolted into action.

2.6.0.2 Limited access to certain schools and communities

The limited access to certain communities was a constraint. The lack of strength in my relationship with Howick Secondary was part of the reason for this. The communication between me and the teacher concerned was always polite but did not open up, with the result that the enthusiasm to engage in a research process was very low. I always had a feeling that there was no sense of ownership of the SWAP audit process in the school. The time to engage and discuss this problem was never available. However, the communication line between me and the other schools was always open.

When sense prevailed that an interview with the Indian teacher was not possible, there was a feeling of loss as I considered how I could get access to the community to be able to interview an elderly Indian community member for racial representation. I approached an elderly couple in the street and made an appointment with them, which appointment was not honoured. To be able to

interview the 78 year old Indian lady was possible after enquiring at a shop where I had previously purchased my lunch. The access to the lady was quite difficult. She did not trust the genuineness of my intentions and as result conducted an interview of me to ascertain that before I could interview her. This has been discussed in 2.4.1.0, and in more detail in 5.4.0.

2.6.0.3 Technique as recipe

The flexibility that an experienced researcher might employ I substituted with rigidity. A critically reflexive researcher is one who can think ahead on his/her feet, improvise and not lose sight of purpose. Many times I was caught off guard i.e. in instances when I was asked by a participant to respond to my own question, when a one-to-one basis interview suddenly becomes a focus group interview because an accompanying work colleague was constantly asked by an interviewee to respond. There was an instance when I put a strain at the beginning of an interview with a formal greeting and tone to a colleague. The discussion that followed was on research techniques rather than the questions I was concerned with.

A focus group session should have been conducted for the 'educators' group instead of individual interviews in order to encourage discussion and reflection on participants' past roles in resource development processes about which they were interviewed.

2.6.0.4 Language

Language is a dynamic communication process and as such the kind of Zulu that is spoken by today's youth and the 87 year old Zulu lady has notable differences. When she became intimately involved in the discussion her Zulu expressions became complex and as distant as the era she was discussing. This, interestingly enough, reflected on the nature and complexity of indigenous knowledge. I had to rely heavily on my accompanying elderly work colleague to explain complex expressions and sayings. This made the interview so long that there had to be a lot of weeding at the data analysis phase.

2.6.1 Strengths

2.6.1.0 It was not a lonesome journey

When, “I was overwhelmed by data. To reverse the common saying, I couldn’t see the trees from the forest-much less the branches. There was one big forest in front of me” (quoted by Garner in Ely 1991:141), my supervisor was there for guidance and colleagues such as O’Donoghue. According to Joan Ginsante (Garner in Ely 1991) this feeling could result in despair and action paralysis, hence peer support proved to be invaluable.

2.7 Summary

The first chapter set the scene by explaining what the study is about and ‘why?’ it was being conducted. The chapter we are proceeding from explains ‘how?’ and why the research was done within the post-positivistic tradition, the manner in which research interviewees and participants were selected, the research techniques as well the approach to data analysis. The last discussion was an evaluation of the research methodology, with main focus on the strengths and constraints.

CHAPTER THREE

The reification of indigenous knowledge as a sequel to earlier socio-political processes.

3.0 Introduction

This chapter proceeds from the discussion on the post-positivistic research process and methodological decisions to earlier socio-political processes in southern Africa. It is a chapter that functions as a light-shedding overview of historical processes. It explores interactions of the Nguni people during the Mfecane, the effects of colonialism, historical events involving the Nguni, some of which have been written by them, and the indigenous narratives that have more recently come to be told in some protected areas of ecological importance. A metaphor of a multicoloured marble cake provides a useful imagery of these interactions, their merging and complex nature. These interactions are however discussed in sections for the sake of clarity.

The necessity of this discussion stems from the fact that the environmental education story on water collection practices, which is used as a springboard for the study, is based upon Nguni cultural practices. A discussion of earlier socio-political process, and looking into the interactions between the groups that inhabited South Africa, introduces issues on the relationship between indigenous knowledge and environmental education. However, my interpretations of the historical interactions to be discussed are based on an imposed rationality loaded with understandings that are congruent within our times. Some of these interpretations have come to be seen as truth; and cannot be contested by the actors of those earlier times and environments.

The chapter recounts social interactions that lead to the reification of indigenous knowledge as a concept. Indigenous knowledge was the coming to know through interactions within socio-cultural contexts. Reification (see 6.3) , is the abstraction of indigenous knowledge practices from time and space contexts, the compartmentalisation of knowledge into systems, rigid defining which points out specific characteristics, references such knowledge as systems (IKS), (compare with Lather's view about knowledge in 2.1). An example of reification can be found in the 3.4.1 discussion on 'ecologising'.

3.1 Nguni people's nation building activities and interactions during the Mfecane

The main migration of the Nguni south eastwards, according to radio carbon results of pottery found in the vicinity of the oldest iron mine in Swaziland, dates as far back as 450 AD (Davis 1978, Matsebula 1988, Parsons 1984). Oral accounts of the later Nguni arrivals reveal that those 'found ahead' in the new areas were the Khoikhoi, San and few groups of Nguni people. These new Nguni arrivals formed part of the major migration of the sixteenth century which came to be known as the Mfecane (Davis 1978). This movement of people marked the beginning of a tremendous effort at nation building by different ethnic groups in eastern southern Africa. It was a process that resulted in the subjugation and amalgamation of cultures found in new areas by the new Nguni victors. The acts of state consolidation display less formal processes of education and common sense ways of reasoning as people learnt to be part of new clans and environments as the Nguni grew domesticated crops, potted and made iron implements.

The main parent Nguni groups that emerged were the Xhosa, Zulu, Ndebele and the Swazi. The Swazi, Zulu and Ndebele clans shared a lot of common practices. According to Matsebula (1988:199-201) an education based on tradition was established in the occupied lands. He defines tradition as a totality of ideas, feelings, ways, habits and attitudes that were passed from one generation to the next. It was an educational approach that was based on words and deeds which included doctrines, customs and legends that had evolved over a long period. According to Matsebula, tradition gives rise to culture in such a continuous process of education. The king, symbolically known as 'the lion', presided over all issues of political authority and the queen mother, the 'she elephant', had authority over the spiritual and ceremonial domain of governance. They together played a crucial role in promoting values and rites such as the harvests of royal fields and national seasonal hunts which came to be regarded as cultural practices.

3.2 Colonial changes within Nguni inhabited environments

The Nguni way of life underwent dramatic and speedy alterations with the arrival of Europeans in southern Africa who became the new victors. The earliest European arrivals with intentions to settle were of mixed origins one distinct group became known as the Afrikaner and also known as the Boer. As a non-homogenous group Afrikaners played different roles in southern Africa. Some seemed to want to integrate through intermarriages with the locals; they were also colonisers of the Nguni and the Khoisan; and they became colonial subjects of the British. According to Mostert 1993 (in O'Donoghue 1996 40-41)

The Boers adapted easily to Xhosa life so similar to their own, when it suited them. None of it was at any rate strange to them. What foreign visitors might recoil at, they took for granted. They lived unconcernedly with the encrusted flies, dark clouds of fleas and rancid smoke of the kraal and its huts. These things were in their hut-like homes. Skin was not their problem. They took black concubines, as they had Khoikhoi women, and sometimes took up residence in Xhosa kraals under the authority of the chief...the Boer very rarely if ever, allowed themselves to be fully absorbed into it. Finally this is what drew the line. Proximity and intimacy achieved familiarity, sensual gratification, shared lifestyle and mutual convenience, but not tolerance and understanding

With the intensification of colonisation under British rule, the authority of traditional Nguni leaders became increasingly threatened by the colonial British administrators, whose gun power-aided approach to governance was regulated by economically driven policies imposed by their governments (Davis:1978). Colonial administration came with challenging and imposed world views which struck at the core of the Nguni way of life. O'Donoghue (1996:97-120) gives a detailed example of some of the interactions in Zululand through the story of the effects of the tsetse-fly sickness on game and domesticated animals. From long held wisdom the local people maintained that cattle and wildlife could not co-exist. Game was said to infect cattle through the saliva they left on the grass. The colonial administration sent in a scientist to carry out a comprehensive study of the sickness. He started off by interviewing Zulu locals on the cause, nature and control of the sickness, drew the blood of the infected animals and in his London laboratory discovered the cause of the problem. He then communicated his comprehensive published results to the colonial administrators. According to O'Donoghue (1996:120) this 'scientific analysis' marked a "significant shift from inside social events amongst the people involved to outside figurations and a detached vantage point". The colonial administrators however did not share the laboratory results on the cause of the problem with the local people under their administration.

These administrators' interest on the tsetsefly issue was mainly motivated by a concern for wildlife which they saw as being threatened. According to a missionary by the name of Samuelson (1974) the colonial administrators lacked an interest and understanding of the local Zulu. The kind of 'interest' that Samuelson was referring to though was "a sympathetic interest" which could have

made it possible for Europeans to understand the Zulu and be able to turn “the tide of thought in the right direction” (see Samuelson 1974:5-6).

Common amongst most arrivals including Samuelson was the view that education as a civilising process was necessary for the transformation of the behaviours of Black people whom they regarded as heathens and primitive children of nature (Palmer 1966). The Nguni, who were also a non-homogenous group, reacted differently to the arrivals and their perceptions of them as Nguni people. A slow process of religious education aimed at their transformation took on the ‘empty vessel’ transmission learning approach (see Janse van Rensburg 1995:83) aimed mainly at the eradication of those values that conflicted with Christianity (Parsons 1984). Calvinism a religion which the Afrikaner continued to practise and other varied forms of Christian teachings emerged in those times. Religious teachings displaying an integration of Nguni religious practices with Christianity developed; the numerous varied Zionistic churches are latter day indicators of this. Calvinism later played a central role as a framework for fundamental pedagogics in South Africa, an educational ideology (see Ashley 1989:1-27) obvious in the *veld skool* environmental education programmes (see Appendix 3). This example indicates the intermingling of religion with indigenous practices.

A missionary like Samuelson in those colonial times had noted the bond between the biophysical environment and the Zulu people. She says that:

The Zulu put their own interpretation on the songs of birds, visits of birds or quadrupeds, and conversations between birds and insects, all of which creatures are supposed to talk also with human beings (Samuelson 1974:6)

This bond which she had encountered in storytelling, she capitalised on in her teachings, to turn “the tide of thought in the right direction”, for instance, away from ‘heathen’ practices towards Christianity.

Education planners of the time, mainly missionaries, took on as a priority issues of religious significance, and the romantic notions of Nguni people as the children of nature “which would give them greater influence over their scholars” (Samuelson 1974:5) and those promoting economic gains for the colonisers. Most colonial written historical records of interactions reflect more colonial points of view rather than being windows of different interpretations to the

happenings of those earlier times. O'Donoghue (1996:81) also notes that within these 'outsider' reflections on the rural life of the Zulu are utopian, timeless images and romantic notions of Zulu life which can also be noted in the Samuelson quote above. I did not come across written evidence which displayed the Nguni people's successes in introducing issues central to them into those earlier forms of curricula.

3.3 Nguni authored historical perspectives

Some Nguni notions about education in the colonial times have been explored through the writings of Nguni people who lived in those times. Fuze's book (*Abantu Abamnyama Lapa Bavela Ngakona* 1922) is the first to have been written by a Zulu person and it is the main source of my interpretations. Fuze had been converted to Christianity and received a missionary education.

Throughout his book one realises that the role of a missionary educated Christian converted Nguni writer was quite complex and thus difficult to penetrate because of the two worlds to which he belonged. In Fuze's book some of the romantic notions about local and historical ways of life in early times are carried through. He makes assertions such as that: "all...clans lived in harmony and without enmity" (1979:25).

Educated Nguni converts also tended to adopt a moralistic view of their ethnic groups who in their writings they sometimes analysed through religious lenses. This can be noted when Fuze (1979) described how God came to be known as *Tixo*. According to him, the reference to God as *Tixo* was unsuitable. *Tixo* was the Khoikhoi name for the praying mantis. Fuze (1979:5) is critical of the fact that a name of "an insect as small and as repulsive" as a praying mantis be equated to God. He blamed the Xhosa for this, whom he said had told missionaries that such a name was the equivalent of God. It should be understood that because the Xhosa liked adopting foreign words as their own that such a situation developed, he says (see 6.4.0 discussion on how language shapes identity).

Moralistic views to local indigenous practices and language promoted through the Christian approach to education could have created and promoted inferiority complexes which in turn accelerated the loss of indigenous knowledge as people selectively shed off certain practices. The latter was at times a cause for concern. Fuze (1979:viii) saw amongst the Zulu a noted "ceasing to

observe our own ways and respectful customs” and advised the Zulu to adhere strictly to those of their customs which fitted with his moralistic missionary view of life. A difficult piece of advice by which he had not been able to live himself.

The Zulu people through their military prowess under King Shaka had established themselves not only as the ‘real human beings’ but as the dominant and most knowledgeable of the Nguni people. Which explains Fuze’s criticism of the Xhosa. The importance of language in this discussion stems from the fact that language amongst the Nguni differentiates between those who are human beings and ‘the others’ (see O’Donoghue & Janse van Rensburg 1998). The status of ‘humanity’ is solely reserved for the Nguni other groups are referred to by their ethnic group name. Language and its role in environmental education based on historical happenings such as the ‘Tixo’ issue are further explained in 3.4.1 on the ecologising of the San and the Khoikhoi.

Central to Fuze was also the need to promote important issues such as the history of the Nguni. He worried that such would be lost to future generations. A concern that is still prevalent today (see Ngwane 1999, Mtshali 1994). His book was an attempt to get such issues into the formal school curricula. In his struggles to publish his book he says:

I am praying to God in his merciful grace to allow me to complete this book by which I am anxious to enlighten those to come, including all our own ignorant children (Fuze 1979:vi)

However, historical texts like Fuze’s have not been as widely read in schools as he had hoped. This is evidently so because Mutwa’s first book (undated *My People*) does not acknowledge that there is another historical publication which precede it. This is evidently presented in its preface as; “Zulu history has been, until this document, an oral tradition”. The first edition by Cope and translation by Lugg of Fuze’s book (*Abantu Abamnyama Lapa Bavela Ngakona* 1922) was only published in limited editions in 1979. Authors like Mutwa (undated 1964, 1997) encouraged the intensification of populist notions of indigenous knowledge to instil a pride vital for a people stripped of personal dignity through apartheid policies which replaced colonialism. Such policies further interfered with every aspect of the Nguni people’s way of life, constructing them as third class citizens. The preservation of the Nguni way of life has been promoted by other Nguni people as well with different agendas.

The continued re-appropriation of the Nguni way of life and practices through publications such as Fuze, Mutwa, and others, have contributed to limiting a greater loss especially through environmental education. A look at conservation efforts which developed later and at provincial interactions, in the next chapters help us understand how indigenous knowledge came to be linked with environmental education processes.

3.4 From conservation-driven interactions to environmental education narratives and further

3.4.0 institutional interactions

In 1947 the Natal Parks, Game and Fish Preservation Board was formed. This Board later developed into an institution called the Natal Parks Board (NPB) which has recently (April 1998) amalgamated with a provincial conservation institution to be known as the KwaZulu-Natal Nature Conservation Service (KZNNCS). Throughout the study I will refer to both institutions in the name they were referred at that time. This is because the new name is not just indicative of a mere change of name but a merger between two organisations.

The establishment of conservation areas by the NPB had resulted in the local Zulu people being pushed away from some of the areas they occupied. These areas formed part of the new conservation areas which were fenced off; subsistence hunting within its boundaries was forbidden. By the 1960's the chief executive officer of the NPB alerted his staff of the futility of a conservation effort without educating the Black people on conservation (O'Donoghue 1997). By the early 70's interactions between the NPB and the Wildlife Society had paved the way for the development of conservation-driven education programmes. The Society's branch based at the Umgeni Valley Project at the time ran an educational programme focusing on the experience of the wilderness as an adventure for White school groups. The NPB ran the African Conservation Education (ACE) programme which catered for Black teachers and was supported by the membership of the Wildlife Society. By 1982 the ACE programme was run at the KwaZulu homeland conservation institution while the Umgeni Valley developed one for Black schools (Taylor 1997, O'Donoghue 1996).

The South African educational barriers whose foundation had been moulded around perceptions based on race and fundamental pedagogics started crumbling in different times and stages in the NPB education programmes exemplified by Ntombela and Player's (Player ran educational programmes at the Umfolozi Game Reserve) forming of the Wilderness Foundation, as related by Taylor (1997), O'Donoghue (1996) and some other environmental educators. People were encouraged to work with each other irrespective of race around issues that prioritised environmental education.

Also, the work of Garland and later Hurry, Owen Smith and Gcumisa were examples of small scale developing processes where practical engagement amongst people at a local level opened up new ways of seeing things and each other." O'Donoghue 1996:231)

The NPB recognised the increasing need for environmental education programmes aimed at facilitating development in neighbouring community areas to reduce pressure on protected areas. It was also anticipated that this move would lead to a better relationship between the NPB parks and its neighbours. Up until the mid 80's the NPB conservation education programmes were mainly conducted within the boundaries of the parks (O'Donoghue: 1996). The NPB and the Wildlife Society, through the support of other groups who had an interest in environmental education, supported work towards the establishment of Share-Net. Share-Net is a not-for-profit network which supports collaborative environmental education resource materials development (Taylor 1997 and see 4.2). Stimulation, reflection and the sharing of what was happening within environmental education took place through the Environmental Education Association of Southern Africa (EEASA) from 1980. EEASA continues to play a crucial role in providing a forum for these interactions. This year (1999) a southern African monograph on indigenous knowledge will be published by EEASA.

3.4.1 The progress and shaping of environmental education

Ian Player (an elderly interviewee in the study) had become one of the driving forces for environmental education within the NPB in the Umfolozi area with the support of Ntombela, a Zulu game ranger (who became a good teacher and friend to him). The Umfolozi environmental education programmes were mainly wilderness trails supported by interpretative booklets and film

shows, with the aim of 'raising environmental awareness'. According to O'Donoghue (1996:350) the developing pattern was one of:

A socio-ecological revival in a landscape of sweeping reconstructions in the Umfolozi wilderness amongst Player and Ntombela to an ecologizing of the San in Walker and Richards...and a shifting story of romantic indigenous harmonies as fact, reaches into the early environmental education programmes of the Karkloof Environmental Education Project, the Joint Venture and later the Umgeni Valley Project.

From the O'Donoghue insights, as well as from Player himself, one learns that the wilderness trails were based on the interpretation of the wilderness from the same outlook as Samuelson referred to in 3.2. An 'ecologising of the San' by early 1970's KwaZulu-Natal environmental educators Walker and Richards (O'Donoghue 1996) can also be seen in Fuze's (1979:4) interpretation of the San who; "do not feel the cold at all, like being a beast or dog or antelope that is not affected by cold, for they are also veld sleepers who do not bask before a fire for warmth as we do". With regard to the Khoikhoi, Fuze (1979:4) said that, "the head of a Hottentot is as strong as that of a sheep, whose hard head can kill a bull. When a Hottentot fights with a person, the person should watch out for that very same head". Fuze's comparison of the Khoikhoi and San with the Zulu people might be a display of how humans have tended to grade themselves and 'others'. This discussion also linked to 3.3 where language and its role on shaping identities of ethnic groups is briefly touched upon. The developing pattern that emerges might be telling us that those groups which were able to carve out a dominant identity through language were able to promote an ideology that divided people into hierarchies (see detailed discussion in 6.4.0). The tendency evident here is that people who lived nomadic and basic lifestyles, and 'others', were also described in ecological language. This can be noted in the description of the Xhosa, Khoikhoi and San by Fuze (1979), of the Zulu people by Samuelson (1974) and of the Zulu and Khoisan people by Walker and Richards (1975). This 'ecologising' of people helps us understand how Southern Africans saw each other is also woven into earlier forms of environmental education (see Taylor, O'Donoghue, Clacherty, 1993). This picture might also be telling us that some of the indigenous practices of the 'lesser humans' tended to be marginalised by the dominant groups of the time, whose views and political ideologies received a place in school curricula.

Another development within environmental education was the formation of the Wilderness Foundation by Player based on spiritualism for future young leaders, in protected areas conducive to reflecting on a world in change and risk, away from the buzz and bustle of the city. The Wilderness Foundation brought in more and more of indigenous story as an important dimension of their programmes in KwaZulu-Natal (O'Donoghue 1996, Player 1997) and Ntombela became the teller of indigenous stories in the NPB uMfolozi protected areas. This approach to environmental education can be explained by Jenkins in his analysis on Bourdieu's work when he says that:

communication between old and modern values, might mean that individualism would gain a new strength by being located within a socially constructed collectivism adapted from traditionalism (Jenkins 1991:53)

What this statement touches upon is the focus of this type of environmental education on the individual away from the everyday environment for an environmental soul searching experience to enhance environmental related leadership skills. From Fuze (1976:7) I learnt that such stories as the ones told by Ntombela were told to children by elderly women within the enclosure of their huts around sleeping time. Within the Wilderness Foundation, these stories were transformed into interpretative narratives told by men in the wilderness, a clear appropriating adaptation of tradition within a modern value orientation.

In 1922, Fuze (1979:148) had written that:

I am concerned to preserve. It will be a good thing if even in the future our children gain knowledge about their past, rather than remain ignorant and stupid like the...eagle.

We can only assume that Fuze's wish of preservation was met, though very differently, and later, than he may have anticipated.

In this exploration journey on the role that indigenous knowledge can play within environmental education processes, one is confronted with more complexities than answers. In the South African picture of the re- appropriation of indigenous knowledge, of which the Sweet Water story is an example of, and the interactions of the Nguni is the glaring absence of Indian people. This is a

result of the paucity of information that relates to them with regard to indigenous knowledge and environmental education. Indian people arrived in South Africa in 1860 (Parsons 1984), as contractual labour in the tea and sugar plantations. This paucity of information could be attributed to limited involvement influenced by their contractual labour status and discouraged by the apartheid laws. Could it also be linked to their meagre numbers when compared to those of Black people, or/and that areas converted to wildlife reserves were very much distanced from areas where Indian people resided? There is a fair representation of Indian people in current environmental education circles i.e. EEASA. The usefulness of this revelation is in that it provides the historical backdrop that is necessary to understand Indian people's views with regard to indigenous knowledge and environmental education. In chapter two I mentioned the difficulty I had in establishing a relationship with an Indian school and interviewing an elderly Indian lady which might have relevance to this historical picture. My curiosity and desire for better understandings about the Indian people I leave as an open-ended question because it deviates from the main research question.

3.5 environmental education within global development circles as a process of re-appropriating indigenous knowledge

In earlier definitions indigenous knowledge was conceptualised as a 'system of knowledge' identifiable through certain characteristics (Milton 1996). It was the 'property' of the 'indigenous'. According to Davis an editor of the World Bank discussion papers (1993:ix), the indigenous "do not hold views that land can be bought and sold", and also "do not view trees, plants....as "natural resources" which produce profits or rents". The views that Davis (1993) attaches to the so-called indigenous, make up part of what was/is regarded as belonging to indigenous knowledge systems (IKS). His definition of indigenous people from an economic point cuts out other angles from within which one can interpret the concept of 'indigenoussness'. Such views are slowly changing as people begin questioning a lot of the assumptions attached to them.

Within the global arena, indigenous knowledge came to be located within environmental education, influencing processes within nation states. The 1977 Tbilisi Principles for environmental education (UNESCO-UNEP:1978) prioritised perspectives that embrace culture and history in addressing today's pressing environmental issues. The 1987 World Commission on Environment and Development advised that indigenous communities were "repositories of

accumulations of traditional knowledge and experience” (WCED, 1987:114). Within this perspective, society would be able to learn from traditional wisdom to manage complex ecological systems. Since the appearance of these documents, there has been escalating interest by educational professionals, development NGOs, agencies and conservation institutions in adopting approaches that “link humanity with its ancient origins” (WCED, 1987:114-115).

A healthy and vibrant debate regarding indigenous knowledge has also developed. One of the prominent publications on indigenous knowledge (*Indigenous Knowledge and Development Monitor*) from Hague, recorded nineteen indigenous knowledge resource centres in the world in 1994 and by 1997 thirty two. In South Africa a resource centre based in Cape Town was established in 1993, the Institute of Indigenous Theory and Practice. The centre’s recent literary contribution (Normann, Snyman & Cohen 1996) presents interesting and challenging issues ranging from traditional medicinal use, indigenous knowledge and environmental management to indigenous values in human service practice.

The global realisation that indigenous knowledge could play a role towards development, displayed a turning point to past negative perceptions on indigenous knowledge as standing in the way of economic progress (Agrawal 1995). The support that this realisation received from institutions and movements associated with environmental education reshaped environmental education approaches. An additional role for environmental educators became that of re-appropriating indigenous knowledge and environmental education became the vehicle through which indigenous wisdom could be shared. The development of stories such as the Sweet Water is evidence. The re-appropriation of indigenous knowledge is not new and this can be observed through Fuze’s recordings (1979) of interactions in Southern Africa, with Walker and Richards (1975), O’Donoghue (1997), Gcumisa (1993) etc. With re-appropriation, some practices are transformed for appropriateness within the times and the contexts for which they are needed. An example that I can think of as evidence to substantiate this statement is one of a grain pit construction at Umgeni Valley in 1996. A grain pit is supposed to be lined to prevent moisture from entering inside the pit and destroying the grain. The researchers had been told that cow dung and ant hill soil should be used. However, a lot of assumptions on the binding nature of clay and cow dung were made and clay was chosen ignoring a past practise of using anthill soil. When the dried clay cracked they remembered that they had been told that anthill should have been used which means that re-appropriation becomes a selective process of knowledge reshaping.

3.6 Summary and conclusion

The different ideas discussed in this chapter are the symbolic capital that the research participants in the next chapter might have drawn from and fed into the processes of resource development.

O'Donoghue's study (*Detached Harmonies: A study in/on developing social processes of environmental*

educative teams). W (Tvoices ses T ayl

CHAPTER FOUR

Exploring the environmental educator group's views on the research question

4.0 Introduction

This chapter narrows the focus to the KwaZulu-Natal Midlands and the views of a group of environmental educators who were involved in indigenous knowledge resource materials production in the area. Though hardly mentioned, the thread of the reification and re-appropriation of indigenous knowledge from the previous chapter weaves through this chapter. Rather than rely on literature, it is a chapter that has mainly been constructed from the interview responses of the 'educators' group of interviewees. Their responses are memory re-constructions of their involvement in indigenous knowledge processes from about 1985. Wider national activities also played an influential role in shaping the activities expressed by the environmental educators and these will therefore be noted.

Insights from interviewees will not be followed by the usual pers. comm. Instead they will be introduced in this section as:

Mba Manqele working with the Environmental Justice Networking Forum NGO,
Pietermaritzburg, 12 August 1997.

Khulani Mkhize a conservation officer at the Department of Nature Conservation, Ulundi,
13 August 1997.

Rob O'Donoghue, senior environmental educator at the Natal Parks Board,
Pietermaritzburg, 14 August 1997.

Margaret Keogh a Biology lecturer at the University of Durban Westville, Durban, 2
September 1997.

Jim Taylor, the Share-Net environmental education resource development network co-
ordinator, Howick, 15 October 1997.

These interviewees played an active role in the province and in some areas nationally in/for environmental education. Their activities and influences around the development of indigenous related materials for which they were chosen to participate in this study, happened within the

newly formed Share-Net, a network formed to respond to the paucity of up-to-date and relevant environmental education materials (Taylor 1997).

Before having a formal interview with O'Donoghue and other individuals mentioned here, O'Donoghue drew my attention to the fact that interviews on happenings of the past sometimes result in an elevation of issues of not much importance into something larger than what they actually were. O'Donoghue's comment influenced me into seeing the interviewees responses as reconstructions. To increase the credibility of their responses various literary writings that relate to some of the questions raised by the study, which have been written by the interviewees, have also been consulted for data triangulation and as evidence, as suggested by Cantrell (in Mrazek 1993) to enrich the discussion. Wider national activities which played an influential role in shaping the activities expressed by the environmental educators will also be looked into.

As the intention of the study is to inform the development of indigenous knowledge materials, it is crucial to revisit and re-examine the interactions amongst these educators in the KwaZulu Natal midlands. These are interactions which fuelled critical reflections about environmental education materials and paved the way for the development of materials which came to be perceived as relating to indigenous knowledge. The reasoning that supported this resource development phase and the anticipated roles played by the educators who were involved in this process thus offer some insights to the research question. The indigenous knowledge resource materials developed by the educators interviewed in this study were used by school teachers within the formal school context. It was after this phase of resource development that indigenous knowledge understandings may have started to play a planned and purposeful role in environmental education.

In South Africa the late 1980's was a period when events that swayed the foundation of education in the country challenged educational practitioners to rethink most aspects of their educational practice. One of the movements that called for change, as well as encouraged a shifting of boundaries within the educational landscape, was People's Education (see Ashley 1989). The relevance of some educational programmes, and their contribution to a better South Africa for all who lived in it, came into question. The noted shifts and responses within the KwaZulu-Natal Midlands to such calls within the environmental education scene from about 1985 were reflected through some collaborative interactions between conservation institutions and schools (see e.g O'Donoghue, 1987e, 1988c, 1994b). One is tempted to compare the initiatives and activities of

these environmental educators to the movements of first time moon walkers feeling their way about because criticism of the apartheid education system was not easily tolerated by the state. This meant that an extreme caution and creativity in the voicing of such concerns became important and central in exposing the injustices the education framework of that time posed for all South Africans. This can be seen in O'Donoghue's (1987) metaphorical *Story of bananas, frogs and the process of change*.

4.1 Institutional interactions

By 1985 a good working relationship between the Wildlife Society and the Directorate of Nature Conservation (DNC), (previously referred to as the KwaZulu Bureau of Natural Resources) existed. This had been influenced by the handing over of the ACE programme run by the Wildlife Society at Umgeni Valley in 1977 to the KwaZulu Bureau of Nature conservation. This programme was, however, reintroduced in the Wildlife Society in 1980 and co-ordinated by Jim Taylor, then an education officer. In 1990 Mkhize, an education officer with the DNC, worked as a secondment on the Umgeni Valley ACE programme with Taylor (Taylor 1997). Another person who began working closely with Taylor on environmental education related issues was O'Donoghue. The latter was an education officer with the Natal Parks Board (NPB) based at its Pietermaritzburg office. Keogh who worked with the Schools Education Project (SEP), a Durban based NGO, interacted with these conservation institutions. The main objective of SEP in Durban was to work together with teachers through a co-constructivist and participatory approach to improve the quality of science education in some of the township schools. One teacher, amongst the many Keogh worked with, was Manqele, who later joined the NPB and worked with O'Donoghue. Together they developed indigenous knowledge materials. This drew Keogh more into the environmental education developments of the KwaZulu Natal Midlands.

4.2 Participatory initiatives and environmental education support materials reviews

The participatory activities between Keogh and the teachers who were involved with SEP are an example of some of the participatory efforts that were taking place amongst some education supporting institutions. In 1986 Keogh's interest was more broadly in environmental education than narrowly on the 'hard sciences'. Keogh and the teachers she worked with collected and reviewed available science education support materials.

In 1986, at Spioenkop in KwaZulu Natal, a workshop was convened to critically review environmental education materials in order that available resources could be improved and new ones be developed. The result of this resource inventory encouraged an exploration of participatory means of resource development. The factors identified (Taylor 1997:32) as having been contributory to the perceived inferior quality of the resources were that:

- materials had not been developed around an adequately researched rationale,
- few teachers and other users had been involved in the development processes,
- the purchase, or acceptance, of free materials was assumed to indicate the successful use of the materials,
- evaluation at the development (formative) and implementation (summative) phases had been neglected, and
- the redevelopment of materials for local situations had not been considered.

The only factor that this study does not address is the one concerned about the purchase or acceptance of materials. By soliciting responses from teachers they indirectly became part of the resource development process. This study is also to a certain extent an evaluation of the development processes of indigenous knowledge materials and also explores whether these earlier resources had been developed out of an adequately researched or understood rationale.

Two years later, in 1988, a workshop to set a strategy and prioritise research issues, saw the re-definition of the action ecology project, an initiative set up by O'Donoghue (1990) to provide teachers with materials for teaching ecology. Within the same year a number of collaboratively published papers (SAJEE 1988a, 1988b, 1990) crucially stimulated theoretical debate and transformed approaches to environmental education curriculum development and evaluation, paving the way for participatory initiatives in teacher support materials development. Still in 1988, another workshop was convened in Howick, which concluded with commitments from participants to engage in co-operative resource materials development projects. This workshop

was followed by a 1989 Soweto resource development conference, where a list of known environmental education publications, participants and their areas of residence was drawn up. This list became vital in 1990 when Taylor and O'Donoghue made widely supported recommendations for the establishment of an informal network for materials development. As a result Share-Net was formed with offices at Umgeni Valley in Howick. The logo of 'people, publications and environments' that Share-Net adopted mirrored the collaborations that had facilitated its establishment and the compass towards the future. According to Taylor (1997:37) Share-Net set out to:

- encourage grass-roots resource development by teacher groups and local communities, and
- foster joint resource development activities amongst conservation and environmental education agencies and projects in southern Africa.

The discussion of this collaborative orientation and its implications for the study is that it sets out the stage and explains the history that had paved way for the indigenous knowledge materials and why this was an interactive process within the KwaZulu Natal Midlands at Share-Net. It was to be through this network that most of the indigenous knowledge teaching materials, on which this study draws, were developed and distributed.

4.3 Indigenous knowledge within environmental and science education processes

The expressed aim of the environmental educators interviewed in this study was to work with teachers through participatory processes and thus contribute to uplifting the quality of environmental education (see also, O'Donoghue 1996). Share-Net, was the manifestation and support structure with the potential to meet this aim. O'Donoghue worked closely with teachers from farm schools on the action ecology project as a response to one of the aims Share-Net had set out to achieve in 4.2 above.

There was consensus between Mkhize, O'Donoghue and Taylor when interviewed that there was little concern about indigenous knowledge in their numerous discussions and meetings at that time. It was rather in the discussions amongst the Midlands educators, sometimes with Keogh, of exploring ways of working with teachers, that indigenous knowledge emerged as one of the means for working towards meeting the purposes of Share-Net which was collaborative environmental

education materials development. Thus, a role for indigenous knowledge within those developing environmental education processes emerged as a useful way of working with teachers. Keogh who had a different aim to Share-Net's, had been enthusiastically working on what she called "radically challenging conventional science teaching" by exploring indigenous knowledge and integrating emerging understandings into her Biology lessons, joined the Midlands discussions. The excitement generated by Keogh's explorations of indigenous knowledge practices with the SEP teachers encouraged her to use indigenous knowledge as a gap reducer between so-called 'formal school knowledge' and the life world experiences of the teachers.

4.5 Diverse views of indigenous knowledge and the Education Department's response

Environmental education materials which developed out of the collaborative processes, some in the form of stories that Keogh and the teachers used, were to support the teaching and learning of science. This is not a view that was supported by the Department after they had seen the materials, instead tensions between SEP and the Department of education arose. The Department, raised questions on the relevance of indigenous knowledge in formal science education and expressed concern to the effect that: they believed that the materials had been constructed on misconceptions, rather than a sound scientific rationale and therefore were 'not scientific'. Keogh was therefore advised to have the materials removed from the teachers' resource files. According to Keogh, the Education Department's views were based on a clear distinction between science and indigenous knowledge which frustrated her work.

The Midlands educators were not deterred by the Education Department's difference of opinion in their approaches to resource development. This loose partnership around resource development was not united by homogenous views on the nature of indigenous knowledge as a concept. As evidently displayed by Share-Net and Keogh's intentions in 4.3. the role of indigenous knowledge in environmental education was perceived differently. Their views need to be understood within the context that: they were derived far later than the activities they are interviewed about. They are views that have been shaped by events happening prior to the resource development phase and have also been considerably shaped by present day emergent views about indigenous knowledge.

The overriding belief in education's power to increase environmental literacy by raising awareness about environmental degeneration (see IUCN/UNEP/FAO/WWF/UNESCO 1980) based on the assumption that people would not destroy their world if they understood how to conserve, strongly influenced most conservation education programmes. In the early 80's conservation institutions at that time, particularly the DNC and the NPB, were involved in a process of 'getting the message across' through visits to communities bordering protected areas. In an interview with Mkhize, he explained the role of indigenous knowledge in these early conservation programmes. According to him, indigenous knowledge was, "the culture of black people" and their everyday practices. These cultural practices, according to him, which in the past were not considered to be particularly relevant for conservation, suddenly came to be seen as indigenous knowledge and complimented conservation efforts by this group of environmental educators.

In their investigations of indigenous practices through interviews towards materials development of the rural elderly, the research participants carefully selected stories and practices and re-worked them to suit their aims. Some of these stories regulated and/or sanctioned certain practices (see appendix 1, Sweet Water - on sexual transformation). Mkhize saw the potential the stories possessed to contribute to enriching a conservation ethic that was being promoted through environmental education by conservation institutions. An environmental education approach which sought to integrate indigenous and local knowledge for conservation with Black, rural and Zulu communities neighbouring protected areas was likely to find better reception. Mkhize, therefore, saw indigenous knowledge as a tool for creating a sense of the value of conservation. The status of indigenous knowledge, with a newly discovered potential for promoting and enhancing values, started taking an upward hike amongst these interviewed educators with encouragement and impositions of institutions such as the World Bank. The World Bank was one of the institutions that promoted the view that some of the solutions to environmental problems were to be found in indigenous knowledge practices.

Mkhize also related that there had been an imposed marvelling and valuing of indigenous knowledge which he had experienced while storytelling especially from Keogh. This he said, was also evident when Keogh persuaded him to document the Nguni stories he usually told to school groups that visited the Valley. The majority of White students were usually enchanted, and marvelled at these stories. Most Black city students usually responded with embarrassment and/or treated these stories as laughable tales. This he recounts, later led to a conviction on his part that documenting these stories for environmental education use with Zulu school children was a waste

of time. Mkhize's analysis of the situation made him draw conclusions to the effect that these were children who had been overexposed to popular television cultures which had contributed to their inability to link these stories to their lives. The marvelling on one side and embarrassment on the other, had bewildered him and he could not offer any explanation for this state of affairs.

Keogh classified indigenous stories she had heard from either Mkhize, the SEP teachers and from her interviews as myths, fables and stories of Black communities. As she went around interviewing some people and encouraging others to write she was looking for something "radically challenging and worth experimenting with" with SEP teachers. However, as she sifted through her data she found that the emerging stories were varied and fragmented. The content she interpreted as "individual views to science". Keogh's interpretation of communally developed understandings as individual's views might have clouded a better understanding of the issues she was investigating. She might have overlooked the fact that the practices in the stories she was comparing were influenced by differing environmental factors and hence the variations. Keogh's constant reference and struggle as to what indigenous knowledge was, might have been a result of the fact that she had not theoretically internalised indigenous knowledge practices and issues as likely to be varied, fragmented, dynamic and chameleon like. Within these frustrations Keogh saw the role of indigenous knowledge as that of breaking the formal education barriers which "conventional science teaching" had put up against "science in the wider sense". The SEP teachers excitement about indigenous knowledge as an educational possibility gave Keogh an opportunity to work with them in integrating meaningful and relevant understandings of environmental education processes. This act was a move towards 'multiculturalism' in education at a time when the government's policy of separate development stood in the way of this. An ideological question she was constantly asked, especially by the Department of Education, was whether what she was dealing with was science.

O'Donoghue related that at the time referred to by Keogh he did not have the sense of the epistemology of indigenous knowledge that he has now. He asked me to regard his responses as "vague details that I can remember and fragmented bits and pieces". O'Donoghue further said that the common oppositional placing of science and so-called non scientific understandings blurred useful and better understandings about indigenous knowledge. Before embarking on his study, (*Detached Harmonies* 1996) his interests and attempts at understanding indigenous knowledge were directed towards locating where things came from (compare with Players comment in 5.4.4 about littering), as well as a desire to find out what was behind the "taken for granted". With Manqele

they had explored ways people lived in the olden days with an emphasis on the ecological relationship between man and the biophysical environment. An exploration that fascinated him and which he pursued in his study was the relationship between people, cabbage trees and dassies and some of the wisdom behind people's practices (1996:340). O'Donoghue's interpretation of wisdom is "what was done and considered as a success" and that which warrants acknowledgement from us today because people in the past lived with hardships entirely different to those we experience. He advised that one therefore should not lose sight of the fact that the world is changing and ideas move and change, and as a consequence people will continuously grapple with trying to understand what indigenous knowledge relates to.

Looking back at the storytelling sessions by Mkhize, O'Donoghue says that the stories were usually entwined in myths of the past and when told their mythical fervour made him experience them in a manner which allowed him to penetrate into the past. Some of the stories he heard from Mkhize exerted symbolic violence which imposed social constraints on children a feature similar to tales told by Western societies and characters like the Grimm brothers. According to Jenkins (1994:104, in an interpretation of Bourdieu's work) symbolic violence is an "imposition of systems of symbolism and meaning" (see 6.4.0 on how 'symbolic violence' shapes status and identity). The Mkhize stories, O'Donoghue said, drawing from his experiences of his stay in Matabeleland in Zimbabwe where Ndebele, one of the Nguni languages, is the dominant language, that he had come to a realisation that Nguni stories told differed with different physical environments. One Nguni story that displayed this violence, promoted the belief that if children urinated in the water they would automatically be changed to another sex (See Sweet Water story). Myth according to O'Donoghue, is something that human beings have carried along with them, indicated by for example, how people relate to the horoscope. Through such a comment environmental education practitioners are warned not to belittle the shadows that people experience because of their meaningfulness to them. According to him, the mythical contextual grip might be absent in stories written by outsiders to a particular culture, context or physical environment because the authenticity of the story gets lost and needs to be talked through (i.e. see appendix 4 *EnviroKids* story of the buffalo thorn tree). A conclusion that he had arrived at because he had believed that mother tongue speakers of a language within which the story is resonant, makes the storyteller to be seen as the voice of the culture the language is part of. He advised that in order not to lose the voice of the storyteller in what the listener selects from the story and "takes for granted", there should be interaction between the storyteller and the listener. To make indigenous knowledge an

interactive process we need to interact with what we may see as strange and unusual which might be termed as indigenous knowledge, he said.

The brief discussion with O'Donoghue's ex-colleague, Mba Manqele (A prelude to an interview to which she would not agree refer to 2.2) indicated that her understanding of the nature of indigenous knowledge might have shifted from the time of her interactions with this group of educators in the past. Other members of this participant group have memories of her as she enthusiastically worked towards advancing understandings on indigenous knowledge as an indigenous knowledge conference organiser in 1995. This is clearly reflected by the Share-Net publications (1994) in which she had been involved, with others, to produce. Before declining to be interviewed, she had indicated that she was going to charge me a fee of R300 an hour. Manqele works for an NGO which lobbies for human and environmental rights and her responses echoed her philosophical work framework. Her earlier perceptions on indigenous knowledge understandings had been transformed into extreme concern for the loss of knowledge into a reified commodification. Her present views differ from O'Donoghue's who sees indigenous knowledge as a process that undergoes constant change which is arrived at through interactive re-constructions that illuminate the sustaining practical wisdom in the way many things were done in earlier times. He notes that without the interaction particularly with an outsider such knowledge is not always revealed because it may lie obscured in the habitual as a 'knowing what to do' which is so taken for granted, that it is not known at a necessary level of reflection, to be experienced as knowledge.

When interviewed, Taylor had said that he saw indigenous knowledge as "all knowledge" differing from Mkhize's experience and Keogh's view. He cautioned against the danger of seeing indigenous knowledge as separate from 'other' forms of knowledge, a view he claimed was being promoted by researchers. According to Taylor, working with the indigenous knowledge concept for resource development in the late 80's played a merging role for diverse forms of knowledge (see and compare with maNyembezi's view on merging and the developing of an inextinguishable conflict in 5.4.4). He confessed that since then he has observed the rise of indigenous knowledge to a privilege knowledge status propelled by institutions not directly involved in education.

4.5 Summary

This chapter, which shared the views of the environmental educator interviewees, started to explore and display the underlying complexities and challenges that this group worked through in grappling and developing indigenous knowledge resources. Sensitising concepts which have surfaced in Chapter 3 and re-emerge in this chapter, such as re-appropriation, dis-embedded abstraction, commodification, intercultural dialogues etc. are important. I invite the reader to carry these concepts through and make ‘in-between the lines’ interpretations in chapter 5. The central ideas carried by these concepts will be discussed in detail in chapter 6.

CHAPTER FIVE

Views of school based interviewees and elderly community members on the research question

5.0 Introduction

The structure of this thesis was conceptualised around developing the discussion from a wider and general context to the specific case upon which the study focuses. In chapter 3 I wrote about earlier interactions in KwaZulu-Natal within a broad historical overview and briefly showed how these interactions and perceptions on indigenous knowledge were constantly reshaped. In Chapter 4 the discussion shifted to provincial activities in the late 1980's with specific attention to a group of environmental educators. In this chapter I have further narrowed down the discussion to the 1997-8 period when a number of Howick school teachers received a water week resource pack for use with their students. Included in this pack was the Sweet Water story (story details were discussed in chapter 2, and see story in appendix 1), which was singled out from the pack as a springboard likely to tease out understandings of relevance to the research question.

The insights which are shared in this chapter are of the following teachers, students and elderly residents who were interviewed for their perceptions around indigenous knowledge in schools:

Mrs. Zulu, teacher at Mpophomeni High school, 11 March 1998

Mr. Dickinson, teacher at Howick Preparatory School, 13 March 1998

Xolani & Thandeka, students of Mrs. Zulu, 19 March 1998

Mrs. Subaroyan (78 years old, 45 years teaching) elderly resident of Howick, 20 March

Dr. Player an elderly resident of Karkloof and founder of the Wilderness Foundation, 12 March 1998

Mr. Kimber, a farm owner residing in the Howick outskirts, 16 March 1998

MaNyembezi, (84 years old) elderly, well known diviner and herbalist residing on Mr. Kimber's farm, 16 March 1998 and

Mr. Sikhakhane, an NPB colleague who has worked in the organisation for over 30 years, 16 March 1998.

All the data which will be shared on the interviews will be preceded by some preliminary observations which open a window to the context and environment within which the interviews were conducted. You may note that the Rhodes-WWF students are not included in the interviewee

list above. This is because they were not interviewed and were not part of the research sample but participated in the SWAP activities with the schools. Their observations of the schools and opinions on the research question were shared while I was grappling with the nature and challenges of the research question that I had posed. With regard to not reporting on observations carried out by me of the students I interviewed: the environment within which the students were interviewed had neither bearing nor insights to the research question. The observations related here were then used to complement and interpret the interview data.

Within the discussion your attention and curiosity might be drawn to the side topic, 'on being indigenous' which features in the following discussion of the teachers' and elderly community members' views. The purpose for addressing such an issue was not to divide participants into racial groups but to understand how their experiences and perceptions about themselves might inform their views when critically examining the role of indigenous knowledge within environmental education processes.

5.1 Observations in schools

The visits to the schools prior to May 1997 were conducted with no intentions to record observations. When I visited the Howick schools in May to prepare for a school joint water quality audit with the Rhodes WWF students my role was that of an observer with a facilitatory agenda. The observations of the four schools shared here have been enriched by observations shared to me by the Rhodes-WWF participants as the school social situations were beginning to be too familiar. The observation of the school community environments, teachers and students involved in the water audit project had also influenced the selection process of the research interviewees. There were instances where I functioned as both participant and observer, hence my failure to label my role as either pure observer or pure participant. A lot has happened since the observations discussed below. Mpophomeni High school has a 'no dumping on these premises' sign and an environmental club. The Howick Prep. teacher was present at a workshop to discuss the 1998's schools and home water audit pack activities. The day agreed upon as suitable for interviews for Injoloba Secondary and Howick Secondary proved to be otherwise because of a provincial schools 'stay away' strike. The new Injoloba teacher attended an environmental education workshop and was very enthusiastic about actively engaging himself with environmental education activities. The relationship with Howick Secondary has not improved much.

On the preparation of the school joint water quality audit with the Rhodes-WWF students Mrs. Zulu displayed a lack of familiarity with the contents of the water audit resource pack even though she had had it for over a month. The pack might not have been perceived as a priority within her teaching schedule. She had previously displayed irritation when I visited without an appointment or called while she was in class teaching to discuss the water project. I recognised my role of facilitating Mrs. Zulu as a stumbling block and resorted to discussing the different ways of using the materials. The discomfort and worry as we prepared for the audit with the Rhodes WWF students was dispelled when I offered to be present during the audit. A suggestion I made of interviewing elderly community members as homework also put her at ease. The move from the classroom, a comfort zone, to the river caused other discomforts. Mrs Zulu took on her usual classroom role to the discomfort of all participants. My reluctance to respond to the situation was held back by my not wanting to take over. The responsive behaviour, joking mood of the Rhodes-WWF students created a relaxing atmosphere. My role shifted to that of an observing participant when all became comfortable and we broke into research groups.

The Rhodes-WWF student group who visited Injoloba Secondary school encountered a 'no lessons' strike. They observed the reality of an uneasy political transformation in schools. The few activities done amidst the strike mood, was the water use audit. The teacher who co-ordinated the project taught accounts and as such may have favoured the water use audit as opposed to the water quality one with the indigenous knowledge story.

The third Rhodes-WWF student group who visited Howick Prep. observed the enthusiasm with which the students engaged with the activities though wondered, however, if the students understood the reasons for engaging with water audit issues. The water story had been used as homework and the students shared their findings.

An opportunity to do and observe the water audit activities with Howick Secondary could not be worked out. The tension in the school for good academic results as opposed to time spent differently, was noted. Time outside school teaching could not be used because of the students' and the concerned teacher's commitments. A working partnership seemed difficult to establish.

5.2 Howick teachers' perceptions on the role of indigenous knowledge in schools

Not all the teachers identified as potential research participants from Howick were interviewed. I realised quite late that opportunities to interview teachers (and students) from Injoloba and Howick Secondary were not possible. This situation reduced the research interviewees to two teachers, Mrs. Zulu from Mpophomeni High school and Mr. Dickinson from Howick Preparatory school. These two teachers were individually interviewed.

5.2.0 On being indigenous

Howick Prep. is a model C primary school in the town of Howick. The majority of students are White, Indian, Coloured and Black students are a minority. Although Mr. Dickinson, a teacher at the school was able to trace his ancestry back through several generations to Britain, he considered himself an indigenous White South African as his grandparents were born in South Africa. Mrs. Zulu is of Zulu origin and is a school teacher at Mpophomeni High school and the club advisor of the school's environmental club. I will refer to her throughout the discussion as Mrs. Zulu to differentiate between her and the ethnic group she comes from so as not to confuse the reader. Mpophomeni High is a township school in the vicinity of Howick attended mostly by resident Black students. When both Mr. Dickinson and Mrs. Zulu saw themselves as indigenous South Africans I interpreted their responses as insider perceptions within a South Africa which they saw themselves as an integral part. Mrs. Zulu confidently maintained that the issue of whether she was an indigenous South African or not could not even be contested because her race and colour was evidence of her originality.

Mrs. Zulu, however, felt that in a South Africa that is made up of diverse cultural groups, a narrow view that strictly associates indigenous knowledge to certain cultural groups without leaving room for individual choice, is problematic. She saw indigenous knowledge as belonging to everyone who felt a strong bond with the historical richness that indigenous knowledge provided for South Africans. Mr. Dickinson's view on what counted as an indigenous story, and which contrasted with his description of being 'indigenous', should also be noted in 5.2.1 below which draws one's attention to the fact that even though people may consider themselves as indigenous, what characterises indigenous knowledge may be perceived differently.

5.2.1 How indigenous knowledge and its role within environmental education processes was perceived

The concept of indigenous knowledge was not an entirely foreign concept to both Mrs. Zulu and Mr. Dickinson. This might have been influenced by the numerous meetings I had with them in which before the interview we discussed the use of the water week resource pack.

Both teachers see environmental education mainly as happening within the school context. I am of the view that neither of them had seriously considered that there might be a role which indigenous knowledge could play in environmental education or within education in the wider context before I introduced them to the SWAP resource pack. The interviewees saw the environment outside the school mainly as an area from which the students could benefit to broaden their syllabus related understandings. They viewed the role of indigenous knowledge as a resource to be used in the classroom.

that was the perception amongst Black people. The immediate response I can give is one expressed by Mrs. Zulu as a Black person in the above paragraph, where she said that indigenous knowledge was embedded in the culture of rural people, specifically Black people. According to Mr. Dickinson this view has been promoted by Black people who appeared to him, to have a richer and more varied oral culture, and a rich verbal language which is handed down through stories.

5.2.2 How teachers could bring indigenous knowledge to the fore in environmental education

Mr. Dickinson encouraged that indigenous knowledge should from the outset not be seen as “a subject or a secret, and not be restricted to one subject, but be what all teachers can draw on,” and if that is not realised indigenous knowledge could become a peripheral, dis-empowering, specialist issue. He cautioned against the relation of indigenous knowledge only to subjects that were traditionally associated with environmental education, such as Biology and Science, and commended the weaving of indigenous knowledge into areas such as History, Languages and Chemistry. This he said could be realised within the OBE curriculum framework. For teachers, according to Mr. Dickinson, to recognise that indigenous knowledge has an important role in environmental education, curriculum and resource developers must start recognising environmental education as inclusive of indigenous knowledge. By taking such an approach they would be able to provide insights and varied approaches in order for teachers to gain access in a form of environmental education that is richer for teaching and learning purposes. He further indicated that indigenous knowledge practices should receive attention in practical subjects, which students could be encouraged to explore in their practical projects, such as water studies. He emphasised that History and language teachers should play a leading role and could work together in making History personal and alive through a creative use of language, especially when looking at family histories to show a link between indigenous knowledge and environmental education.

Mrs. Zulu said that she had observed that most people, especially teachers, were not aware that indigenous knowledge is part of environmental education. I interpreted this statement to mean that she was one of the aware ones. According to her, teachers should be made aware of how indigenous knowledge aspects could be taught within the school context. This could include possibilities such as working with other community members. She saw some of the teachers as lacking a realisation that there are many sides to educational issues and that indigenous knowledge is one of them. One example of showing this, she said, could be that when a teacher is required by

the syllabus to teach about viruses he/she might decide to look at HIV and further discuss AIDS to stimulate and encourage students to interview elderly community members, especially as some maintain that HIV and AIDS is not a new health problem. She singled out languages and Biology as some of the main subjects where indigenous knowledge understandings might be explored. She touched upon topics such as marriage and pointed out that it could be useful to encourage students to research about the different types of marriage because some are more commonly practised than others. There seems to have been an increasing loss of understanding and experience of traditional cultural practices and values (see also Xolani's views about cultural values in 5.3.3). She ruled out mathematics and physical science as subject areas unsuitable for the exploration of indigenous knowledge. She advised that for indigenous knowledge to be integrated into environmental education varied aspects of indigenous knowledge which have relevance in different subjects should be taught.

Mr. Dickinson felt that by making room for the mythical type of stories in teaching, indigenous knowledge could be brought to the fore. He believed this because he had come to realise that he talked much more with his grandparents than his own children do with theirs. According to him, time for talking in some parts of society was diminishing because of the global increase in technical gadgets such as televisions and computers which influence our views on knowledge and contribute to the loss of and waning regard for verbal cultures. Instead of increasing passive computer approaches to teaching teachers could promote verbal cultures which were traditionally important amongst black people, by encouraging children to talk about their cultures. According to Mr. Dickinson this is important in South Africa for helping us understand each other better; not for pointing out the right or wrong, but because it would interest students who should learn about each other's different cultures and promote understanding that though we are all South Africans we do have different cultures, he indicated. According to him, South African myths and legends have not been explored widely in schools and students and teachers could look into these.

5.2.3 On indigenous knowledge within environmental education processes in the new outcomes based education (OBE) curriculum framework

Mrs. Zulu maintained that many teachers were a product of a teacher training curriculum which had not encouraged them to wander off to areas outside the syllabus. However, both she and Mr. Dickinson were of the view that the OBE framework opened up 'detouring' possibilities which gave teachers access not only to areas crucial to the students' personal development, but also to a

better understanding of their local environment. This new approach to education was further seen by both teachers as the only means to display the interaction between indigenous knowledge and environmental education. The development of respect for local environments and histories was going to be made possible in curriculum 2005, and adult members as providers of related knowledge were going to be a valuable resource. Mr. Dickinson, however, emphasised that teachers should not fall into the danger of being over context specific, thus losing sight of the wider global picture. He further said that those schools with access to advanced communication technology should be encouraged to find out about indigenous water collection practices from children in other countries.

5.2.4 Can adult community members play a role in strengthening the links between indigenous knowledge and environmental education?

Mr. Dickinson suggested that there could be logistical problems with involving elderly community members deeply in education and felt that this could be avoided by encouraging students to visit and interview them to get a sense of where indigenous knowledge stories come from. Developing resources with elderly people is another way of involving them into school affairs, an approach which needs to be promoted. Mr. Dickinson was of the view that due to the fact that elderly people have seen a lot of changes in their lives, they could be used as gauges for advising schools on whether curriculum development was progressing in a positive manner or not, and could offer valuable problem solving insights. He said that partnerships which facilitate communication between the child, parents and teachers are being forged more nowadays than in the past, and teacher appeals to parents to play a role in the affairs of the school are increasing. According to him such communication should end up bridging the gap between the school and home.

Mrs. Zulu was of the view that bringing elderly people to school should be minimised. The lack of experience by the elderly on matters that involve educational planning could slow down progress that has already been made in curriculum development. Instead students should be encouraged to conduct investigations outside the school and to involve the elderly in their activities. The teacher should also invite people such as counsellors who have important issues to get across to the youth of the school.

5.3 Students' perceptions of indigenous knowledge within environmental education

processes

I conducted an interview with Xolani and Thandeka, Mrs. Zulu's students. She had selected Xolani (male) and Thandeka (female) for the interview because they were outspoken members of the school environmental club of which she is an adviser. These students had used the Sweet Water story in the water week resource pack. The aim of the interviews with the students was to try and understand how they saw the role of indigenous knowledge in their lives at school and at home. I used the Sweet Water story and activities as the context within which I had interacted with them and this became the starting point to achieve my aim.

5.3.0 Views about the school and community

According to Xolani and Thandeka, the teaching and learning of indigenous knowledge within environmental education should not be confined to the school because issues that could be labelled as 'indigenous and environmental' are learnt more from parents at home. Teachers' reluctance to continue from where parents left off on these 'learnt from home' issues has considerably contributed to the lack of respect amongst the young. They indicated that better communication between the school and the rest of the community to create awareness of what students were doing at school was important. Such a move could encourage that students be treated in a manner that enhances learning at school and makes room for teachers to understand issues of importance to the community. This could be done by allowing the elderly to come and teach in schools about issues of social importance which are relevant to broadening the minds of today's youth, especially an understanding of Human and Social Biology in a "non-academic way".

5.3.1 On education and educational approaches

Indigenous knowledge to Xolani represented a way of life which is different from school education. Both students also, saw 'school education' as different from just 'education'. Xolani called school education a "new civilisation shield" which an educated person uses to protect her/himself when acquiring it. They both felt that by learning at school they were going to join the 'knowing' and respond to a 'high demand' by our society for school educated beings. Xolani was particularly interested in becoming knowledgeable so that he could teach others on how to pass an examination, about the environment, forestry. He explained that education is power and such power holds advantages and disadvantages and when he teaches he wants to strive at making

those he interacts with realise the way they could use this knowledge in a manner that it benefits the environment.

Thandeka strongly believed that formal education has also been used as a blindfold against indigenous knowledge. As a blindfold the negative side of formal education becomes invisible as the wisdom in indigenous knowledge has not been encouraged to serve as commentary. She pointed out that teachers select what can be learnt from the past without the consultation of parents. Teachers, according to her, should encourage students to make personal judgements for issues external to their formal school life so that they can learn to be responsible 'knowers' who could become responsible and wise grandmothers, drawing from rich experiences when they tell their stories. According to her, grandparents should be encouraged to continuously play a role in child development otherwise they start feeling incapable of making positive contributions in the shaping of society. Thandeka saw the school as a teaching platform from which those students whose grandparents have resided in urban areas can also benefit.

Xolani and Thandeka saw the teacher as "one who dishes out what I should eat which I have to digest and cannot be taken away from me" and one who has the responsibility and authority of making sure that they are in turn able to 'dish out' what they have been taught for the examination.

5.3.2 How to illuminate an indigenous knowledge link with environmental education

According to Xolani, in the past people were dependent upon the environment as a resource base, and upon each other, and hence there was respect for the self and others. A loss of this respect is evident because young people are sometimes given responsibilities they cannot handle which results in the lack of enjoyment of youth and a lack of personal respect (compare with Player's comments in 5.4.3 about the amount of work given by teachers to students). Xolani blamed industrialisation for these cultural erosions which he said had also resulted in Zulu becoming a threatened language evident in the memory loss of tree names and environmental concepts that cannot be captured in the English language. By teaching values such as respect and pride amongst Zulu people for their language, for self and others a strong link between environmental education and indigenous knowledge could be realised. He said that elderly people could play a role in making that possible by bringing in their stories and making environmental education a rich experience instead of environmental educators taking on a role that is similar to that of a chief in

the past i.e. that of a superior being. According to Xolani, problem solving in the past was controlled by the chief and problem solving approaches were usually autocratic and aggressive.

They both voiced the view that even though some past practices were not good for the environment most were less detrimental to the environment than present ones. In the past a resource like a tree was used for firewood, building and for medicine, while nowadays formal education encourages that more resources be used for personal comfort through subjects such as Woodwork. Xolani said that when people see a tree many ideas race through their minds as to how they could use it for personal comfort. He referred to traditional healers as some of the very sensitive and responsible resource users of the past, and advised that teachers who use natural resources such as wood and metal take on the responsibility of also teaching about wise use of their teaching resource.

5.3.3 Is there room for mythical stories in environmental education?

In the Sweet Water story there is a part that points out that children, were discouraged from urinating in the water by adults who told them that if they did they would be transformed into the opposite sex. Xolani felt that formal school education discourages students from bringing stories like these to school. Students telling stories like these would be laughed at, making them doubt the things that are taught at home. Thus the tendency among formal educators has been to teach students to doubt the wisdom of their cultural values as they grow older and learn to dismiss things of the past not because they are valueless, but because they are of the past. (compare with Mrs. Zulu's similar view in 5.2.2 where she talks about marriage).

5.4 Elderly community members

5.4.0 Observations

In the final set of interviews I consulted a small sample of elderly community members in the Howick region and immediate surroundings to hear their views on indigenous knowledge, environmental education and the present status of education. The researcher is, at times, considered as one in a powerful position. This differed quite considerably with different

interviewees. They were all friendly once they had agreed to be interviewed, and as a younger Nguni person I understood I had no power in such situations. If respect for age is displayed, the elderly person would usually treat you with respect, I had been told. The fact that the interviews were conducted in environments which they were used to might have been another reason for achieving a relaxed atmosphere.

We sat on the grass under the tree with the 84 year old Zulu lady, a practising traditional healer, who lives in a thatched hut in a farm. Her role as a teacher was observed; she had a boarding diviner student. Her solid frame and hard baked bare feet as she walked off to collect wild spinach may have indicated that she had stood by the cherished values she could still hold onto.

What was observed from the landlord of the Zulu lady, an English farmer, was the warm relationship he had with his workers and the relaxed mood with which they responded to him. His willingness and enthusiasm to be interviewed, even though an appointment had not been made, was encouraging.

The 75-80 year old White male participant was confident in all his responses. His lounge housed an interesting collection of Southern African artefacts with a conservation and evolution theme. Pictures of him and his late treasured and celebrated Zulu friend and collections from European travels grace the mantelpiece. He referred to his collection as 'culture merging'.

The 78 year old lady did not trust my intentions of wanting to interview her. She sat at a slightly higher level than me, thus reducing my role to a submissive one. She looked me straight and sharply in the eye when my questions were not clear. I did not feel intimidated and trust developed. I was curious about the authority in her voice in relation to school education and had to be cautious not to ask questions that might destroy a rapport that had taken quite sometime to develop. Her living room decor was fairly modern, with a copy of Jesus the shepherd. Sports trophies and pictures of relatives in academic attire, prompted me to ask once the interview was over, if she was a teacher. Observing the authority in her voice and discovering that she was a teacher was a serious breakthrough which could have been missed had my observation skills been off guard. The breakthrough revealed her views as those representing not only the elderly group of participants but also those of the school teaching community. This is elaborated upon in the sixth chapter where the research understandings are shared.

5.4.1 Elderly community members' understandings of 'indigenous knowledge'

Interviews conducted with Kimber, Player, Subaroyan were on a one to one basis. An elderly colleague who had accompanied me when I interviewed maNyembezi ended up contributing to the discussion. Subaroyan's contributions should be understood within the context of a very informed formal education background as she had taught for about 40 years. Kimber is a farmer who has had formal education and maNyembezi is a *sangoma* (traditional healer) trainer and retired farm worker residing on Kimber's farm. Player is a conservationist of international repute who has worked with the NPB and later founded the Wilderness Foundation. Sikhakhane who had accompanied me when I interviewed maNyembezi worked as a Midlands region community conservation officer for the NPB. He had previously contributed insights in understandings that are reflected in the Sweet Water story and other indigenous knowledge materials including the construction of a demonstration grain pit at Umgeni Valley (Share-Net 1998, and see O'Donoghue & Janse van Rensburg 1998 for insights on the pit construction).

There was some difficulty in doing a penetrative exploration on indigenous knowledge within environmental education processes in schools with some members of this group of interviewees. Indigenous knowledge as experienced everyday life was suddenly presented to them in a conceptualised abstract manner, appearing as something important to be grappled with by researchers (see 6.1). Only Player had a notion of what indigenous knowledge as a concept meant. As a result interviewees responses might therefore have been influenced by a sharing of my insights on what I understood as indigenous knowledge at that time in order to help them see what is meant by the term making the interviews to sometimes wander. This group was also not directly involved in formal school education at the time the interviews were conducted.

5.4.2 On being 'indigenous'

All research participants felt that they should be regarded as indigenous people. Kimber's reason was that he was born in South Africa and was carried on the back like all Zulu babies in South Africa. According to Player the fact that humans beings originated in Africa meant that all people are indigenous. However, most White and Indian South Africans have in earlier South African history, because of the availability of financial resources, robbed themselves of an indigenous identity by choosing a westernised materialised culture base. Subaroyan felt that even though she

was Indian she was South African because she was born here. She mentioned that those classified as Indians differ from each other in their religious practices. As much as she felt she was South African, she followed some practices that are 'indigenous' to Indian culture, for example, making sure that she cares for her own children, the eldest son must live with his parents and if the eldest is a daughter then she too must. Adhering to these practices made her to be recognised as practising Indian indigenous cultural practices as much as she was African.

5.4.3 On the state of education

All the elderly interviewees were of the view that education in the country was a farce, and in a state of serious decline. MaNyembezi was very critical of the increase in teenage pregnancies and a lack of respect and declared here as signs of a struggling education system, especially where values are concerned. Subaroyan said that there were very complex social and economic problems affecting schools and the indicators of this she mentioned as; poor matric results, school strikes, lack of respect between students and teachers, students and parents and teachers and parents. Kimber was of the view that the architects of the education system had been very short-sighted curriculum designers because the outcomes of education have proved them as not being in line with societal changes and instead have bred environmental neglect, lack of respect and unemployment. Player was mainly concerned about the lack of respect for the environment and between people in schools. He said that this was a result of poor planning by teachers who gave students too much work with no appeal to the students' imaginative capabilities and a curriculum designed on racial grounds, based on fostering values that moulded races towards uniform thinking (compare with; Xolani's views in 5.3.2 about tasks given to students that they have difficulty coping with, Player's comment in 5.4.2 about White and Indian South Africans which could foster cultural specific ways of thinking).

5.4.4 On indigenous knowledge within environmental education processes

MaNyembezi had observed that there was a serious lack of knowledge of indigenous plants amongst the youth. She assumed that this was a result of the fact that edible plant identification was not taught at school. In the past young girls were formally given these lessons by their mothers or grandmothers. She felt that this was a result of the young having abandoned edible plant collection as a solution to dietary problems because they have the option of buying vegetables from the shop. MaNyembezi also felt that education about healthy eating habits should be an

important part of education because children are not encouraged to eat “sour milk a nourishing foodstuff that is kind to the stomach”. Formal education according to her provides very few solutions to social problems and good cultural practices are barely taught.

MaNyembezi continuously linked indigenous knowledge to respect throughout the interview. In this paragraph I discuss how she combined responsibility and respect. She maintained that old people are made to feel like burdens to their children who traditionally, would have shouldered the responsibility of looking after them. According to her, environmental education is about responsibility not only for what affects you but what affects useful cultural values. The responsibility of looking after the spirits of relatives buried in the farm belonged to her and she confessed that she would never leave them because they are her link with her ancestral world. She felt that young people do not understand that these are important and fragile values which need to be treated with sensitivity when dealing with current land issues in the country. She warned teachers against the combining of Western and African cultural values because they might cause an inextinguishable conflict (compare with Taylor in 4.4 on indigenous knowledge as a merger between scientific and non-scientific understandings and Player in 5.4.3). To substantiate this point she said that she had learnt that Zulu culture does not encourage one to look an elderly person in the eye while White people who brought formal education insist that it be done.

Growing up as White person in a farm Kimber, had learnt the Zulu language when he was a child. When learning the language he had discovered the value of being respectful, for which he is very grateful, for he believed it had made him more broadminded than South Africans who had not ‘detoured’ into other cultures. He then advised that language is the means for South Africans towards learning, understanding and thus respecting each others’ cultures. Kimber felt that environmental educators together with school teachers must play a bigger role in identifying and drawing links between indigenous knowledge and environmental education. The solutions to present day social and educational problems could be found in the heart of the link. Kimber said that, instead teachers encourage students to look out for environmental solutions first in formal education at school and later in formal paid employment.

Subaroyan saw the link between environmental education and indigenous knowledge as an understanding and respect for values, for example, in wanting to understand and get along with each other. She said that such values had been ignored in apartheid education and should be taught to children. According to Subaroyan these values have to be extended to the biophysical

environment, and teachers need to work with such values and ideas in mind. If this was not done, Subaroyan felt that the socio-cultural environment which encompasses indigenous knowledge will continue to be degraded. This she said was already happening, obvious in the loss of the belief that that there is 'a special time and special place for everything'. Instead dirt, noise and pollution plague the streets.

To redress apartheid problems such as the ones referred to by Subaroyan, Player said that there was a need for a holistic and responsive environmental education. He emphasised that as people rush to revamp the education system, care must be taken that environmental education does not get marginalised and stripped of its richness by segmenting it. He advised that environmental education practitioners should take note that reference to indigenous knowledge as the historical part of our environment could marginalise indigenous knowledge. To emphasise this point he gave an example of how in the past people used to pour their traditional frothing beer onto the ground before taking a sip, a practice which continues even though people buy bottled beer. Practices such as these which are usually associated with indigenous knowledge and seen as superstitious display that indigenous knowledge is a continuous process.

With regard to how the organisation for which I work the KZNNCS could play a role, (he worked for the NPB before retirement), Player expressed his despair at its reluctance to promote indigenous knowledge. He said that this could be done by inviting and hiring game guards who have retired from the organisation to tell stories about their experiences in the 'wilderness' to tourists. These stories need to be recorded as part of the history of conservation, he said. He then charged environmental educators with the responsibility of making indigenous knowledge accessible to Western people because he said he had observed a confrontation between the Western and the African culture, and that the renewed excitement and talk about indigenous knowledge brings hope for a cultural merger (compare with Taylor on a merger in chapter 4) and broadening environmental education. A contradiction to an earlier statement about all people as being indigenous in 5.4.2. He urged environmental educators as people who sometimes work with different racial groups, to function as bridges between racial and cultural tensions associated with environmental education where tensions exist around environmental ethics.

According to Player starting up the Wilderness Foundation was his way of integrating indigenous knowledge into environmental education. One prompting issue was an observation that he made was that, when a group of people with an attachment to the biophysical environment for its

livelihood is encouraged (imposed upon) to adopt materialistic lifestyles its attention gets drawn away from its natural resource base and it tends to adopt culturally deviant behaviour, such as thieving, when the promised rewards do not materialise. Similarly, taking away communal land resulted in a loss of ownership values and attachment to the land and one result of this could be the throwing of dirt on the ground. He suggested that another reason for littering could be that people go on with their lives as they would have done in the past whilst adopting new materialistic lifestyles and thus continue disposing of waste the way they used to. According to him, in the past there was hardly any waste and if there was, it was biodegradable. Indigenous knowledge seeks to encourage environmentalists to put things into perspective and to understand how people have been shaped by their past, he said (compare with O'Donoghue's comment in 4.4 about having a sense of where things came from).

Player shared his experiences of conducting wilderness experience sessions for students in the Mfolozi game reserve in Zululand. He said that he had observed students, particularly those from townships like Gugulethu, and some White and Indian children. The most common behaviour amongst all of them was to huddle together and stare into the fire as if the source of their fear would emerge from there, yet it was behind their shoulders that the danger could pounce from. Player maintained that he had observed the same kind of behaviour with some teachers and environmental educators. The focus of the environmental educator is, at times, to provide the scientific names of plants while the teacher would focus on the textbook for security. He emphasised that the presence of indigenous knowledge within environmental education, can be located if teachers and educators begin to share from their own experiences thus exposing themselves as individuals who are affected by environmental problems as well. He said people should not be scared to open up their experiences in response to a new and refreshing hunger to understand African people evident in the popularity that his book (*The Wilderness: Shadow and Soul* 1997) has achieved.

5.4.5 On educational approaches that have been used to share indigenous knowledge

MaNyembezi called for a return to the old ways of teaching and learning, where adult people in the community were given a role to play in the education of the child. She said that when she was told that she must spit in the water to avoid her sister getting annoyed and impatient with her she did as she was told. She never asked how spitting could influence her sister's moods because she grew up being told that such and such was not done and when she looked around her, indeed she found

out that it was not done. She said that this way of teaching might not work with young people because they ask too many questions and go ahead and get pregnant.

Subaroyan on the other hand was of the view that going back to the olden practices of teaching might not be a solution because things were different then. Mothers at that time did not teach about sex education. Home education from her grandmother was, “Do as I tell you” and “ Things were done because that was the way that they were to be done” and to respect parents. This way of doing things would not work because the extended family way of living is breaking up. It is also an approach that would not work at school as the traditional authoritative ways of teaching are being challenged by students. Traditionally if three sons got married they all lived under the same roof with their parents. A daughter had to leave home and stay with her in-laws. Nowadays sons do not always stay because houses are smaller and the cost of living is high. Sons marry and leave, she said.

Subaroyan further expressed relief at the transformations about to take place in education today. She said that the authoritative educational practices observed in Indian schools would not work today because of the racial mixing mostly with Zulu children. What she had observed, and heard from her grandchildren suggests, that “the Indian teacher is not sensitive to some of these changes and lacks an understanding of Zulu culture” and is forced by conflict situations to gradually learn from their pupils what happens in their homes. This she said was because the Indian way of living is different from the way of life of the Zulu and White peoples’. When she was a teacher she was reluctant to try new ideas of teaching because, “we Indians as teachers became passive and did not become good teachers and were not ready to challenge some of the bad practices in education. We would listen. If the Education Department introduced teaching ideas which were good we tried them out, if we didn’t like them we wouldn’t say but ignore and forget. We Indians are like that and slowly waking up to challenges that involve everyone in this country.” (compare with Player’s comments in 5.4.4 above in relation some teachers fears of sharing beyond the textbook).

Sikhakhane views on education focused on the Zulu child. He said that, education in the past instilled fear and respect for elderly people. This was done by clan name and extended families appointing a knowledgeable adult to teach the young along gender lines. The popular practice was to present problems to the young as language puzzles which they had to put together. One example involves a bird called *umvemve*; children were told that if they killed it near their homestead they would not be recognised by ancestors. The main reason for saying this was to

discourage the hunting of this bird which could not multiply fast; promoting this belief was to guard against its loss. As children grew up they would in turn promote new practices and beliefs as long as they served a good purpose. Sikhakhane said that if this way of teaching is useful then teachers should promote it.

There are some similarities between what Player and Sikhakhane said. He also, like Sikhakhane said that, adult people had a way of teaching young people without giving them answers. They used to encourage exploration and discovery and through mental puzzles. They had to learn to fit pieces together and when they did not, then their curiosity was not worth thinking about and puzzling out. People in the past would be of assistance when one had tried to solve the puzzle. Player was drawing from his experiences in his relationship with Ntombela, his life companion and teacher in the 'wilderness'. He said that when he asked Ntombela about something Ntombela would tell Player to try and answer it himself. It was when he had made observations and shared them with Ntombela that Ntombela would then give his response. This way of teaching he found stimulating and full of depth as well as good exercise for the imagination. Adults did not expect to be questioned on what they said because they had the experiential knowledge of knowing that certain things should not be done and questioning them was avoided as an act of respect.

Kimber who shared from his childhood experiences recalled instances when he was told that if things were not done in a certain way misfortune would befall him. The reasons that were given did not make sense then and as he grew up, if they were not forgotten, they would suddenly make sense. According to Kimber there were no explanations because the elderly people did not have any, but knew that the consequences of one's actions would be much greater if they did not do as they were told. He said that teachers should not be discouraged from discouraging students from behaving in a certain manner if they know that the consequences would be negative, and should confess their lack of knowledge when they are asked the reasons.

5.4.6 What role should elderly community members play in school?

All the elderly participants were of the view that society does regard them as 'holders' of indigenous knowledge. The conflict with this, though, according to Subaroyan, was that their knowledge and experience is usually undermined thus they cannot be given an opportunity to play

a role in the development of the school curriculum and their views would not be taken seriously (compare with Mrs. Zulu's comment with regard to curriculum development in 5.2.4). Her conclusion was that the elderly would have a lot to say given the opportunity. MaNyembezi was worried that she was not educated, and that education has tended to be given by formally educated people. In the past she had a responsibility over girls who were ready to have suitors. She was the community educator on issues that involved women's sexuality and their responses to a man's sexual advances. As a result there was planned parenthood. This kind of education maNyembezi was confident she could offer to girls who had reached 12 years of age, with the assistance of teachers. Kimber felt that elderly people needed to play a role and give a different meaning to education. Through playing such a role opportunities could begin to open for other people who have potential to make the experience of the school learner a richer one. He mentioned maNyembezi as one such person because of her vast knowledge about plants. Kimber mainly saw the role of adult people in school as that of storytellers. He felt that they are the ones to fire up the spirits of the young people and stimulate their imagination.

5.5 Conclusion

The key ideas that come up from this discussion have been isolated to be further discussed in the next chapter in the company of literature to throw more light on the issues raised. This wider discussion will provide insights for a way forward with regard to understanding the role of indigenous knowledge within environmental education processes.

CHAPTER SIX

Alice

had seated herself on a bank of a brook,
with a great dish on her knees, and was sawing
away diligently with the knife. 'It's very provoking!'
she said, in reply to the Lion (she was getting quite
used to being called 'the Monster'). 'I've cut several
slices already, but they always join on again!' You don't
know how to manage looking-glass cakes,' the Unicorn remarked.

Lewis Carroll, *Through the Looking Glass* (in Greig, Pike & Selby 1987:37)

6.0 Introduction - 'baking a multi-coloured marble cake'

This chapter is a synthesis of ideas and supporting evidence that have developed around the research question. It reflects the voices of other researchers who engage in discussion around the themes I have isolated for further discussion. These are the contests and shifts, within ideas around indigenous knowledge, views on indigenous knowledge sources, the reification of indigenous knowledge, data collection techniques for indigenous knowledge stories and resource development approaches. A major part of the discussion will focus on exploring the role of indigenous knowledge around these subsections :

- status and identity,
- history and the future,
- values,
- story,
- teaching methodology,
- collapsing barriers between the school and home,
- a moral voice for conservation,
- institutional mediation,

The dividing of these themes into sections for discussion by no means suggests that they are separate entities. Rather they melt into each other. It is for that reason, that I refer to this style of presentation as that of baking a 'multicoloured marble cake'. Such blurred demarcations are referred to by Pike, Selby & Greig (1987:30) as the 'permeability of boundaries'. A mash of all emergent themes into one discussion could however be the cause of a mental indigestion for the reader, which may be avoided by a thematic discussion.

6.1 The contests and shifts around indigenous knowledge

The varied views of research interviewees and some participants evidently displayed indigenous knowledge as a shifting, complex, and contested social construct. Their views were contextually specific to Howick-Mpophomeni, KwaZulu-Natal and South Africa, and served to clarify the nature of indigenous knowledge in this context. According to Xolani, one of Mrs. Zulu's students, "indigenous knowledge was a way of life and different from school education in that school education was a new civilising shield used by so called educated people to shield and protect themselves by claiming that they know". Taylor had indicated that "all knowledge is indigenous" and that the new focus on indigenous knowledge as a concern transforms indigenous knowledge into "privileged knowledge". Mkhize believed that indigenous knowledge was "the culture of Black people". Keogh maintained that indigenous knowledge was "radically challenging myths, fables, stories that are fragmented and varied". Manqele's response seemed to imply that indigenous knowledge is exclusive to a certain group of people and individuals, and worthy of economic gain. According to O'Donoghue, indigenous knowledge is not "something that lives in people's heads, but a process that can be understood through interaction". O'Donoghue's statement made more sense to me when I interviewed elderly community members. I found that the concept of indigenous knowledge was more difficult to talk about with them because they were speaking from within a rich indigenous knowledge experience by virtue of being older and in touch with some indigenous practices. MaNyembezi walked barefooted on the way to the field to collect wild spinach when I arrived to interview her. Therefore, bringing into the talk such a concept would have perhaps been similar to facilitating an "intrusion of abstract systems into day-to-day life" (Giddens (1992:112). It was thus in the interaction with the participants, and not necessarily bringing indigenous knowledge as a key to the discussion, that understandings related to indigenous knowledge emerged.

When Arun Agrawal (1995) published an article where he presented his views around indigenous knowledge, a debate where indigenous knowledge emerged as multi-faceted was opened up (see 1996:19). Agrawal had asserted that most writings about indigenous knowledge presented many conceptual weaknesses and contradictions. His views were summarised by Tick (1996 :12) as:

- Distinguishing 'indigenous' and 'western' as two types of knowledge is not only potentially ridiculous, but also counterproductive for those who believe that indigenous knowledge has a contribution to make to sustainable development
- There is actually nothing new about the rhetoric and practice of indigenous knowledge
- the strategy of archiving and disseminating indigenous knowledge runs counter to the very concept of indigenous knowledge

As a response to Agrawal's concerns Rollefson (1996:16) points out that "contrasting indigenous knowledge to Western knowledge is moot" and could be equated to a comparison of apples with oranges. Rollefson saw indigenous knowledge as the "practical knowledge and experience of people who still have a direct link to the 'soil' and their immediate environment". Heyd (1996:12) indicated that there was confusion in Agrawal's analysis created by his equating of 'scientific' knowledge with 'western' knowledge, and further argued that, "all scientific knowledge is clearly not Western..., nor is all Western knowledge scientific". He also wrote that indigenous knowledge "has its limitations, and that there are many situations in which it is actually not useful" (compare with maNyembezi and Subaroyan's views in 5.4.5). Haverkort (1996:16) pointed out that there were differences between information and knowledge and that "information can be managed but knowledge is a creative process in the minds of people: it has its own dynamics and is largely uncontrollable, due to the role played by values, learning experiences and inspiration". Semali (1996:14) wrote that the "dilemmas we face in defining IK are central to the post-colonial debate on the origins of knowledge and the manner in which it is produced." While Showers (1996:14) maintained that "both indigenous knowledge and western science are an attempt to characterize and understand the 'universe' of a given society". She made a direct link of this debate to environmental education by clarifying that environmental problems have always been there yet the questions that they raise are based on non generalizable but site-specific details. It is in, "both indigenous and local environmental knowledge that we have the potential to advance people's understanding of the environment in all societies" she added. Though Annette Gough (1997:5.1), was not one of the respondents to Agrawal's article her views around indigenous knowledge open up the discussion even more. She asserts that indigenous knowledge "is the local knowledge that is unique to a culture or society which clarifies what Showers (1996) means by 'local knowledge'

here. “Indigenous knowledge is also known as local knowledge, folk knowledge, people’s knowledge, traditional wisdom or traditional science”, Gough said.

From all these responses the key points that emerge are that,

- any type of knowledge is a process of trying to understand our environment,
- there are many problems that arise in the contrasting or equating of indigenous knowledge with either scientific or western knowledge,
- indigenous knowledge is practical knowledge,
- there are some limitations to indigenous knowledge,
- knowledge making is an on going creative process,
- the complexities in the defining of indigenous knowledge are evident in earlier debates,
- indigenous knowledge is multi-faceted.

The recognition of indigenous knowledge as a multifaceted concept suggests that it is a personal construct which cannot be encapsulated by one definition. The views expressed here are all important and not only central to the explaining of issues around indigenous knowledge but directly relate to environmental education processes. Keogh’s frustration over the fragmented nature of the indigenous stories she encountered in her research work with teachers was influenced by her ‘scientific method’ approach and personal experiences which were ‘quiet’ to the stories. This suggests therefore, that teachers need to employ different and varied approaches for teaching and learning with issues that relate to indigenous knowledge. The conceptualisation of indigenous knowledge as practical knowledge by Rollefson (1996:16) is in line with environmental education theoretical debates that challenge the dominant belief in the ‘written word’ as authority or what we see as final (Lather 1991). I would assume that it could be this practical side of indigenous knowledge that has contributed, at times, to the promotion of indigenous knowledge as the panacea for all developmental projects e.g. Campfire (see Sibanda 1999). This notion could push indigenous knowledge further into the margins if such developmental projects fail to deliver the expected economic benefits (see discussion on CBNRM in 6.4.6).

Elias’ (1987) ideas, when used as reflection and indirect commentary to issues raised in indigenous knowledge discussions, are illuminative and useful in the interrogation of the concept of ‘abstraction’ raised by Giddens (1992) which I used to explain the interviews with elderly (see 5.4.2). I said that the act of introducing the indigenous knowledge concept in the interviews would have been referred by Giddens (1992) as an “intrusion of abstract systems into day-to-day life”.

According to Elias (1987), abstraction is a fairly modern phenomenon which characterises the complexity of the time and society in which we live, and the desire by humans to know more. Elias further says that,

what is often registered simply as different types of knowledge, among them the magical-mythical and the scientific types, are connected with each other in the form of a clearly recognizable sequential order of ascent or descent. They represent different phases of a process, different stages in the development of the involvement-detachment balance. (1987:xl)

To me, Elias's statement draws our attention to that though indigenous knowledge and scientific knowledge might at times be considered as separate they are actually connected in a process. The 'sequential order of ascent or descent' can be recognised in the present ascent of indigenous knowledge which had been forced into descent previously because of its magical-mythical nature. Even though Elias does not say that registering these types of knowledge as different is counterproductive it links back to Agrawal's view that distinguishing between 'indigenous' and 'Western' knowledge as two types of knowledge is counterproductive. It is a distinguishing that clearly displays that knowledge is always in flux and open to contestation, pointing out that the patterns and processes of sharing and distributing knowledge are complex and dynamic.

The misunderstandings which emerged between SEP and the Education Department (related in 4.4), particularly on the resources Keogh and the teachers had developed as a result of questioning their usefulness in environmental education based on an oppositional placing of science and indigenous knowledge are a good example of knowledge contestation. The Department of Education's doubt concerning the SEP materials was displayed by its insistence that Keogh should have them removed from the files of the teachers with whom she worked with, which clearly displays that indigenous knowledge was not regarded as 'science'.

Teachers, therefore might experience difficulty in trying to explain what indigenous knowledge is and like Annette Gough (1997) give a list of what indigenous knowledge is usually referred to as. The main weakness in describing indigenous knowledge in the way she has, is evident in the OR she used in her statement which might suggest that indigenous knowledge could not be all that she lists but could be either/or, yet some people may perceive what she lists as different dimensions of the knowledge under discussion.

6.2 Sources of indigenous knowledge

Central to the indigenous knowledge debate are the characteristics of an indigenous knowledge source. I therefore, considered this theme as important for discussion.

The views on what the characteristics of an indigenous knowledge source are has already shaped, and continues shaping, education, particularly now when scientists are challenged to look beyond the confines of their laboratories for medical solutions to environmental health problems such as HIV and AIDS. I argue for the views to follow especially because they developed out of personal struggles as I wrestled with the main research question, and in the process encountered a web of complex pictures. These pictures might be fragmented because they arose as small ideas mentioned by research participants and interviewees which, when patterned together developed into something more tangible and workable. They are shared with readers, so that they are able to refine them for the development of process models which might shed light to clearer understandings about/for indigenous knowledge.

I presently believe that Indigenous knowledge and ways of knowledge sharing can sometimes be located within complex hierarchical social strata (see Elias 1987 in 6.1 above). Such strata are built on an assumption that people with fewer opportunities for preferred lifestyles are more inclined to rely on the biophysical environment for their livelihoods and in the process develop ways of deriving resources in a much more benign way than modern industrial implements would (Thakadu 1997). The manner in which this is done might be refined from time to time. I am of the view that in the past, through an education of relevance to the livelihoods of the local people, these practices would be shared by the old with the young for continuity as practices that were more prevalent before the advent of industrialised economies.

Mtshali's (1994:36-7) study indicated that there were more distinctions within the categories of knowledge which are much more influenced by social roles of individuals within the communities in which they resided and belonged. Her study provides evidence to the effect that knowledge of certain indigenous practices can be divided along gender responsibilities within a community. Adult women in an area in KwaZulu-Natal knew more about the different varieties of wild fruit species than men. This statement is further supported by Zweifel (1997:7) who says that women know more about wild spinach species as the people who prepare food because they are much more aware of the 'nutritional needs of their families'. MaNyembezi supports Mtshali and

Zweifel's view when she laments the loss of such knowledge amongst girls. Ngwane (1999) however indicated that in a village in the Transkei, women had more environmental knowledge because most men are temporal homestead residents and the majority of them are employed in mines in the cities. She also cited the youth as lacking in knowledge about plant species. MaNyembezi a traditional healer educator, a medium between the living and the ancestral world, identified one of her past role as that of teaching teenage girls. Which suggests that the tradition and value of sharing plants species knowledge might die out amongst the youth who might not be highly regarded as sources of such knowledge.

Agrawal (1995) in his exploration of indigenous knowledge acknowledges earlier anthropologists, such as Levi Strauss etc., as proponents of indigenous knowledge, as their writings form part of the wealth of indigenous knowledge. He advises (1995:3-5) that we tread carefully and critically in dealing with all issues related to indigenous knowledge, especially if we lack clarity on the motives behind the resurgence and opening up of the indigenous knowledge debate promoted by the likes of Levi-Strauss, Levi-Bruhl, Malinowski, Boas, and other anthropologists. Such exclusive debates have evolved to be inclusive of the so called 'indigenous'.

Another view that I encountered, shared by some researchers, is that of a new and developing pattern of indigenous knowledge appropriation which has been influenced by global donor funding agencies which encourage the idea of 'indigenous people' as the repositories of indigenous knowledge. This appropriation, evidenced by varied investigations and recordings especially within the medical and botanical field, developed as a result of an intensifying global concern for the deteriorating environment accelerated by industrial growth. Development agencies have immersed themselves within this appropriating of knowledge process for the sake of the indigenous and/or the environment, while researchers define appropriate language, approaches and process models accompanied by terms such as; top-down, participation, participatory learning activities, facilitation, community based natural resource management (CBNRM), permaculture, etc. This development discourse has, in turn, influenced ways of doing research, teaching and learning, hence we hear of participatory action research, education for the environment etc. which increase researchers' interest in this knowledge context. Research findings are sometimes documented in databases for communities with no computers, while some are used for developing sophisticated medicines which end up being patented and accrue no benefits to the people from whom they were solicited. Such ethical problems have paved the way for institutions and consortiums that have established themselves as the intermediaries between the communities and researchers by

attaching monetary value to indigenous knowledge and insisting that researchers pay for information. This has in turn made indigenous knowledge a commodity that could be subjected to all kinds of market forces. A debate on the role of institutions continues in 6.4.7.

According to O'Donoghue (pers. comm.) the prominent perception, especially in South Africa, promoted by Black and White people, is that Black people are an indigenous knowledge source. In Chapter 3 Mkhize as a Black person made such claims. Ethnic groups, sometimes referred to as 'first nations', such as the Khoisan people are also recognised as sources of indigenous knowledge. Palmer (1966) and Walker & Richard (1975) present the lives and practices of the Khoisan as the foundation of an environmental ethic from which we can learn uncritically. When choosing participants for this study I saw the importance of breaking out of these artificial boundaries around knowledge 'ownership' in search of varied representation. This was one of the reasons that I asked the teachers and adult community members if they considered themselves as indigenous or not.

Within these claims and mediation of indigenous knowledge ownership in South Africa, I have come to believe that 'indigenesness' has underlying complexities, some of which I share here. Mrs. Zulu in chapter 5, claimed she was indigenous because she is a Black Zulu person. She also maintained that in a country like South Africa with its diverse cultural groups, a narrow view that strictly associates indigenous knowledge only with certain cultural groups is problematic. She saw indigenous knowledge as belonging to everyone who felt a strong bond with the historical richness that indigenous knowledge provided for South Africans. Mrs. Zulu echoed the view that I identified with at the beginning of the study, which I have abandoned, of seeing all South Africans as indigenous. My reason is that some South Africans cannot tie themselves to one environment because they view themselves as belonging to more than one country where they are recognised as citizens. Other South Africans who do not have this option, might not have this divided attachment to this country. Also, Mrs. Zulu and other interviewees contradicted the view that 'all are indigenous' later on in the interviews, because they identified Black people as 'repositories' of indigenous knowledge (refer to Mostert 1993 quoted by O'Donoghue in 3.2 and compare).

These are issues that environmental education planners, such as curriculum developers, textbook writers and resource developers as well as teachers need to consider. The issue of how students would relate to programmes that draw on or highlight indigenous knowledge could either meet with rejection or be romanticised and idolised, especially if a particular group of students is

considered as a source. This could lead to the popularising of an abstracted, reified concept of indigenous knowledge rather than that of knowledge in flux.

6.3 The reification of indigenous knowledge

'Reification' as a concept, especially with regard to indigenous knowledge, need not only be seen in a negative light because it has facilitated new and refreshing debate about education. If the talk around indigenous knowledge has encouraged us to look into 'uncharted waters' with different lenses then it has relevance. Socially critical theory within environmental education provides the tools and encouragement for venturing into these 'uncharted waters' by encouraging us to break through the barriers that have blinded us from seeing beneath the assumptions (Fien 1993a & b). Reification gives people the feeling of tangibility which social critical theory challenges. Process sociology reminds us of 'flux' which allows us to see the conceptual mobility that we rob phenomena of through reification.

From as early as the Mfecane, I related some of the interactions, especially those that have shaped environmental education. In the artificial opposition camps that have been created between indigenous versus 'non indigenous institutional knowledge' is a constant bubbling of knowledge, which if engaged with without intentions of isolation, through documentation, systematic storage in databases and international archives could freeze into disuse (cites, NPB, database systems). By indigenous knowledge being local and implicated in peoples lives, lives its dynamism and the right for people to make informed choices which come with breaking the barriers (see and compare with Frost, Mending wall) between the camps.

Agrawal (1995) provided useful insights when he noted that the practice, then the rhetoric of indigenous knowledge went as far back to the debates by earlier anthropologists. Elias (1987) is in agreement that it is mainly the conceptualisation of indigenous knowledge that is new. According to Agrawal, in the past indigenous knowledge was formerly perceived as detrimental to development, yet suddenly it has been 'reborn' to emerge as the pivot of sustainable resource use. (refer to 6.1 on indigenous knowledge as the panacea for all development projects and 6.4.6 on CBNRM). Inquiries on the need for the re-focus on indigenous knowledge might also lead us towards more answers to some of the broader questions that relate to sustainable living. Agrawal suggests that perhaps we need to look closely at facilitating *in situ*. conservation of knowledge by

loosening the pressures of modernization and cultural homogenization aimed at international trade systems which threaten environmentally benign lifestyles. Environmental education has a crucial role to play in this by opening up a window and providing powerful lenses for looking into the terrain of global commodified culture built on competitive resource use which is transforming indigenous knowledge into consumptive knowledge. However, socially critical theory views as presented by Fien (1993a & b) seek to empower environmental education practitioners to move beyond a state of action paralysis and respond with action first by critically examining the undercurrents beneath these issues. Hence the debating of a role of indigenous knowledge within environmental education processes.

6.4 The role of indigenous knowledge

In Chapter 1 and 2, I drew the reader's attention to the assumptions that developed at the research proposal drafting phase. The main assumption that I carried along in the study was a 'gut feel' belief that there is a role for indigenous knowledge within environmental education processes. This feeling was encouraged by the views of the SADC WWF students who shared this view and came from different African countries. The feeling I had was based upon a view that indigenous knowledge is intermeshed into environmental education processes. I carried this assumption through an exploration of the role indigenous knowledge has played, presently plays, (if any) and could play in education in the future. In the process of wrestling with this question, roles might have been imposed on participants who did not recognise any. However, the elderly, students and teachers saw clear roles for indigenous knowledge within environmental education processes. Throughout the discussion which emerged my intention was not that of trying to prove the existence or not of roles.

Semali (1996: 15), who is informed by her teaching experience in Tanzania, is of the view that "The 'rhetoric' of indigenous knowledge is important, because it encourages a discussion that has been suppressed for many years by dominant European centred educational systems", a view I support. The crucial role of the rhetoric according to her is to stimulate and facilitate the transformation of school curricula. Semali's views encourage one to explore, through research questions related to the one I have chosen, to explore how present curricula can be transformed to have relevance to local environmental problems.

However, for a better understanding of means to, 'curriculum transformation', it is crucial that one tries to understand how the educators who are directly and indirectly involved position themselves within the indigenous knowledge debate. Secondly, one needs an exploration of how their perceptions about the institutions from which they are operating will influence their contributions in environmental education. This will be done by exploring different authors' views on the theme of status and identity.

6.4.0 status and identity

The responses to the different interview questions in this study was influenced by the status and identity into which interviewees slotted themselves, and the identity which I had allocated to them, by the mere act of interviewing them. The exclusivity around indigenous knowledge sources (6.2) and how people are viewed and view themselves in society is of central importance to this research question. Through the writings of Davis (1993) for example, one is able to understand how an institution such as the World Bank imposed its views on ethnic groups by promoting certain identities and laying emphasis on the stereotypical practices they wanted to promote globally.

In Chapter 3 I looked into socio-political and cultural interactions such as the Mfecane within Southern Africa to demonstrate how identities developed and continue to influence our outlook towards indigenous knowledge and environmental education processes. Chapter 4 further explored interactions within the KwaZulu Natal province, and shared with the reader insights on how talks and research on indigenous knowledge focused on certain cultural identities and how it was viewed by the Education Department. Throughout the discussion in chapter 5 the most prominent concept that ran through all the interviews was that of 'respect', an important concept in the shaping of identities. From chapter 5 one can draw links between the identities to which interviewees linked themselves and their interview responses. All these ideas run through from these earlier chapters and continue to link in with ideas in 6.2 on sources of indigenous knowledge and how they enhance and promote certain identities. A useful orientation for the reader through the next theme is to bear in mind that people move in and out of identities, depending on the context at a particular time. The question I will ask here is ' what are the views of global thinkers within the discussion of identity and what lenses do they provide us with to make a blurry understanding around indigenous knowledge 'sharper' for environmental education practitioners to respond appropriately in a country facing educational transformation?'

In 3.3 I briefly displayed how Nguni authored historical texts shaped identities through language and 'othering'. Fuze (1979) related how God came to be called *Tixo* by the Xhosa. Jenkins' analysis of Bourdieu's work provides useful insights on the shaping of identities by language. According to him;

Language use is a crucial element in the construction of group identities and, therefore the struggle for linguistic dominance is a particular and important manifestation of the struggle for ideological and political domination (Jenkins 1992:153)

Bourdieu's view displays the role of language in ideological domination. Fuze (1979) might have recognised such a domination via religious language by the very fact that the Xhosa had an opportunity to offer a substitute for the word God in their language before the Zulus.

In his exploration of power/knowledge in teaching and research Popkewitz (1991:15) advises that we do not lose sight of "the relational and social embeddedness of knowledge in the practices and issues of power", a point related to what Bourdieu (1992) says. Bauman (1995) explains how knowledge came to be embedded in these issues of power, especially within the school context, and in the process paints a picture of how perceptions around practices that relate to indigenous knowledge pushed indigenous knowledge into the margins. In the statement I quote here Bauman was referring to the process of nation and state building which led to modernisation. He wrote that:

diverse communally sustained group memories were suppressed and supplanted by a unified curriculum, aimed at the preservation of the 'shared national heritage'. Communal traditions, customs, festivals, rituals were redefined as residues of ignorance and prejudice and replaced with a uniform calendar of national festivities and authoritatively set 'national usages', or wrenched from communal administration and then adapted and invested with new global meaning (Bauman 1995:235)

By opening up the indigenous knowledge debate these suppressed group memories can be explored not as 'residues of ignorance and prejudice', but with an aim of giving them respect and 'local meaning' and encouraging them to talk to our contexts through open curricula.

Charon (1995 :159) brought some light to Agrawal's question in his discussion of identity issues. Illustrating that the opening up of this debate by the World Bank within the development field has links with institutional status and identity, Charon said that;

one way of influencing people's actions is to cast them into a role that we want so that they think of themselves in that manner and behave in the way we want...in casting others to identities that make sense to us and aid our plans in interaction is controlling the situation to some extent.

In his discussion on how identities are shaped in interaction, Charon also points out that human beings are not just powerless as this 'casting' happens within dynamic social interaction. This view is supported by Giddens (1992:32) when he says that "in the context of a post-traditional order, the self becomes a reflexive project". This presents a useful view that acknowledges that amongst the 'others' are individuals who make decisions within the collective decision making process. The ability for one to be a 'caster' is influenced by the power one yields within the interaction. Within the development context, the World Bank holds the financial power which casts the recipients of their funding into the roles that promote the World Bank agenda. Though the recipients can be critical about the role they are playing, they remember that 'you don't bite the hand that feeds you'. Charon (1995:163) further explains identity through interaction by saying that:

We label others in interaction; we attempt to shape the identities of others in interaction; we tell others who we think we are in social interaction. Through it all we come to think of our self as something; an identity is formed. And our action is now influenced by who in the world we think we are.

According to Jenkins (1994:104, in an interpretation of Bourdieu's work) Bourdieu would have summarised the chain of actions related by Charon as 'symbolic violence' because they come out as an "imposition of systems of symbolism and meaning" because the power relations in the process are obscured and come to look "legitimate in the eyes of the beholder."

In order to relate what Bourdieu, Charon, Giddens, Bauman, Popkewitz and Agrawal say about identity to the school context in South Africa it is important to note Semali's observation, based on experience of education in Africa (1996 :15) ;

African students are immersed from birth in a cultural setting that values the authority of elders and emphasizes practical knowledge. On the other hand, they are schooled in a system in which teachers do little to make classroom lessons relevant to life in African village communities, and in which the authority of elders is devalued and undermined.

The picture that Semali paints of African education is true to a certain extent. Subaroyan and maNyembezi in 5.4.5 point out that schools devalue their knowledge, while Mrs. Zulu and Mr. Dickinson both maintain that though they have a role in education their involvement within the school should be minimal. The interviewed students, teachers and elderly community members lamented the loss of 'respect'. On one hand, respect was the vehicle for 'casting' students into certain identities which were central to promote an educational system that upholds the notion of students as receivers of knowledge. The authors I have consulted above have explained how identity positioning takes place. I suggest that while we plan for a better education and environmental education that reflects indigenous knowledge concerns, teachers need to understand these identity shaping dynamics. I do not suggest, however, that by teachers knowing these dynamics positive change will immediately be visible in education. I am of the view that the decisions that teachers will make as they engage with indigenous knowledge within environmental processes, can at least be informed by an understanding of the role of status and identity. This is clearly echoed by Giddens (1992:85) when he says;

life-planning presupposes a specific mode of organising time because the reflexive construction of self-identity depends as much on preparing for the future as on interpreting the past, although the 'reworking' of past events is certainly always important in the process.

(see Mrs. Zulu's comments in 5.2.1 on reshaping the past to move into the future).

6.4.1 How we may understand the past and the present

I am of the view that there is a close relationship between history and identity in that history shapes identity. This is because the way we view history influences our behaviour. Within this study's data, history emerged as another key feature of indigenous knowledge. Giddens (1992: 31) also makes this link when he says everybody does reach back to their early experiences as an act of

“reflexive mobilising of self identity” (see Zulu 5.2.1). When this happens, (Giddens 1992:31) “shared histories are made and sustained depending on how the participants plan for the future” (refer to the Mostert 1993 quote by O’Donoghue in 3.2). One good example of this is the history that has been made and shared about Paul Kruger in South Africa. His track record with regard to nature conservation is not the best, yet the most well known game reserve in the country was named after him. This is because he became a ‘heroic’ character that the Afrikaner race rallied around for their identity.

Chapter 3 particularly, and Chapter 5 provided the evidence of a strong link between indigenous knowledge concerns and history. Player in 5.4.4 warned that whilst we display strong links between indigenous knowledge and history we must steer away from locking indigenous knowledge concerns into the past. He used the example of the continuous practice of pouring beer froth on the ground as a feature that displays indigenous knowledge as a continuous process, an act that distinguishes some of the Zulu as ancestor respecting people. I have drawn heavily upon Jenkin’s (1993) discussion of Bourdieu’s work in trying to understand what the reasons for these strong links are and how they may relate to environmental education processes. This is because I see a merger of the concept ‘environment’ and indigenous knowledge in his sociological theory of ‘habitus’. According to Jenkins, Bourdieu (1993:80) says that;

History culminates in an ongoing and seamless series of moments, and is continuously carried forward in a process of production and reproduction in the practices of everyday life. Here we have a process of production, a process of adjustment, and a dialectical relationship between collective history inscribed in objective conditions and the habitus inscribed in individuals. History is experienced as the taken-for-granted, axiomatic necessity of objective reality. It is the foundation of the habitus.

From this I read three main issues which are; firstly, that history is experienced, secondly; it is a dynamic process of everyday reproductions influenced by the need to make adjustments within our environments. Thirdly, his reference to collective histories suggests that there is no one history, but multiple experiences (collective memories, dreams and plans into the future) which make and shape individuals as they adjust to environments. Based on this view, I therefore argue that seeing ‘one history’ may influence us into objectifying, reifying and taking history for granted.

The common teaching and learning of history as a 'taken-for-granted' is removed from this dynamic picture of Bourdieu's analysis of history by Jenkins. Drawing from my own personal experience as a teacher of history, this subject was taught and learnt as 'objective reality' with little relation to habitus. Du Preez's (1983) study, which explored '*Master symbols in South African school textbooks*' and Ashley's outline of ideologies that have influenced South African education (1989), point out that the ideologies that were represented in subjects such as History were aimed at promoting apartheid. Different records of South African history such as Palmer's (1966), Fuze's (1979) and others are an objectified presentation of reality. An approach towards history which makes no links to relationships between people and their environments can be globally observed in the teaching and learning of history through the way that history has been written. To show the location of history in people's lives would be to draw the links between indigenous knowledge and environmental education processes. An example one could give here is that of name giving and surnames. Nguni surnames were made up of rich poetical histories that captured and retold the history of all who were born into that surname. For instance Zulu people have different versions of the battles between them and the English, the version that has been studied in schools does not reflect the Zulu side of the story. According to Samuel (1974:5) to learn to read and write their language Zulu people had to read "such a poor translation as we have of the Bible", when Fuze's (1979) Zulu written historical text could have been used.

Bourdieu's view of history (Jenkins 1993:80) in the above paragraph is echoed by Popkewitz (1991:178) who considers history as "the interplay of epistemological breaks and continuities from which the present is constructed". He further points out that "a crystallization of history occurs in accounts of teaching school subject matter". According to Popkewitz, (1991:179), to recognise knowledge "solely as representation of a stable content is to ignore the social construction and social relations in which individuals locate themselves and their world, denying historical responsibility and autonomy". Popkewitz refers to this crystallization as 'reification' because it fails to recognise "the role of human constructions and history in social phenomena" (1991:172) which means that the "socially constructed world is made to seem natural and inevitable" (1991:171). To move away from approaching environmental education in this way Player suggests we teach in a manner that fires the spirits of young people and stimulate their imagination.

The combination of Bourdieu and Popkewitz's views served as commentary on the processes of indigenous knowledge and environmental education, and particularly to the bond between

indigenous knowledge and history. I arrived at a conclusion that history should permeate all school subjects in order to be relevant in people's lives, by encouraging teachers and students to teach and learn towards responding positively 'for' the environment, a view supported by Mrs Zulu and Dickinson in 5.2.2. Xolani one of the interviewees pointed out that the woodwork teacher should not just teach about wood utilisation as a natural resource and ignore pointing out how and why wood usage has increased and what the environmental problems attached to that are (see Xolani's view in 5.3.2). This approach could instil the historical responsibility and autonomy that Popkewitz (1991) refers to, which might in turn encourage learners to recognise their role in the continuous reconstruction of a healthier environment, making education relevant to our everyday lives.

6.4.2 The role of values such as 'respect' and 'responsibility' for environmental education processes

The different factors that influence the shaping of an identity are also interwoven around what people consider to be values which for some reason need to be promoted. The ideas shared by the participants in chapter 5 display some similarities with views on values education. Some values are closely linked to indigenous knowledge by their very nature, and it was pointed out by the interviewees that they need to be promoted through environmental education processes. The prominent values mentioned in the interviews of students, teachers and elderly community members were 'respect' and 'responsibility'. 'Respect' has been noted in 4.1 as interconnected with issues of identity.

The reason I do not come out strongly to link the values of 'respect' and 'responsibility' with environmental education processes is because I have been influenced by Fien's (1993:6) view of, education for the environment as having "an overt agenda of values education and social change". According to Player, in the past young people were encouraged to do as they were told and not to question the knowledge of elderly people which was founded on and shaped by years of experience and hence not seen as open to challenge. A child earned respect by not challenging elderly people's authority. In turn the parents of a respectful child would win respect from the community and be recognised as good teachers. The conflict between home education and the values education that Fien (1993) promotes is that, home education also had an overt agenda of values education which

usually did/does not aim at encouraging dramatic social change through a questioning of the status quo as values education in education FOR the environment does (see appendix 3 an example of values education in South Africa and its hidden agenda).

This fine line of difference presents two very important issues; the importance of being forthright about the agendas behind the programmes we teach or facilitate, and in allowing students to interrogate and challenge these agendas. 'Respect' provided the comfort zone for the teacher to whose knowledge the students were only receptive because it was based on years of experience and by the mere virtue of the teacher being regarded as older and more knowledgeable. By focusing on the role that indigenous knowledge can play in the promotion of values such as respect, the opening up of the indigenous knowledge debate for formal education institutions provides comfort to those students, teachers and community elders who see 'respect' as necessary for curbing problems of discipline in the school. However this view of indigenous knowledge as necessary for instilling respect for elders and authority could send indigenous knowledge back into the margins it has previously been subjected to. A school climate where students have some space to celebrate and experiment with new found identities will need understanding teachers rather than those who demand respect by virtue of their position and seniority only (a challenge presented by Subaroyan in chapter 5).

Xolani insisted that it is crucial that respect for language, the self and others be promoted through environmental education so as to strengthen a strong link that previously existed between indigenous knowledge and 'environment'. Subaroyan maintained that a link exists between indigenous knowledge and environmental education worthy of promoting an understanding and respect for values that could encourage people to get along with each other. I think that the call for respect is embedded and related to the escalating social problems that have gushed out at the collapse of apartheid boundaries and which challenge particularly respect for personal property and life in South Africa. Subaroyan further suggested that values such as respect be extended to the biophysical environment. These views indicated to me that the understanding of the role of indigenous knowledge within 'environment' illuminates more than ever that environmental education is more than just the biophysical environment.

MaNyembezi who had also lamented the loss of respect especially in the rural areas emphasised that environmental education is about respect and 'responsibility' for what you have seen, known and experienced. If environmental education does not teach responsibility and fails to encourage

every student to take on a certain responsibility for the environment, she said, certain aspects of 'environment' will be ignored and be allowed to deteriorate. I found these insights from maNyembezi challenging and exciting for environmental practitioners. One may hope that with 'environment' as a phase organiser within the OBE curriculum framework (Janse van Rensburg & Lotz 1998, Lotz, Tselane, Wagiet 1998), teachers might take on the challenge maNyembezi presents to promote 'respect' for environment rather than authority. When teachers perceive 'respect' and 'responsibility' in that manner they will be responding towards the responsible environmental commitment and action advocated in education for the environment (Fien 1993a & b).

6.4.3 Story

The link between *history* and *story* is a strong one, especially when related to indigenous knowledge, as discussed in 6.4.1 above. A literal translation of a Zulu saying "it (the sun)sets with tales of its own", brings the 'time' concept within the discussion, suggesting the process nature of indigenous knowledge and the fact that every day new stories are made. It was through a story, the "Sweet Water" story, that I interacted with the study's interviewees and participants. It served as a spring board which allowed some of the common sense insights shared here to spring out of their ordinariness.

In South Africa schools were built upon racial segregation policies, and mixing of White, Coloured, Indian and Black children in one school was against the law. This contributed to the artificial engineering and development of a variety of stories. 'Stories' therefore have an important role to play in environmental education as one way of making learning exciting. This is through the exploration of discourse that teachers/students sometimes take for granted. All the research participants in chapter 5 were in agreement that elderly people have a role to play in enriching education and should be given an opportunity to share their experiences and stories of the past with students. MaNyembezi was even willing to be actively involved in the educating of girls about issues of sexuality and storytelling, which could be one of the means to share experiences. Even though at times Player perpetuated stories of difference in chapter 5, he also constantly referred to the importance of storytelling in schools emphasising that storytelling should have a place within the school curriculum as a vehicle for firing the imagination of the youth. Player also suggested that South African stories be utilised as educational entertainment for tourists visiting

protected areas within the KZNNCS and elsewhere. The philosophy that has moulded Player's Wilderness Foundation combines storytelling with history, with an aim of fostering an appreciation of the 'wilderness'.

Annette Gough (1997:4.1) justifying the importance of 'storytelling for the environment' in a workshop resource pack around this theme listed her objectives as:

- to develop an appreciation of the importance of stories as educational resources;
- to develop an appreciation of the importance of traditional, indigenous and contemporary stories as sources of environmental education themes;
- to develop skills in locating stories to use in teaching and integrating them constructively into teaching units; and
- to develop an appreciation of the value of guest storytellers and ways of using them as co-teachers.

Annette Gough's objectives are crucial for environmental education processes. They are objectives that she developed around a 'narrative theory' (Noel Gough 1994) approach (as used by Knoespel in N. Gough 1994, N. Gough 1993, Stables 1996) where the environment can be read as text from within a post-structural perspective. The importance of recognising Annette Gough's objective lies in their potential not only to give voice to marginalised stories, but also to acknowledge less dominant perspectives such as post-structuralism which encourage the co-construction, deconstruction and reconstruction of knowledge in a South African story built on differences. It is for this purpose that stories of elders like Subaroyan, maNyembezi and other people with a story worth telling be given an opportunity. As a discourse about discourse the post-structuralist perspective challenges the 'bottom line' notion (N. Gough 1996), through the study of the social uses of language to dissuade teachers from teaching for 'final knowledge' (Lather 1991). According to Noel Gough (1994:190):

post-structuralism destabilizes privileged discourse by insisting that we read our own and others' stories intertextually - that we seek to understand the ways in which, in the production of meaning, "every text is related to every other text". Intertextuality suggests that we cannot claim that any text is original or authentic.

This comment holds true for environmental education processes where the environmental and educational issues and knowledge we are concerned with are 'contested, temporal and emergent' (Lather 1991), more so, because of a belief that an environmental education approach that encourages 'encounter, dialogue and reflection' through 'history, context and active learning', could contribute to sustainable living (O'Donoghue & Janse van Rensburg 1995). A reflective dialogue between different schools, adult and the young, school and the home needs to be encouraged in South Africa so that we listen to each other, recognise what unites us, to jointly redress the wrongs committed by apartheid.

Such a dialogue was encouraged through the SWAP booklet where the "Sweet Water" story facilitated the co-reading of text within our environments to address environment issues. The assumptions that "present narrative conventions of science and environmental education textbooks" (N. Gough 1993:608), have dictated to teachers to teach for examinations at the expense of developing an understanding of local environment are true for South Africa. According to N. Gough (1994:90) "every text is related to every other text" yet curriculum developers long "for one true story that has been the psychic motor for Western science" ignoring the fact that the physical environment presents a complex set of texts. The SWAP booklet throws up diverse stories that examiners would have difficulty with because for them, traditionally, the clearer and less contradictory the content, the better. The rejection of Keogh's SEP indigenous knowledge materials by the Department of Education is a clear example of this.

In this SWAP booklet students are encouraged to investigate the history that will help them understand how and why their environments have been sculptured the way they are. This is done through the students asking their local relatives to share historical stories on their catchments. They list land use activities and their distance from the river bank and relate how the physical environment has changed. When the observations have been concluded they are encouraged to add their text to the interpretation of what they read from their environment. This is done through a comparison of stories from their elders, textbook and what the physical environment communicates to them. This is where critical reflection can play a role, in contrast to the passive mere acceptance of 'passed on' stories. The final activity involves a reflection on the quality of the catchment and planning for the future to address problems 'read'. The activities in this booklet are an attempt to encourage active learning because they are done in groups where discussions on the catchment risk lead to a collective rating within a context that the learners learn and live in. Part of the excitement that Dickinson, Mrs. Zulu and myself read in these activities shared in chapter 5

might have been influenced by, the fact that this process was a departure from the usual teaching convention to describe the processes by which we make use of the environment through the written text, rather than the 'environment' itself (Stables 1996:190).

The above is an example of why storytelling has an important role within environmental education processes and is exciting and useful when combined with other activities, an assertion based on my experience of working with students on the SWAP project. Combining storytelling with other activities could bring storytelling, which has been confined to the home, into the heart of formal education. Noel Gough (1993) and Malcolm (1998) both see formal curriculum as a story. According to O'Donoghue & Janse van Rensburg (1995) one of the means of achieving some state of sustainable living may be through the use of storytelling (O'Donoghue & Janse van Rensburg 1995:20.2)

Mrs. Zulu as well pointed out that the water story and accompanying activities also generated some excitement amongst her students which came out of the shifting of the students roles from passive learners to researchers. Her usual role as 'transmitter' shifted to that of a facilitator enabling her students to become researchers. She also could not impose judgement on their findings because these had been drawn from their families. This forced her to re-think teaching and learning roles and believes that her students might have done the same as well.

According to Mr. Dickinson, the initial propelling excitement for investigating water collection practices became somewhat disappointing when the students came back saying that "their parents had nothing to say on the issue". This, possible disappointment, he said, should be taken into consideration by materials developers, accompanied by an understanding that many present day parents are quite removed from indigenous practices and that room be given for such investigations to be conducted with grandparents if these are accessible. Mrs. Zulu echoed the same thoughts, though indirectly, when she maintained that she was one of the parents who had very little understanding of indigenous knowledge practices, having been brought up in a township without grandparents.

6.4.5 Collapsing barriers between school and home

Fien (1993a & b) one of the main proponents of education 'for' the environment or education for sustainable living within the socially critical theory framework, advised and promoted a process of collapsing barriers between the school and home. The views of research participants in chapter 5 with regard to this theme under discussion, especially Xolani and Thandeka, echoed the need for communication between the school and home for learning which would be responsive to present day demands.

Fien (1993a:14) advocated a "socially critical or transformative orientation in environmental education" such a process would not be "value free" and "education about and through the environment are valuable only in so far as they are used to provide skills and knowledge to support the transformative intentions of education for the environment" (1993a:16). Within a socially critical theory orientation, according to Fien, "the school and society reflect one another" with the school taking on the role of "overcoming social inequities". Within such a framework the broad curriculum should be based "on negotiation between community, teachers and students". A value

is placed “on the role of knowledge in social action: the emancipatory interests of knowledge” in socially critical theory.

Fien’s views are useful in a discussion of indigenous knowledge within environmental education processes in as far as it suggests that education for the environment responds to the need of collapsing artificial barriers, and should be recognised as contributory in illuminating some of the issues responsible for the declining state of the environment. Barriers have marginalised home based education within the school context through the use of concepts such as ‘misconceptions’, ‘unscientific’ and ‘mythical’. Through processes that have brought indigenous knowledge as knowledge to be reckoned with within the formal school context, the need for collapsing such barriers becomes evident, displayed by research participants views such as O’Donoghue and other interviewees in chapter 5.

6.4.6 A moral voice for conservation

As was mentioned in chapter 4, Keogh was the only participant in the group of educators interviewed who was not working from within a conservation institution. Mkhize maintained that he had seen a crucial role for the indigenous knowledge concept as an instrument of kindling a conservation ethic amongst community members bordering nature reserves through environmental education programmes aimed at ‘raising environmental awareness’. It is for this reason that he was keen to tell some of the stories that could promote this environmental ethic to Keogh, a researcher and teacher. Mkhize is one among many that have recognised the potential of indigenous knowledge to promote conservation practices, a view which Thakadu (1997) supports in his study on community based wildlife management in Botswana. According to Thakadu, (1997:99) “indigenous knowledge systems should form the basis of environmental conservation education within all conservation agencies”. He further encourages conservation agencies to “devise research partnerships with the indigenous communities...through this communities will show a sense of commitment to the research findings because they participated and were involved in the formulation of research projects” (1997:97).

Globally, motivations to promote conservation through indigenous knowledge are based on reasonings such as those of Quiroz’s (1994) and the United Nations Development Project (1997). According to Quiroz (1994 :12), “most cultures and societies indigenous peoples have successfully cultivated and inhabited areas with a high degree of diversity”. This statement which Quiroz based

on what he referred to as “a large body of evidence”, is used to point out that as practitioners of environmental processes, indigenous peoples are motivated by a will to conserve. This will is built on an awareness of their dependence on the diversity of the ecosystems for survival, he said. This is a view that the United Nations Development Project funded Rural Advancement Foundation International (RAFI) advances (1997) as they point out that such a dependence can be recognised through issues that concern health and food. The RAFI publication further adds that as much as it is for their survival, “indigenous communities are losing the biodiversity..., as approximately 100 species per day are becoming extinct (1997:ii).

I am in support of views which encourage the promotion of an environmental ethic. Views such as Quiroz’s and the ones promoted by the UNDP acknowledge that such people have made a major contribution towards the conservation of species diversity. However, if attempts at working with ‘indigenous people’ are mainly motivated by species extinction and a belief that people join UNDP development projects and research projects such as the ones suggested by Thakadu (1997) here, because of a concern around common issues, such projects will fail. The indigenous communities who RAFI is referring to here, are the ‘rural poor’, who may join such developmental conservation projects for entirely different reasons, especially if their concerns are those of food and health. Romantic notions of homogenous and conservation intentioned indigenous people have paved the way for the promotion of economically driven so called community-based natural resource management (CBNRM) projects at the expense of other values (see Sibanda 1999).

The important aspect of the CBNRM approach, however, is its emphasis on the fact that partnerships in projects of this nature should contribute to the development of management skills. Thakadu’s (1997) support of this statement goes beyond just the focus on economically motivated skills, and makes recommendations to the effect that “indigenous knowledge systems should form the basis for the modern educational system by being regarded as a vital base and component in every subject matter”. This, he claims, should be promoted because the “holistic nature of IKS gives it a broad spectrum of coverage in all spheres of life”.

Thakadu’s recommendation, Mkhize’s realisation that indigenous knowledge could contribute towards the promotion of an environmental ethic and Player’s establishment of the Wilderness Foundation to link conservation, education and indigenous knowledge, are valuable insights and practical responses to environmental issues. Within the excitement generated by CBNRM, the role that conservation areas have played in environmental education should not be abandoned in the

exodus towards 'developing the community'. Conservation agencies can form partnerships with schools neighbouring protected areas towards the development of projects that enhance the school curriculum rather than being prescriptive about conservation practices not only with adult groups as suggested by Thakadu (1997). Otherwise conservation, as an important part of environmental education in protected areas, could be marginalised by grand schemes such as CBNRM projects and limit its role to maintaining parks as banks for biodiversity preservation and environments for leisure pursuits.

6.4.7 Institutional mediation

The institutional framework from which a research participant responds influences his/her attitude towards the research question. One participant's responses echoed the lobby for justice institutional framework for which she worked. The reluctance of this person to be interviewed was motivated by the view that if knowledge is used for research purposes it gains value and that this value eventually becomes transformed to an economic gain. The value of an hour's interview was placed at R300. Concern about the tendency by researchers not to acknowledge insights gained based on interrogating so-called indigenous people's way of life, might have negatively influenced this person to decline to be interviewed.

This situation paradoxically posed the question of ethics around the imposition of a monetary value on knowledge that was in the past shared freely amongst fellow clansmen except that which was considered as specialist knowledge such as traditional medicine. In the past, knowledge was a communally shared inheritance and a Nguni person was an automatic beneficiary of Nguni cultural practices. However, the fact that my search for knowledge was for purposes of research altered my status from being a fellow clansmen. Different people amongst Nguni cultural groups were responsible for specific knowledge which could not be shared with everybody. For instance, long held secrets around the purification of the Swazi king are held by people who have a specific clan name. The whole education process of traditional healing was shrouded in secrecy because of a belief that not everybody could become a traditional healer because it was a response to an ancestral call. An apprenticed traditional healer was expected to pay for his educational expenses in cattle and goats. Such practices are the sacred part of a culture. However, Hall (1995), an American who gives a detailed account of his education and training to become a sangoma, divulges all such secrets and knowledge to those who can read. Such acts are met with mixed

feelings and Giddens (1992:113) highlights that these are, “ phases at which things are wrenched out of joint, where a given state of affairs is suddenly altered by a few key events”.

The move to commodify all information related to indigenous knowledge, displays a shift from communal ownership of knowledge to institutional centralisation and monitoring of knowledge sharing. This might contribute to a monopolistic, commodification of knowledge which could play a role in the obliteration of indigenous knowledge as it reduces past knowledge sharing processes to economic products. This state, however has at least partly been triggered by the unethical practices of some working under the guise of research for the common good of all humanity. Some of these researchers have converted valuable practices genuine to certain communities and locked them into patents sold to drug companies. Most of the time very minimal or no benefits at all accrue to the communities of the people who informed such research initiatives. Searching for clarity and answers in the *International Council for Education* (UNCED 1992) principles for equitable and sustainable societies with regard to whether such practices were in line with environmental ethics, I found out that; Principle 11 advises that, environmental education should value “all different forms of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolized”.

According to Giddens (1992:112) “the intrusion of abstract systems into day-to-day life, coupled with the dynamic nature of knowledge, means that awareness of risk seeps into the awareness of everyone”. Some communities are realising that through the abstraction of the common sense knowledge in their everyday lives they are at risk of losing indigenous knowledge if no recording takes place. Some institutions concerned with environmental issues realise that there is risk in knowledge being given freely, others such as Share-Net are responding to the UNCED principle 11 to promote the view that since knowledge is socially produced it should therefore not be patented. Share-Net publishes low cost, collaboratively developed environmental education materials which can be recopied and redeveloped for educational purposes. NGO institutions who have become mediators on the appropriation and use of indigenous knowledge have declared themselves observers of whether benefits derived through the use of such knowledge filter back to the communities from which it was solicited. The ethical question that is raised is one of whether such institutions pay for indigenous knowledge understandings and whether the benefits of selling such knowledge are ploughed back into the communities from which they were derived? I am aware of the motivation for NGO's to take on this 'nanny' role (to empower) which might be contributing

to the collapsing of structures within communities, transforming them to the open 'monoculture' that most cultures are becoming, under the guise of economic gains.

As much as this pattern of events presents a myriad of complexities, it also challenges environmental education practitioners to recognise 'ethics' as an important part of environmental education, not to be taught only at a tertiary institution level but at school as well. The study of ethics should also not only be limited to religious studies. It should filter into all subjects as the research participant student stated that the woodwork teacher should not just teach how to design and make furniture, but should promote an ethic of wise resource use if we are to commit ourselves to environmental problem solving.

6.5 Research techniques and materials development processes

In Bauman's (1993:146-150) exploration of research processes he refers to "knowing the other, knowing of the other" as important in that it allows responses to be related to context. Keogh's struggles around stories collected from teachers being fragmented and varied (chapter 4) are directly about research techniques because of limited knowledge with regard to knowing the other. The research participants in Keogh's investigations were sometimes selected randomly and did not only reside in KwaZulu Natal. The findings of her study based on a search for one story were then used for teachers in KwaZulu Natal. This way of researching stood in the way of looking out and focusing at what Bauman refers to above. When research is conducted randomly for this type of knowledge it is not easy for the researcher to relate the data to the context that has shaped it and for which it is relevant. The researcher may be transformed to a receiver and translator of messages that cannot be re-interrogated, because dual construction and meaning making has failed to take place in a situation where the researcher is also ignorant "of the other" and comes in from outside of a situation. Secondly, the locus of power to probe rests with the researcher and the cultural experience of the interviewees remains as taken for granted. Bauman (1993) says that:

each of us 'construes' his or her own assortment of 'others' out of the sedimented, selected and processed memory of past encounters, communications, exchanges, joint ventures or battles.

The power gradient between the storyteller and the listener could be levelled through the shared understandings in dialogue, where they penetrated more and fuller meanings in the interpretative reconstruction of the old for resource development. According to Bauman (1993:147), it is the mis-understanding that requires explanation, makes us pause and think, sets minds moving, triggers the process of conscious knowledge building.

Such a conscious knowledge building was picked from earlier interactions in 1992 (see appendix 2 *Hands on Common Household Life* -1996 and some 1994 draft materials), from which the 1996 Sweet Water story was redeveloped. The Sweet Water booklet opened up the dialogue between older practices and present understandings, giving these complementary roles and contributing to the 'process of conscious knowledge building' which Bauman (1993) refers to above, from which the study sprung out of.

Conscious knowledge building might have happened in the involvement of an official from the Biology Department of education in the activities around indigenous knowledge in the KwaZulu Natal Midlands with Keogh opening up a dialogue between older practices of resource development and the newer ways that Share-Net and Keogh were exploring. The Department of education's view that the resources had not been developed around a scientific rationale was based on what Lotz (1996) refers to as the RDDA approach. Within an RDDA resource development approach expert researchers gather information about environment and environmental problems as content presented to the Education Department. If the content is approved by the Department materials developers produce them and they are later on distributed to schools and adopted. All other support materials that teachers might develop in their classroom must reflect the umbrella ideas in the Education Department adopted materials. It is for this reason therefore, that the Department was not in favour of Keogh's resource development approach, because the Department made the decision on what was good for teaching.

6.6 Summary and conclusion

This chapter functioned as a thematic synthesis of ideas and supporting evidence which developed around the research question. The themes focused on the contests and shifts within ideas around indigenous knowledge, views of indigenous knowledge sources, the reification of indigenous knowledge, data collection techniques for indigenous knowledge stories and resource development approaches. A major part of the discussion was given to sharing views on the role of indigenous

knowledge in environmental education through the following subsections; status and identity, history and the future, values, story, teaching methodology, collapsing barriers between the school and home, a moral voice for conservation and institutional mediation.

The recommendations which will be made in the next chapter will be based upon the central themes discussed here. I am aware that this is a chapter which might raise more questions than gives answers.

CHAPTER SEVEN

...‘I’m sure I don’t know,’ the Lion growled as he lay down again. There was too much dust to see anything.

L. Carroll, *Through the Looking Glass* (in Greig, Pike & Selby 1987:37)

7.0 Introduction - implications for environmental education processes

There is a Swazi dance called *sibhaca*. It is a highly energetic and dust raising dance which is most enjoyed when performed by a group of young boys. The dancer moves gracefully to the clapping of hands and music, rhythmically swaying the stick he carries, while he vigorously pounds the ground with bare feet. It is a communal dance. One dancer moves into the crowd and hands over his stick to anyone in the crowd who should rise up to the challenge and dance. It is discourteous to refuse the stick. Like a dancer, I am handing over the stick to the reader whom I encourage to join the dance.

Having raised so much dust I hesitate to call this chapter a concluding chapter and would rather, through the dusty haze, make tentative suggestions and recommendations which should remain open ended. This is because anyone yields the power to use them the way they may deem necessary within their work situations.

These are recommendations that were shaped by a research process within which I was a dominant participant while I explored the role of indigenous knowledge in/for environmental education. I used a Nguni story entitled “Sweet Water”, as a springboard with intentions of setting into view and motion those understandings around indigenous knowledge which have received minimal attention within the debates around environmental education processes. Schools in Howick, a town in the KwaZulu Natal Midlands, were the focus of the study, but commentary from far and wide also enriched and influenced the following recommendations.

The reader will notice that I recommend certain activities for teachers and students. Lotz (1996) points out in her study that an approach on resource development where expert researchers collected data about information relating to environment and environmental problems for engineering the behaviour of people has not been very useful for environmental education

processes. The education department supported RDDA resource development processes because they believed that they were backed up by a scientific rationale (see 6.5). Like Lotz (1996) I recognise problems in a RRDA approach because it frames resource development as a specialist process for experts. I recognise teachers as resource developers and encourage that people involved in developing resources for schools recognise themselves within the school context rather than outside and looking in. The recommendations I share are meant to encourage the development of resources that are compatible with the activities and approaches suggested in this study if the role of indigenous knowledge within environmental education processes is to be recognised. Even though the activities might be directed at teachers and students they are meant to be inclusive and informative for materials development processes.

7.1 Recommendations for environmental education practitioners

- The starting point on the research topic is an understanding that issues around indigenous knowledge are multidimensional and complex. For instance I experienced problems in defining indigenous knowledge with the elderly because they located themselves within a rich indigenous knowledge experience. Teachers, curriculum and materials developers alike and students should therefore realise that the way the concept may be defined will be influenced by the context of the definer.
- The complexity presented by the indigenous knowledge concept, and issues that relate to identity, might influence teachers or other curriculum developers towards dismissing or ignoring the discussion of indigenous knowledge issues. In dealing with the rhetoric around indigenous knowledge, teachers could engage students in issues that have been marginalised yet relevant to the subject matter learnt. For instance, they could debate the role of traditional healers in slowing down the spread of HIV infections in a Biology class. Environmental clubs, for instance, could also rally against activities that are detrimental to their environment by highlighting and favouring past and present practices with minimal negative impacts, such as seasonal cropping as opposed to monocultural agricultural practises that pollute water collection points.
- Employing different and varied approaches for teaching and learning, when addressing indigenous knowledge in school contexts could illuminate the multidimensional nature of

indigenous epistemology of everyday life (for examples of how this could be done see activities in the Share-Net indigenous knowledge series in appendix 5).

- Working with indigenous knowledge issues in a pedagogical context the (abstract) theoretical and practical dimensions should be illuminated as dynamic and process orientated so that the facets that had been submerged within the school curriculum such as myths, fables, folklore, stories etc., receive attention in ways that are more relevant to the learner. For instance, the Nguni belief that if one stones a gecko they will die before it dies has been useful in the protection of the gecko. Geckos live on trees and move very fast and cannot be easily hit with a stone. Sikhakhane gave an example of the usefulness of such stories which have been referred to as myths in 5.4.5.
- In environmental education processes, an incorporation of lessons with activities which encourage students to investigate indigenous practices within their communities, could throw up understandings that had become taken for granted such that their usefulness for environmental education processes had become shadowed. This could be done through activities such as the one I was involved in of constructing a grain pit. We learnt that the Nguni were not the only group that constructed grain pits but the Sotho-Tswana ethnic groups of southern Africa and North American Indians did in earlier times (see *From Grain Pits to Silos* in Appendix 5).
- It is necessary to dispel the belief that indigenous knowledge practices are mainly the practices of Black people. For instance, most of the interviewees and participants in the study recognised indigenous practices as those of Black people (see Mkhize's comments in 4.4). In order to dispel such a belief the use of examples such as the use of the Y shaped water divining stick and associated practices by the Afrikaner as proof of the existence of indigenous practices amongst other groups would be useful.
- We need to acknowledge that practices of the past have constantly been reshaped by contemporary languages and developments. It is unwise to become dismissive about indigenous knowing and experiences when discussion and investigation might lead to interesting understandings which may contribute to the dynamic reshaping of knowledge. In 5.4.4 Player acknowledged that the Zulu continue to pour contents of their beer on the ground. Investigating the wisdom behind this practice it was interesting to find out the ecological

wisdom behind such taken-for-granted practices which are related in the Share-Net (1998) *Beer, Ants and Ancestors*.

- There is a historical dimension to every subject. If environmental education is to be recognised as a cross-curricular concern or phase organiser (Janse van Rensburg & Lotz 1998, Lotz, Tselane Wagiet 1998), teachers could bring to the fore the historical environmental dimension within the subjects they teach. By so doing they would be drawing the links between indigenous knowledge and environmental education processes.
- For history to become less perceived as a study of the 'past, and dead people' teachers can treat home, school and community histories as equally important. This approach to the teaching of history could bring about an understanding to students of their local environments and the historical practices that have sculptured it. In chapter 4 Mr. Dickinson has pointed out the importance of treating history in this manner. Fien (1993:23) within a socially critical education for the environment advocates a "reciprocal relationship between school and society in which formal education is both shaped by and responsive to the needs of society and in turn, helps to shape the society within which the schools are part".
- The study of ethics, an important part of investigation of indigenous knowledge concerns, should not only be limited to religious studies but the exploration of a basic ethical rationale linked with environmental ethics could feature in all subjects taught at school. According to Fien (1993:16) education *for* the environment "...builds on education *about* and *through* the environment to help develop an informed concern for the environment, a sensitive environmental ethic, and the skills for participating in environmental protection". In my view this could be achieved if all teachers could take on this as their responsibility.
- The promotion of economic values at the expense of other values and to the detriment of the environment by development agencies, some researchers, teachers and environmental agencies, should be questioned. For example, a competition that encourages paper collection so that it can be sold and laying emphasis on the economic gain rather than the pride inculcated by an aesthetically pleasing school environment is questionable. The critical questioning of the dominance of economically driven values might further trigger questions about globalisation and a new consumer culture.

- The teaching of values and their ethical analysis should be aimed at the development of critical skills in the student and the inculcation of a positive ethic for the environment. The strong links between dominant indigenous knowledge values such as respect and responsibility should be extended and promoted not only amongst human beings but to the biophysical aspects of the environment.
- There is a need for parents and teachers to forge and commit themselves to an in-depth partnership with regard to refining curriculum content and educational approaches for educational relevance to present day changes. Homework that encourages inputs from parents by questioning the everyday way of life may sharpen and contribute to the development of a critically reflexive community within the local environment of the school (see Fien 1993).
- In 5.4.5 Subaroyan pointed out the lack of understanding by Indian teachers of cultural issues that have shaped the child. Therefore, the home needs to be recognised by teachers and resource developers as a context where learning takes place. There is also a need for content learnt at school to be relevant to the context and environment of the learners and teachers need to learn and understand where their students are coming from. This move might encourage parents to take a positive and active role in the teaching and learning of their children, and thus bridge the gap between the home and school as learning environments.
- Elderly people strongly felt that an important role that they have played in the past as educators in communities is now being ignored. The common view that they have rich experiences by virtue of their age supports them being given a role in education by providing the kind of history concerning the environment that is not recorded in historical documents. The Department of Education could encourage and support such involvement of the elderly especially when students conduct socio-historical environmental audits.
- The reading of the environment as text should be encouraged, and stories like the “Sweet Water” story and accompanying activities could be used and/or developed to encourage students to be critically reflexive in investigations of issues related to their environment. Within a narrative theory (Noel Gough 1994 and see 6.4.4) the use of this story created an excitement that encouraged students to think about environmental problems around their schools. In Mpophomeni High school an environmental club was formed as a response to school environmental problems.

- Without necessarily promoting the questionable view that some practices of the past were observed because they were for conservation purposes, teachers could encourage those practices with potential to enable an environmental ethic to be practised, such as mixed cropping, appreciation of youth time rather than unplanned parenthood, creative storytelling etc., bearing in mind that indigenous knowledge practices have limitations and cannot be applicable to all situations and times.
- As much as we are living within a technological information revolution there is still knowledge that is reserved and sacred, to be understood only by those answering a special call and this is something teachers and students need to understand. For such knowledge we cannot, and need not, employ our present ways of rational thinking and reasoning. This is some knowledge that is related to traditional healing, witchcraft, haunting, etc. According to Le Roux (1998b:5), teachers need to create learning opportunities that enable outcomes such as, “Learners will be able to respect the rights of people to hold personal beliefs and values”.
- Environmental education resource developers should develop resources with careful attention to a number of aspects. Within the activities they suggest teachers use in their lessons, they could encourage less of the ‘gloom and doom’ alarmist stories that contribute to action paralysis for the environment. Rather encourage learners to find good stories and tell success stories which may encourage them to achieve what they set out to in their environmental education projects. In this way they may be encouraged to understand that indigenous knowledge is also a creative storytelling process within which they can take part.
- Indigenous knowledge can promote an environmental and conservation ethic. Nguni people’s surnames are a historical heritage with a totemic rule of respect which regulates one’s relationship with a particular plant and/or animal totem. For instance, Nguni people with the surname *Ngwenya* (Zulu and Swazi word for crocodile) are the guardians of the crocodile as a totem which is awarded the same status as an ancestral spirit. Almost all Nguni surnames have a totem. Therefore, the attaching of monetary value to all biophysical resources for instance, such as crocodile farming amongst the *Ngwenya* people could create and encourage new uses where they did not exist or were once minimal. Environmental educators working within conservation institutions need to bring awareness to such practices and could encourage totemic adoptions of flora and fauna species.

- Presently, maximum educational effort by nature conservation institutions in the province is directed at rural schools mostly attended by Black students and those schools with financial resources for environmental education programmes. The KwaZulu-Natal Nature Conservation Service should try harder to forge environmental education partnerships with schools previously attended and run mainly by Indian people for joint promotion of environmental ethics.
- Striving to ‘know the other’ and ‘know of the other’ (Bauman 1993) is important for teachers, researchers and students in a transforming South Africa. Mrs. Subaroyan indicated that the Indian way of life was different from that of other racial groups. The old South African educational system emphasised racial differences and stereotypes between racial groups rather than commonalities. A renewed exploration of the South African past could reveal practices that have developed out of interactions that have become authentic to South Africa and form part of a shared heritage (see Mostert 1993 and refer to quote by O’Donoghue in 3.2). For instance Subaroyan was not aware that like in the Indian culture the eldest son among Nguni people is not supposed to leave the parental homes and has the responsibility of looking after the parents. Amongst the Afrikaner it is the eldest daughter. Subaroyan had further pointed out that Indian teachers must bother themselves and learn about the ‘other’. I am of the view that all teachers could strive towards ‘knowing the other’ and ‘of the other’.
- The misunderstandings that emerge within indigenous knowledge explorations create a disequilibrium which could be directed towards fostering conscious knowledge building, something which has been obstructed in the past by the authoritative use of the textbook. According to Bauman (1993:147), it is “the mis-understanding that requires explanation, makes us pause and think, sets minds moving, triggers the process of conscious knowledge building”. Within misunderstandings and conflict between nature conservation institutions and their neighbours Mkhize in 4.4 saw indigenous knowledge as a tool for creating a sense of the value for conservation.
- There is a need to develop communication between institutions posing as mediators for knowledge derived from so called indigenous communities, and environmental education materials developers such as those promoting the notion that knowledge should not be commodified. Therefore institutions such as Share-Net should be less dismissive of them but strive to understand their points of view to meet their aims of encouraging “grass-roots resource

development by teacher groups and local communities and foster joint resource development activities among conservation agencies and projects in southern Africa” (Taylor 1993:37).

- I recommend that environmental education researchers continue to explore the relationship between indigenous knowledge understandings and environmental education processes.

7.2 Summary

The study has displayed that there is a role for indigenous knowledge within environmental education processes. Indigenous knowing and experiences could provide solutions to some of the ever escalating global environmental problems. Environmental education practitioners may want to engage a cyclical spiral process of continuous dialogue, encounter and reflection (O’Donoghue & Janse van Rensburg 1995) which can link indigenous knowledge issues with environmental education. The ways in which that can be achieved needs to be explored in future studies.

photo 1



photo 2



photo 3



photo 4



photo 9

photo 5

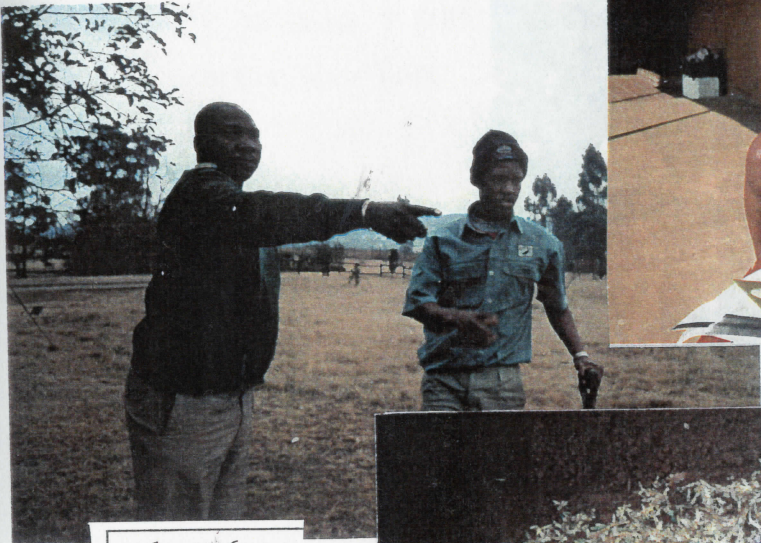
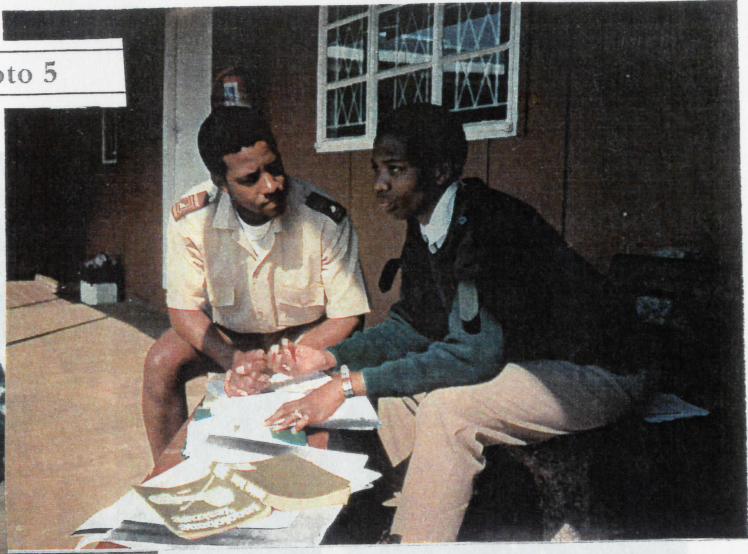


photo 6

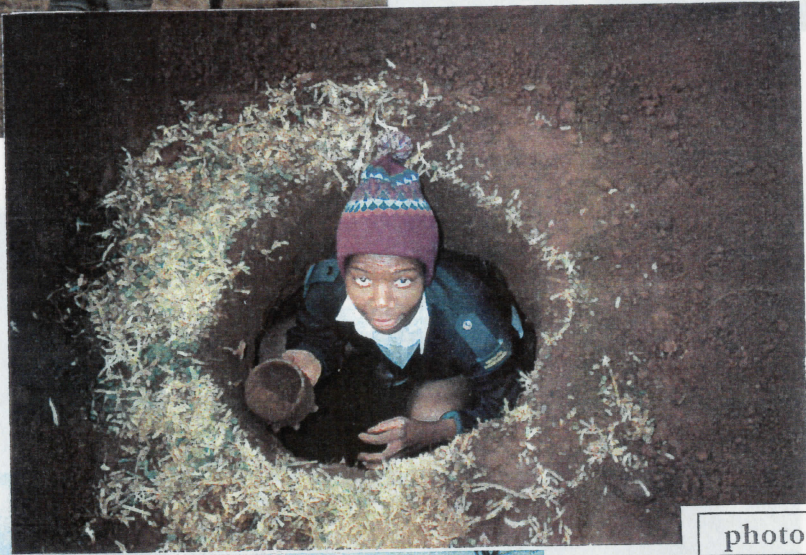


photo 7



photo 12

photo 8



photo 9

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Cantrell, D. ...

Carr, W., K...
Press, Lond...

Charon, J...
Hall, New...



photo 10



photo 12



photo 11

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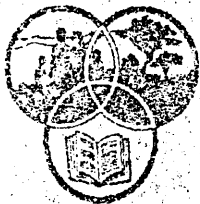
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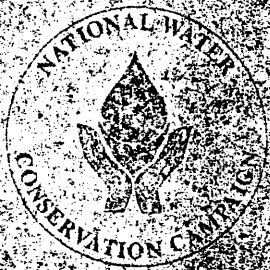
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A School Water Action Project
 (SWAP) Field Record Book



Introduction and Contents

This field record book was developed for School Water Action Project (SWAP) activities within the Global Rivers Environmental Education Network (GREEN).

To join in SWAP activities simply complete page two and do activities 1 to 8 to audit water quality in your area. Research notes and audit scores can be used to report water pollution problems to the Department of Water Affairs and Forestry (See p.21) and for interaction within GREEN, a global network of youths working for water quality in a healthier, more just and sustainable world.

- | | Page numbers |
|---|--------------|
| 1. READ about early Nguni water collection and storage | 1-6 |
| 2. INTERVIEW local people to collect stories of change | 7-8 |



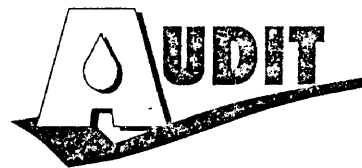
- | | |
|---|-------|
| 3. HEALTH RISK | 9-10 |
| 4. CATCHMENT CONSERVATION | 11-12 |
| 5. RIVER QUALITY | 13-14 |
| 6. WATER LIFE
(Use bugdial and Water Quality Slide provided.)
(Water ecosystem puzzle also included in pack.) | 15-16 |
| 7. WATER CLARITY
(Use turbidity disk provided.) | 17-18 |
| 8. SUMMARY OF RESULTS
(Use field sketches or photographs to make an A3 poster summary and write your audit success story on the SWAP / GREEN report form provided.) | 19-20 |

Also, contact your nearest SWAP support group (list comp. 21) for advice on water test kits and other materials for school action research and community problem solving. Water quality studies can be integrated across many learning areas as challenging processes of cooperative learning amongst teachers, pupils and supportive parents.

Happy water quality auditing!

SAFETY NOTE:

In polluted or bilharzia river systems do not enter the water and use rubber gloves or a plastic bag on your hand when sampling water or collecting water life. Fieldwork should, at all times, be supervised by an adult. Do not drink river water.



Record Book

Name / s: _____

School / Address: _____

Telephone: _____

WATER SUPPLY AND RIVER SYSTEM EXAMINED

Name of area and river or stream: _____

Date of study: _____

Location of study sites: _____

WEATHER CONDITIONS FOR WEEK BEFORE AUDIT

(Rainfall / exceptionally dry / temperature.)

SWEET WATER AND EARLY NGUNI PEOPLE

The early peoples of southern Africa had commonsense ways of collecting and storing "sweet" water, not unlike early humans in other parts of the world. This passage looks at Nguni water collection practices. *(Comments and scientific observations are in brackets so that readers might see the practical wisdom behind some water collection myths and techniques of the past.)*

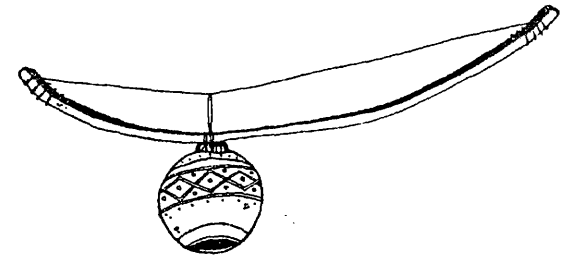
Before the time of the Zulu King Shaka, sweet water was called "amanzi amnandi". Shaka's mother was called Nandi and it is said that because it was not considered respectful to use the queen mother's name in this way, Shaka referred to sweet water as "amanzi amtoti." *(This is how the town of Amanzimtoti south of Durban got its name.)* Today both terms are used and many people of Nguni origin will sniff, smile and hold up "sweet" water collected from a river, spring or well for their daily household needs. *(Water quality scientists today still have people smell and taste household water. Human senses give a refined indication of whether water is good and clean and fresh.)*

Historically water was usually collected in areas where people could hear it running over stones or dripping down rocks. *(Well oxygenated water supports natural biological cleansing processes.)* If a spring was for human use, it was protected by a circle of rocks with a small outlet. Cattle drank elsewhere.

An area nearby was cleared and the site soon



became a meeting place for young people. Young men would hang around these water collection sites, playing musical instruments and admiring the maidens who came to collect water. The girls would saunter along slowly and gracefully, singing and flirting. Water collecting was rarely seen as a tiring or boring chore because of the prospect of courtship!



A water source would always be approached with care so as not to frighten crabs and other small water animals. When disturbed, their movement would stir up sediments and the collector would have to wait for the silt to settle. The surface film was brushed aside for "sweet water" to be collected.

(Sediments and surface films have higher bacteria numbers than the middle waters of pools and rivers. Today scientists take water samples below the surface film taking care not to suck up sediments. In this way scientists can get consistent and reliable measures of bacterial contamination.)

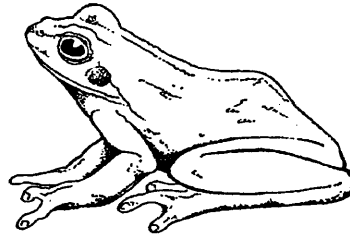


Clay pots were filled with water and covered with a collecting bowl, a piece of skin or a mat made from incema (*Juncus kraussii*) grass. The water would thus stay cool and fresh.

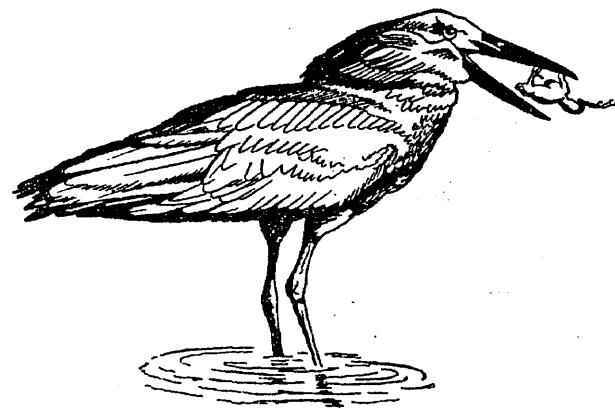
(Water evaporating through the sides of a porous clay pot cooled the contents. Most water bacteria cannot reproduce in cool, dark conditions. Some microorganisms envelop themselves in a calcium secretion in the pores of clay pots. Scientists spoken to were uncertain about the detail of these issues but it is of note that, in earlier times, great care was taken to scour out a calcium-like scale in water pots. Also of note is that when the grass 'lids' and head rings for carrying pots became old they were simply thrown away and new ones were woven. Discarded lids did not pollute the river like today's bottle tops and plastic waste.)

There were many other customs and traditional practices surrounding water. Children were warned that urinating in a river would change them to the opposite sex!

(This myth was probably sufficiently frightening to prevent people urinating in streams. This would have limited a disease like bilharzia. The bilharzia parasite is passed on from human urine and faeces to small water snails. From these its life cycle takes the disease back to people through river water.)



Nguni water collectors say that where there are frogs one does not find sweet water. Frogs are eaten by hammerkops (*uthekwane*, 'the lightning bird') and the prospect of collecting water while being watched by a 'witch-bird' must



have been terrifying in earlier times when spirits, myth and mystery had a more central place in everyday social life. Children were told that if they killed this bird or stole its eggs their homes would go up in flames.

(Where there are frogs one will usually find snakes. Both animals are feared by many people today, not least children told Nguni myths of witches and lightning to fill the heart with terror. Today, scientific tests suggest that many frog species need 'sweet water' if they are to live and reproduce successfully. There must be some doubt about the Nguni suggestion that frogs are an indication of water that is not fit for human consumption.)

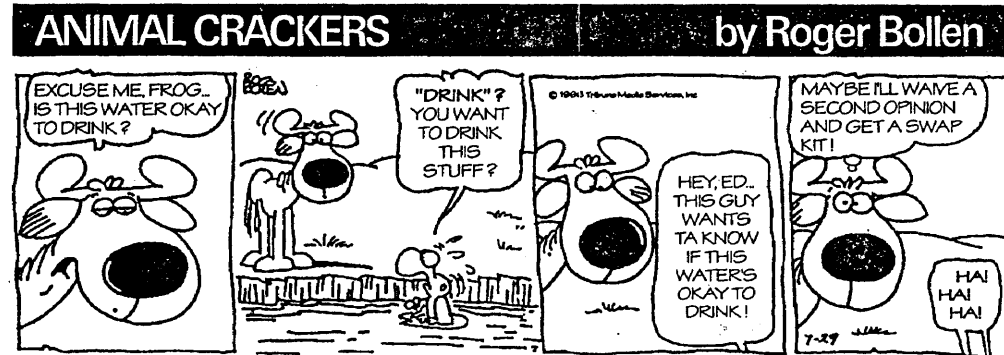
It was also said that it was not advisable to collect water from a river after heavy rain at the start of the annual rainy season. Indigenous commonsense

told people to put out pots to collect rain-water. River water would again be collected four days after the rains stopped and the water had cleared.

(Heavy rains wash human and animal wastes into rivers. There is thus a rapid increase in faecal bacteria and disease. In KwaZulu-Natal health workers have to warn rural people not to collect river water after heavy rains as few remember an earlier Nguni practice of collecting rain-water for four days.)

Today human and livestock numbers have increased vastly, catchments have become degraded and rivers are often polluted dumping places. The best indigenous practices for the collection of "sweet water" would not prevent people getting serious diseases from river water. Learning about historical water collection and storage practices can, however, develop a respect for early peoples and might also help our understanding of water quality issues.

Source: "Sweet Water," Share-Net, Indigenous Knowledge Series (IKS), revised by Lynette Masuku-Van Damme and Kim le Roux, 1996.



The activity on page 7 and 8 starts an investigation of local knowledge, change and water quality in your area. You can then audit health risks in your water supply and local environment. The audit can then be extended to catchment conservation and a river or stream near your school where water life and water clarity are useful indicators of water quality. Remember that although older people may exaggerate stories at times, they are a rich source of experiences to help us understand local problems and how things have changed.

Local interviews, indigenous story and change

Interviewing local people and collecting stories can develop a sense of how things have changed. Local information and stories are thus essential for understanding local water quality issues.



Work out a set of questions to ask local people, particularly older

folk who have lived in the area for many years. Record what you find out about historical change and local water quality problems in the spaces provided.

Historical change (Ask older people about local stories and change)

Present conditions and possible problems

(Ask local people about water quality problems).

AUDIT

HEALTH RISK

OUR WATER SOURCE IS

(Tick-a-box)

Treated tap-water

Borehole / well water

Raw river / dam water

Rain-water tank

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>



COLOUR AND SMELL TEST

Collect a glass jar of water from your community water supply. **Note:**

Colour

Odour (smell)

Is the water "sweet"? (Circle an opinion and record an audit score on page 10)

definitely not

probably not

seems good

POSSIBLE HEALTH RISKS IN THE ENVIRONMENT

Use the picture opposite to identify local health risks. List those observed in your local area below and record an agreed health risk score on page 10.

TOWN WASTES
Are dump and sewage works well managed and away from waterways?

RAIN-WATER TANK

Are the gutters clean?
Is the inflowing water filtered?
Is there a lid on the tank?
Is there a tap?
Are there rotting animals in the tank?

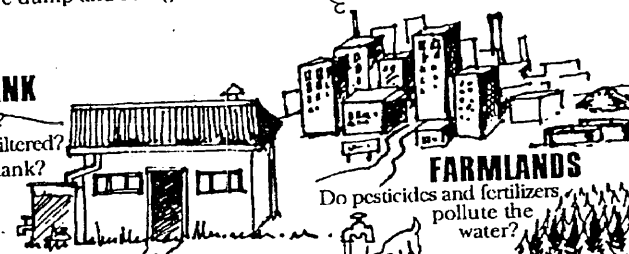
SPRING

Is the spring fenced?

Is there vegetation holding the soil?

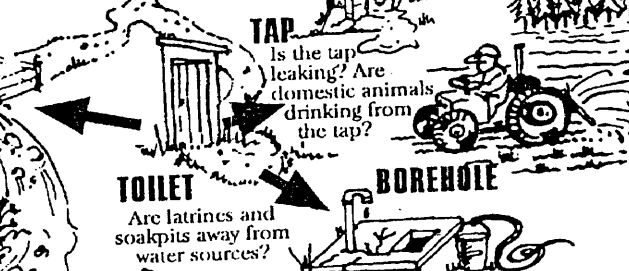
Are there dead animals in the water?

Is there rubbish that can cut you or in which mosquitoes can breed?



FARMLANDS

Do pesticides and fertilizers pollute the water?



TOILET

Are latrines and soakpits away from water sources?

BOREHOLE

Is the tap leaking? Are domestic animals drinking from the tap?

WELL

Is the tap leaking? Is the well protected? Is the cement cracked?

RIVER

Are people washing or bathing?

Is livestock muddying or defaecating in the water or near the water source?

DAM

Does dam change natural seasonal flow of river?

Our water supply is

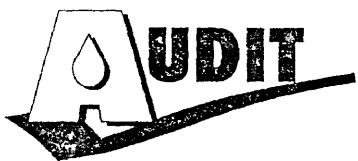
(Tick an agreed audit score and transfer to page 19.)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Health risk is

(Tick an agreed audit score and transfer to page 19.)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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CATCHMENT CONSERVATION

A watershed and its catchment is the land from which rainwater flows into wetlands, streams or rivers.

Many of the river catchments of southern Africa have been changed by historical land use practices, settlements and industrial growth to cater for a rapidly expanding population. In many cases wetlands have been destroyed and riverine vegetation removed, decreasing natural flood control so that the amount and quality of water released by our river catchment is decreasing.



Use the checklist below to audit catchment conservation around your school. Record your observations in the spaces provided:

1. List communities living in the catchment. (The overall settlement pattern)

2. List land use activities in the catchment. (What people do and how the land is used)

3. Note distance of human activities from the river banks.

4. Condition of the riverbank vegetation. (Note any alien plant and erosion problems).

5. How do they dispose of waste? (Are there landfill/rubbish dumps?)

6. Note any loss of natural vegetation. (Habitat change due to farms and plantations)

7. Note wetland and ground water disturbance / contamination.

8. Other observations.

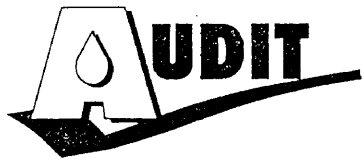
Interpreting observations:

- Ask:
1. Has the catchment been changed or degraded historically?
 2. Do the wetlands release clean water all the year round?
 3. Does the riverine vegetation provide flood protection?
 4. Is there pollution that might be degrading the capacity of the river, both to support animal life and to meet human needs?

Catchment conservation is:

Tick an agreed audit score and transfer to page 19

BAD	GOOD	GREAT
-----	------	-------



RIVER QUALITY

PHYSICAL DESCRIPTION OF THE RIVER



1. River bed

(circle appropriate words)

mud silt sand pebbles boulders rock / concrete

2. Depth of water (circle average depth)

0-10 cm 10-25 cm 25-50 cm more than 50 cm

3. Width of rivermetres

4. Speed of flow

Record the time taken for a floating object to travel 5 metres (Circle below)

<5 sec 5-10 sec 10-15 sec >15 sec

(Very fast flowing)

(Slow flowing)

RIVER QUALITY OBSERVATIONS

1. List visible problems observed (litter and dead animals)

2. List less visible problems (sewage / cloudy grey; green slime; soap froth; oil)

3. Record river vegetation and wetland quality (muddy water and alien plants)

Interpreting observations

- Ask:
1. Is the river polluted and degraded?
 2. Are the riverbanks and natural vegetation intact to provide flow and erosion control?

Remember: Cloudy water and changing animal life can be natural.

River quality is:

Tick an agreed audit score and transfer to page 19.

0-10	10-15	15-20
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AUDIT

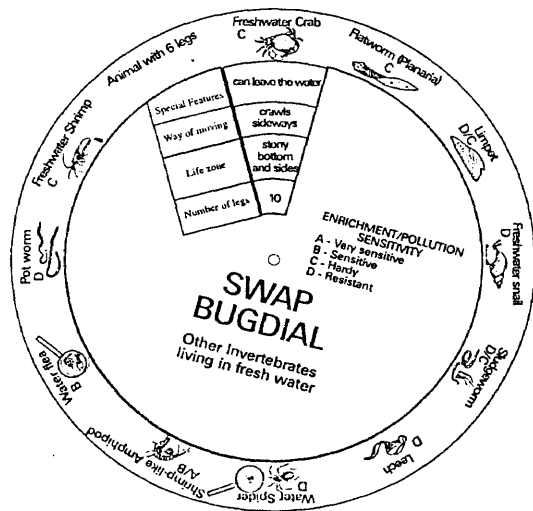
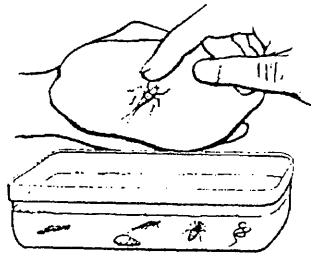
WATER LIFE

Many water animals and plants are sensitive to changing water nutrients and pollution. By seeing which organisms live in a stream it is possible to get a good idea of water quality.



BRUSH SAMPLING WATER LIFE

Pick up 5-10 large stones from the centre of a stream and brush off all the animals into a container of water.



Make up and use a bugdial to identify the water organisms and to determine their sensitivity to pollution.

Note: Sampling water life can be a very reliable indicator of water quality. Get local expert advice if possible as sensitivities and species vary. The bugdial and water slide are little more than 'best guess' but can help you get fairly accurate results.

ORGANISMS	SENSITIVITY	NUMBERS
1. Mayfly nymph	A	
2. Stonefly nymph	B	
3. Caddisfly larva	A/C	
4. Shrimp & amphipoda	A/C	
5.		
6. Flatworm (planaria)	C	
7. Dragonfly nymph	C	
8. Whirligig beetle	C	
9. Freshwater crab	C	
10.		
11. Water snail and limpet	C/D	
12. Worms and leeches	C/D	
13. Rat-tailed maggot	D	
14.		

TOTAL

 Sensitive
 A-A/C

TOTAL

 Hardy
 C

TOTAL

 Resistant
 C/D-D

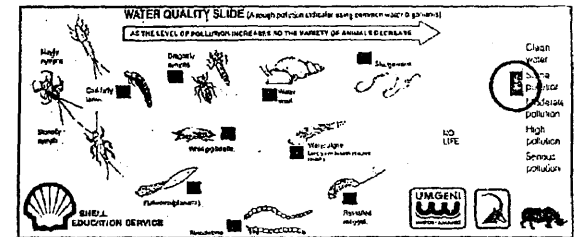
1. Note the numbers for each organism collected on the table, listing any other species found in the extra spaces provided.

2. Add up the numbers of sensitive (1-4), hardy (6-9) and resistant (11-13), and note the totals for each in the boxes provided.

3. Discuss the results and agree on a water life audit score. Check your result using the water slide, below.

NOTE: Return organisms to the water after identification and counting.

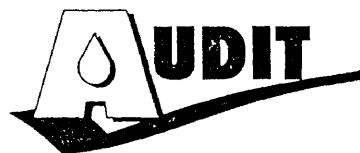
A water quality slide can be used for a rough and ready measure of water quality. Slide the centre card left and right until the organisms indicated with blue windows roughly match those that you found in the stream sampled. Read off a pollution level in the right hand window.



Water life found suggests that the stream is:

Tick an agreed audit score and transfer to page 19.

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----



WATER CLARITY (Turbidity)

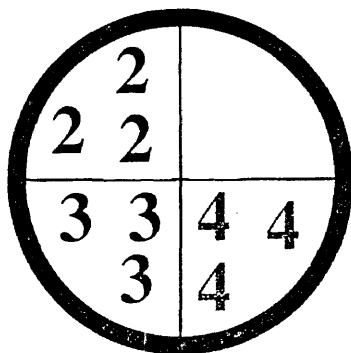
Turbidity refers to the relative clarity of water. Murky water stops light penetration and inhibits water life with a consequent loss of plant and animal diversity. Plants need light to grow and both large and small animals may suffer growth retardation or death because they cannot see to hunt and breed, or their gills may become clogged with particles of silt and organic material. Suspended solid pollution can be caused by silt from soil erosion, by sewage and industrial waste or by excess microscopic life in the water.



Note: Some rivers are naturally turbid and many organisms can only live in turbid conditions. The key is knowing natural levels in your area especially in Cape and forest 'black water' streams and rivers.

How the test works

The turbidity sighting disk is based on an early technique of lowering a black washer into a long glass tube of water and noting the depth at which it is no longer visible. The turbidity disk has a circular washer (outer ring scored as 1) and numbers of differing density (scored 2-5). A measure of clear or murky water (turbidity) can be obtained by noting the image density visible in a 20 centimetre column of water.

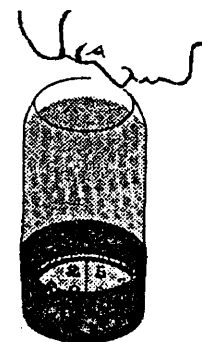


TESTING WATER CLARITY / TURBIDITY

The test should be done in open shade.



1. Cut down a 1,5 or 2 litre plastic cool drink bottle.
2. Fix the disk to the inside bottom of the bottle.
3. Fill the bottle to 20 cm with a debris-free sample of water.
4. Look into the bottle and pick out the water clarity number that is visible. (outer ring [1], 2, 3, 4 or 5)
5. Repeat to get a reliable result.



The water clarity is:

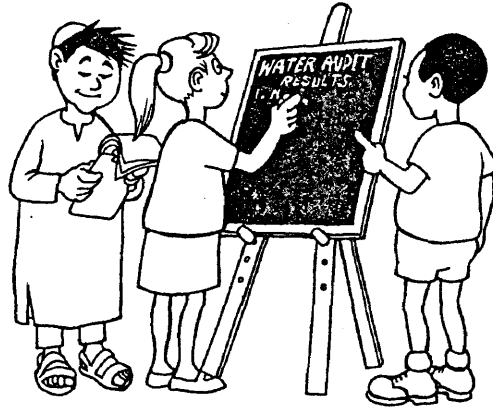
Tick an agreed audit score and transfer to page 19.

Disk not visible	score 1-3	All visible
BAD	NOT SO GOOD	GOOD

AUDIT

RESULTS

1. Examine audit scores 1 & 2 for an overall community health risk rating. Record an agreed result with notes on page 20.
2. Use scores 3-6 for an overall catchment water quality rating. Record this with notes on page 20.
3. Review all notes and results to develop a SWAP plan.



SUMMARY OF AUDIT SCORES:

1. WATER SUPPLY

BAD	not so good	OK
BAD	not so good	OK
BAD	not so good	OK
BAD	not so good	OK
BAD	not so good	OK
BAD	not so good	OK

2. HEALTH RISK

4. CATCHMENT CONSERVATION




5. RIVER QUALITY

6. WATER LIFE

7. WATER CLARITY (Turbidity)

OVERALL COMMUNITY HEALTH RISK RATING

(Summary of audit scores 1 and 2).

BAD	SOME RISK	OK
		

NOTES:

OVERALL CATCHMENT WATER QUALITY RATING

(Summary of audit scores 3-6).

BAD	NOT SO GOOD	OK
		

NOTES:

SWAP PLAN

(Ideas on what might be done and any plans for water quality monitoring and action).

REPORT WATER POLLUTION

PROVINCE	POLLUTION 'HOT LINE' (DWAf)
Eastern Cape	(041) 56 4884 and (0431) 23805
Free State	(051) 430 3134
Gauteng	(012) 672 2880
KwaZulu-Natal	(031) 306 1367
Northern Province	(0152) 295 7000 / 297 0009 and (012) 672 2940
North West	(0140) 84 3270 and (012) 672 2940
Northern Cape	(054) 25605
Western Cape	(021) 9507100
Mpumalanga	(013) 755 4771 X261 (012) 672 2880



SWAP SUPPORT GROUPS

Gauteng

Delta Environmental Centre

P/Bag X6, Parkview 2122

Tel: (011) 888-4831; Fax: (011) 888-4106

Rand Water

PO Box 1127, Johannesburg 2000

Tel: (011) 682-0278; Fax: (011) 682-0444

e-mail: <rw_hpcl@global.co.za>

Web site: <www.waterwise.co.za>

Radmaste Centre,

Private Bag 3 Witwatersrand University

PO Box 44344, Linden 2104

Tel: (011) 486-3294/5 Fax: 486-3369

Wildlife and Environment Society

Northern Areas Region, PO Box 44344, Linden 2104

Tel: (011) 486-3294/5 Fax: (011) 486-3369



delta



RAND WATER

RADMASTE



CENTRE



WESSA

KwaZulu-Natal

Web site: Umgeni Water Indaba

<<http://www.futurenet.co.za/indaba/>>

Umgeni Water

External Education Services

PO Box 9, Pietermaritzburg 3200

Tel: (0331) 3411-111; Fax: (0331) 3411-167

FutureNet

UMGENI

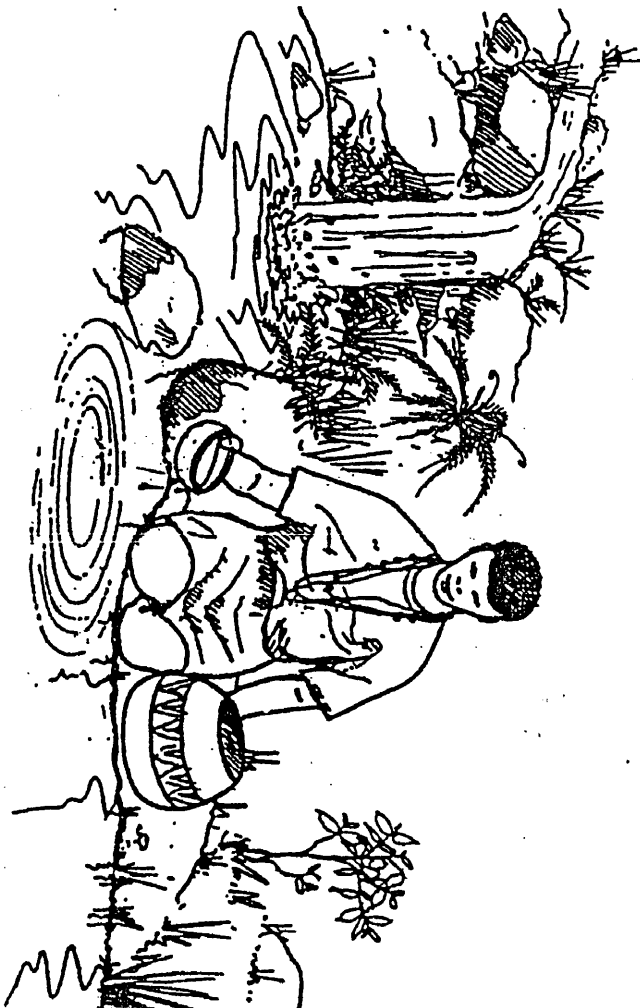


WATER · AMANZI



Indigenous knowledge series:
(Draft, July, 1994.)

SWEET WATER



First published in Look and Learn, Bona
Magazine, The Education Foundation

This series tells of how the wisdom behind many community activities is often lost in our modern times. This booklet takes a look at the practice of collecting water, and some of the dangers of drinking river water today.

Words to know

- spring:** where underground water comes to the surface
- bacteria:** tiny creatures that have their place in nature but which can make people ill.

Acknowledgements:

Project coordinator: Mba Manqele
Compiling and DTP: Rob O'Donoghue and William Charlton-Perkins
Editor: M. C. Gcumisa, author of Isilulu Solwazi Lwemvelo.

A Share-Net resource compiled by the Environmental Education Services, Natal Parks Board

SWEET WATER

In the past, people chose areas for collecting water where they could hear the water running over stones or dripping down rocks at a **spring**. Modern science tells us that this was wise, because water stays fresher when it has a high oxygen content. Water that runs over rocks has more air, which contains oxygen.



Today we know that there are more bacteria on the top of water than below the surface. A skill that is being lost is that of brushing

the water surface of a pool to create a hole from which to collect "sweet water". This helped to get cleaner water, and to keep away stomach problems and diseases caused by bacteria.



"Sweet water" used to be stored in clay pots covered with a piece of skin. It kept cool this way, and bacteria did not increase so quickly.

But these days, even collecting "sweet water" does not help much against disease, as rivers and streams have become dirty

because of **pollution** from animals, factories, cities, and communities. But clear water with many crawling or running creatures usually means a healthier river than muddy with worms.

The worst time of year to collect water is after the first rains, as the rain washes bacteria and diseases from the veld into the river.

But today, to be safe, always boil river water before drinking it!

Some points to remember

It is unwise to:

- * Collect water from rivers after the first rains
- * Collect water if it is muddy for worms are around
- * Collect water downstream from where animals drink

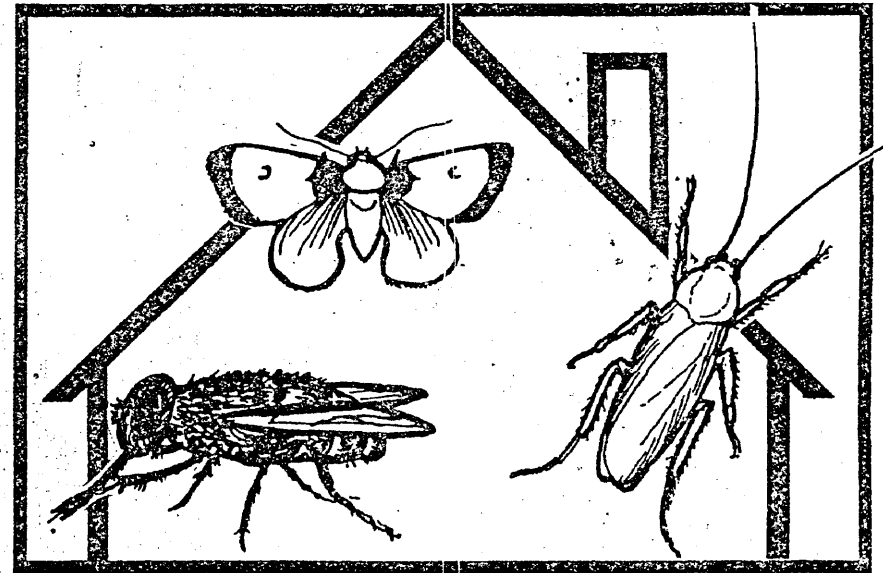
It is wise to:

- * Collect water at a spring
- * Keep water in a cool dark place

- * Collect clear water where there is healthy insect life
- * Contact a health worker if water is "diseased"

ADDRESSES

HANDS-ON COMMON HOUSEHOLD LIFE



A FIELD GUIDE

Compiled by
MBA MANQELE

Edited by **JASON LONDT** and **ANDY WHITTINGTON**

Illustrated by **COLLEEN HUGHES** and **PETER STEWART**



WVW-23




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This field reference booklet was compiled by Mbaweni Mankela of the Natal Nature Board with pupils and teachers from various schools in Durban and Pietermaritzburg and the field staff of the Wildlife Society of Southern Africa. Participants included the Science Education Project, Georg Friedel of the ABS/EEB Centre (Gauteng), Martie Sanders (Wits University), various EEAS staff, and NPB staff. Rob O'Donoghue and Jim Taylor through SHARE provided word processing and editorial support. Special thanks are due to Mkhize for information on the ecology of a traditional Nguni home, D. Londt and Andy Whittington of the Natal Museum, assisted by identifying specimens and by offering structural and editing suggestions. Thanks also go to Marchant (NPB) and Prem Naidoo from the University of Durban-Westville. This edition was developed by Kim le Roux and printed by Mzongisa.

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A SHARE-NET RESOURCE



PEOPLE
PLACES AND
PUBLICATIONS FOR
ENVIRONMENTAL EDUCATION

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 Telephone (0332) 303931

HOW TO USE THIS BOOKLET

These booklets have been developed to help us to learn more about the plants and animals that share our environment. The **CENTRE PAGES** are the most important! Start there! Once the organism has been identified, turn to the indicated page to find out more. To help you with difficult words there is a **GLOSSARY** at the end of the booklet. Other useful **REFERENCES** and Share-Net materials which will complement this field guide are listed on the back cover.

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INTRODUCTION

This booklet contains examples of animals that are commonly found in and around our homes. Although many of these are treated as pests they can make our homes safer, healthier and more comfortable. It may be hard to believe that people can benefit from the conservation (wise use) of household life but here is an example from the early peoples of Southern Africa:

BEER, ANTS, TERMITES AND CHICKENS

Today it would be considered unhygienic to sprinkle a sludge of sugar and grain around the outside of our homes. Not too long ago, however, the peoples of Southern Africa had a tradition of sprinkling the dregs from their beer pots onto the ground around the outside walls of their homes. This is still in practice in the rural areas.

The sweet beer attracted ants. They fed on the sugar but also attacked any termites living in the walls of the houses. Termites were pests as they ate the dry grass and wood from which the houses were made. By attracting ants with the beer, the termite threat to their homes was reduced.

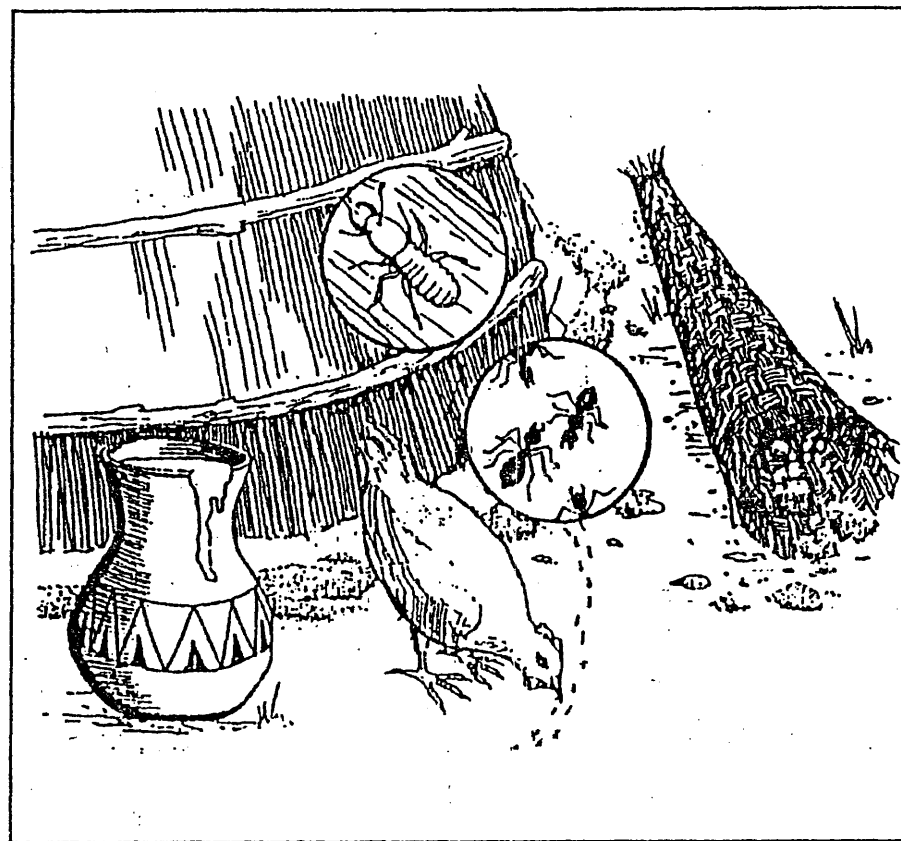
The ants did not become a problem because the beer pot dregs also had bits of grain. These were food for chickens which, of course, ate both the ants and any remaining termites.

Khulani Mkhize (Department of Nature Conservation)

This short example of traditional household life shows that the wise use of the beer dregs led to:

1. less destruction of the thatched homes by termites;
2. ants not becoming a problem as they were eaten by chickens; and to complete the chain,
3. the chickens providing eggs and meat for the people.

This partly explains how, as long as they had people living in them, thatched homes lasted for many, many years. When the people moved on, however, the grass and sticks were rapidly recycled by hordes of termites. Today we use poisons to kill insects and other household pests. Is this always necessary or are there alternatives?



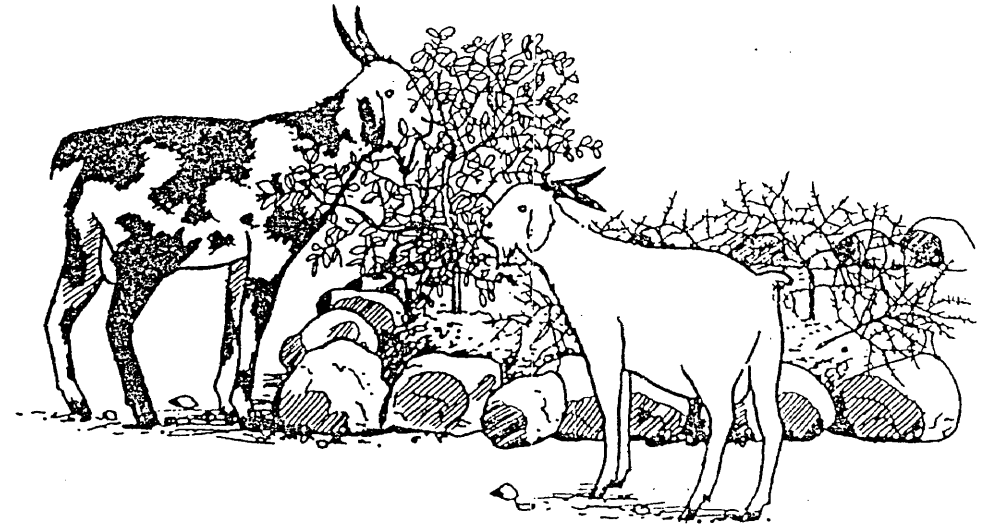
BEER, ANTS and CHICKENS

Use this book to learn about the animals that share our homes with us. As you get to know them you might work out wise ways to make your home or your classroom a happy, healthy place for people and animals.



Indigenous knowledge series:
(Draft, July, 1994.)

TREES, SPIRITS AND GOATS



First published in Look and Learn, Bona
Magazine, The Education Foundation

This series tells of how the wisdom behind many community activities is often lost in our modern times. Trees give us firewood, shade and oxygen. This booklet looks at the 'buffalo thorn' (umphafa, or Umlahlankosi) which is particularly significant to Nguni peoples.

Words to know

oxygen:	A gas in the air we breathe
medicinal:	Medicines for the sick
Umlahlankosi:	The tree of the king

Acknowledgements:

Project coordinator:
Compiling and DTP:

Mba Manqele
Rob O'Donoghue and
William Charlton-Perkins
M. C. Gcumisa, author of
Isilulu Solwazi Lwemvelo.

Editor

A Share-Net resource compiled by the Environmental Education Services, Natal Parks Board

THE TREE OF THE KING

In the past, this tree was planted on the grave of a chief (hence its Zulu name). Today it is still important for the Nguni tradition of bringing home the spirit of a relative who has died away from home.

The head of the family takes a small branch from the tree to the place where his relative died. There he collects the spirit and carries it back to the family home. On the journey he may not speak to anyone or look back.

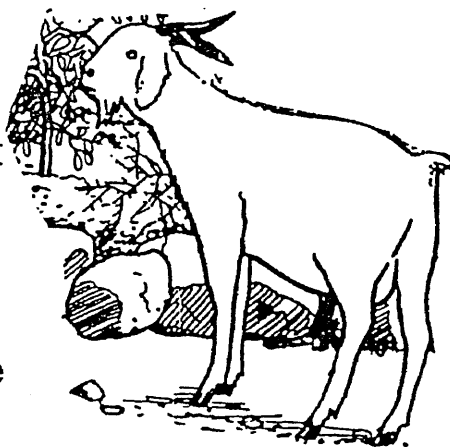


At home some of the leaves from the brai

are usually fed to a goat.

This animal is then eaten at the burial. Some of the meat and a small pot of beer is put aside for the ancestors.

Finally, the branch of the tree is often planted at the head of the grave.

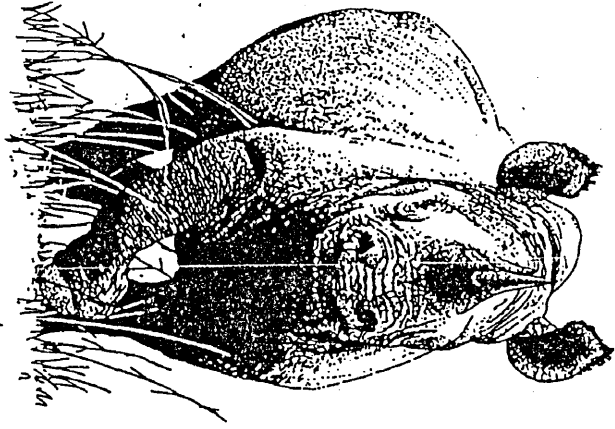


The buffalo thorn has many other uses. In some rural areas it is used to make tools and for cattle kraals. It is also widely used by traditional healers (Izinyanga).

These spiritual, medicinal and practical uses differ from place to place. They are good examples of a past wisdom that set aside the valuable tree for special uses. Modern science shows us how valuable this tree is not only to people but also to animal life that makes the world a healthier place.

This tree provides food for many insects and birds and it is easy to grow from seed. By planting it in our gardens we can attract birds and insects that eat garden pests. In rural areas it is eaten by stock when there is a shortage of grass. In game reserves it is food for many wild animals. One of these is the black rhino (ubhejane). People say that if we had to eat the sharp thorns of Umlahlankosi we would also be bad tempered like

ubhejane.



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APPENDIX 3

SCHOEMANSDAL ENVIRONMENTAL EDUCATION CENTRE DIARY FOR VISITORS

Dear God,

Like the mountains, you comfort us and we enjoy your Love every day. We see the beautiful mountains but often forget who made them. We see the cliffs but forget who keep them in place.

They prevail through storms and wind. They stand firm and strong, like you. We can look up to you for help and protection.

Forgive us, if we disappoint you in so many ways. Some people choose to be down in the valleys as they feel threatened by the heights.

To others it is the inspiration of power and strength. They like to sit on top and look out over the plains hoping that they would meet you there.

We stand at the beginning of a new week. We will be surrounded by the good but maybe also evil.

Give us the fine touch to make the right choices and to look upon this experience, positively.

Thank-you for teachers and parents that are patient with me when guiding me through the more important things I need to know.

*O Father, thank-you for this new day;
for health and strength;
For eyes to see and for ears to hear;
For hands to touch for feet to walk and run with;
For a heart that can experience love;
For a brain that I can use, for thoughts;
For the beauty of nature, surrounding us;
Thank-you for making me part of this, your creation.*

Amen.

WELCOME TO SCHOEMANSDAL

THIS DIARY IS A GIFT FROM US TO YOU. MAKE YOURSELF AT HOME AND ENJOY WITH US WHAT NATURE HAS TO OFFER.

A. What happens next?

1. First grouping and then
2. moving into the dormitories

B. Why groups?

Because group work is one of the most difficult but most important aspects in the community, everyone must learn to be part of a group, how to work together and to protect the groups interests.

You as a family at home are also a group and your parents are the leaders. They decide where you go and how you get there. This week we will also give you some idea, of what nature has to say about teamwork. You will also find out what happens if members get kicked out because of their unwillingness to accept the decisions of the group.

When you have found your room, put down your luggage and decide who sleeps where. Let the "sleep-walkers" rather sleep on the lower bed. Visit the ablution facility and read the instructions on how it should be used. Also make sure you know the name

of your dorm and room number. Orientation will follow after supper and the rest of the programme will be explained.

Read the following so that you have an idea of what you can expect tonight. Then take out your eating utensils and line up on the parade ground.

1. ACCOMMODATION

- a. No-one may visit another dormitory or room. (Boys/Girls)
- b. The rooms, passage and verandah must be kept clean and swept daily.
- c. Empty the rubbish bins of the dorms daily.
- d. Keep your room neat and tidy.
- e. A broom and mop will be supplied for daily cleaning.
- f. Windows must be closed daily and opened at night for fresh air. = *Monkeys are a problem during daytime.*
- g. ALL THE LIGHTS must be switched off after breakfast. Do so every time when you are the last person to leave a room. A dorm will be fined R20 if their lights are on without reason.
- h. Pick up the rubbish and throw it in the rubbish bin.
- i. Report all defects or broken windows etc. to the veld leader for repair any damage there after, you will be held responsible for.
- i. After AWARENESS /

MEDITATION at night it is LIGHTS-Off This must be respected and is also the time when buck and other nocturnal animals visit our terrain to feed. Make time and speak to your teacher or veld leader if you wish to go and look for them.

- k. All the blue taps on the terrain are taps with water fit for human consumption. All the red taps are used for irrigation purposes and is not fit for human consumption.
- l. Treat all geese and animals the way it is explained to you.

Room no: _____

Names of friends: _____

2. ABLUTION FACILITIES

- a. In the ABLUTION BLOCK are toilets and showers that may be used by visiting groups.
- b. The lights work with a TIMER SWITCH that will switch on at 18:00 at night until 23:00 when it will switch off.
- c. Warm water is scarce. Use it sparingly. Rather, wash hair in the basins after shower time. Leave the facility as clean as

- d. you would like to find them.
- d. A SHOWERHEAD is used and it saves water and electricity, please don't tamper with it.
- e. If you wash your clothes, hang them out to dry during daytime. All washing must be taken from the washing lines before dark.
- f. Empty TOILET ROLLS from the ablution block can be handed in to the staff to be exchanged for a new toilet roll.
- g. BATHROOMS IN THE DORMS ARE FOR STAFF ONLY.

3. DUTIES OF THE DUTY GROUP

We make use of a system of duty groups that each gets a turn to be the duty group of that day.

- a. They fetch the food from the kitchen under supervision of the guardian. All members must help when on duty.
- b. They take the empty pots, buckets and left overs back to the kitchen.
- c. They clean the tables and set the chairs afterwards.

4. DUTY ROSTER

DUTY DAY						
DAY	1	2	3	4	5	6
Breakfast						
Lunch						
Supper						

5. MEALS

- Line up at the assembly point in your groups.
- After saying grace the duty group will go and prepare themselves for dishing up.
- The duty group will dish up the food in an orderly manner, under the supervision of the guardian.

A SONG TO SING

FOR HEALTH AND STRENGTH
AND DAILY BREAD
WE PRAISE THY NAME O LORD.
(2X)

ALL GOOD THINGS AROUND US
ARE SENT FROM HEAVEN
ABOVE.

WE THANK YOU LORD,
WE THANK YOU LORD,
FOR ALL YOUR LOVE. AMEN.
(2X)

- Groups will move towards the dishing-up table in an orderly manner.
- After everyone is served, the duty group will serve themselves and then give the signal for "seconds" if there is food over.
- Soap water will be provided to wash your utensils. The washing procedure will be explained to you later.
- All leftover food must be scraped out in the container for left overs.

6. DAILY PROGRAMME

Programme will be discussed later.

7. TUCK SHOP

- The Tuck shop will be open twice daily. 10:00 a.m. and 18:00 p.m. for 30 minutes.
- You can collect a "bonus sweet" for every empty cold drink can that you return to the tuck shop.
- Keep your pocket money and sweets in a safe place.

8. MEDITATION / AWARENESS

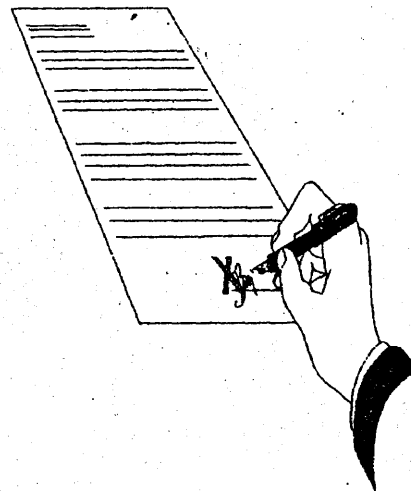
- This is the time that we put aside for meditation. You get guidelines in your book. You may use your own diary too.
- The place will be shown outside by the guardian / Veld leader.
- Everyone will start at the same time and will remain calm and quiet for 30 minutes.
Do the following:
(i). LISTEN
(ii). LOOK
(iii). THINK about today
(iv). THANK God for what you have
(v). ASK what you need for today

If you have read this far, you must feel more at home.

If there are any questions, please ask! Now that everything is clear, you know what is expected of you. After you have promised the following, you will be regarded as one of us. Enjoy your stay at Schoemansdal.

Write your name in the space provided.

10. PLEDGE TO SCHOEMANSDAL:



10.1 I, _____
promise;

- To carry out all signals and

- To be CIVILIZED, CONSIDERATE and POLITE towards others and also respect each others PRIVACY.
- To THINK before I act.
- To hand in all SIGARETTES, ALCOHOL, CRACKERS or any other dangerous item in my possession to the veld leader. (Such an act will not be punished.)
- To put away all my CHEWING GUM until I leave.
- To report SICK to the veldleader when not feeling well.
- Not to throw STONES or SAND.
- Not to play with STICKS.
- Not to bother with the sap of the CANDELABRA TREE.
- Not to SWIM or PLAY on any apparatus without the supervision of Staff.
- Not to throw stones in ponds or dam.
- To hand in all RADIO'S, TAPES for safe keeping.
- To obey the rules of Schoemansdal at all times and to subject myself to the majority decisions of the group.
- To support my GROUP at

all times and to PARTICIPATE in this group.

- o. Not to walk accross lawns but to make use of the foot path provided.
- p. Not to smear one another with shaving cream or tooth paste etc.
- q. Not to climb in trees.
- r. Not to climb and play on the Holy Rock.
- s. Not to climb through the windows of the dormitories.



Find a quiet place to do the following work sheet.

DAY 1. PRAYER FOR OUR CREATION

Good morning! How are you today? _____

WHAT IS LIFE?

What do you hear around you? _____

To be able to hear is a privilage.

Why do animals make those sounds? _____

They praise God for the opportunity to live.

Read this part from Gen. 1:26-28.

- 26. And God said: "Let us make

man in our image ~~and~~ our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps on the earth."

27. So God created man in his own image, in the image of God created He him, male and female created He them.

28. And God blessed them, and God said unto them, "Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea and over the fowl of the air, and over every living thing that moves on the earth."

Why did God create man and place him on this planet?

When God gave us the breath of life. He also gave us the chance to be alive, A life on earth, started as a short stay, to be a body, in it a soul, someone that can pray. A man/woman with thoughts, feelings and sight that can encourage us to a higher height. It is a time full of smiles but also struggle. A Life borrowed to prepare and to serve and to give back body, bone and nerve. Because birth and death are actually the same. Both are started and ended in His name. We realise that many things

are too difficult to understand.

This is Gods aim that between birth and death, we would make a choice to serve God or sin. Be aware and listen, because you will hear the voice, asking you to make your choice.

What is your aim for today? _____

What is your aim for this year? _____

What is your main aim in life? _____

DAY 2. LONGING FOR FRIENDS / FAMILY

Good morning. How are you?

Do you feel lonely? _____

Why? _____ Isn't it wonderful to have someone you can long too? Someone you know that loves you and miss you just as much as you miss them? I know of some other friends that love you and who miss you!

FROM A FRIEND:

Dear Friend,

How are you? I just had to send a note to tell you how much I care about you. I saw you yesterday as you were talking to your friends. I waited all day hoping you would

SIGNATURE
CITIZEN OF
SCHOEMANSDAL

DATE

want to talk to me too. I have given you a sunset to close your day and a cool breeze to relax you - and I waited. You never came. I was hurt. - but I still love you because I am your friend. I saw you sleeping last night and longed to touch your brow so I spilled moonlight upon your face.

Again I waited, wanted to rush down to talk. I have so many gifts for you!

You woke up and rushed off to someone else, my tears were in the rain. If you would only listen to me!

I love you! I try to tell you in the blue skies and in the quiet green grass. I whisper it in the leaves on the trees and breathe it in the colours of flowers, shout it to you in mountain streams, give the birds love songs to sing. I clothe you with warm sunshine and perfume the air with natures' scents.

My love for you is deeper than the ocean and bigger than the biggest need in your heart!

Ask me!

Talk to me!

Please don't forget me.

I have so much to share with you!

I won't hassle you any further.

It is YOUR decision.

I have chosen you and I will wait - because I love you.

Your friend.
JESUS.

WHAT WILL YOU DO TO BE
HAPPY TODAY? _____

WHAT DOES GOD DO TO HELP
US? (From "Footprints")

FOOTPRINTS

One night I had a dream. I was walking along the beach with the Lord. And across the skies flashed scenes from my life. In each scene I noticed two sets of footprints in the sand and, to my surprise, I noticed that many times along the path of life there was only one set of footprints. And I noticed that it was the lowest and saddest times in my life.

I asked the Lord about it; "Lord you said if I decide to follow you, You would walk with me all the way. But I noticed that during the most troublesome times in my life there is only one set of footprints.

I don't understand why you left my side when I needed you most. "My precious child, I never left you during your time of trial. Where you see only one set of footprints, I was carrying you."

DAY 3:
WHO AM I REALLY?

Let's look at the past few days! Did you change your idea on appreciation? Why? _____

What did you achieve these few days that made you felt worthwhile? _____

In the same way your light must shine before people, so that they will see the good things' you do and praise your father in heaven."

Matt. 5:16

Let's try to make a difference.

"I was battered and scarred, and the auctioneer thought it scarcely worth his while to waste much time on the old violin, but he held it up with a smile.

"What am I bidden, good folk?" he cried, "Who'll start the bidding for me?"

"A dollar - a dollar - then two, only two - Two dollars, and who'll make it three? Going for three - but not

From the room far back, a grey-haired man came forward and picked up the bow, then wiping the dust from the old violin, and tightening the loosened strings.

He played a melody pure and sweet as a carolling angel sings. The music ceased, and the auctioneer, with a voice that was quiet and low, said:

"Now what am I bid for the old violin?" and he held it up with the bow.

"A thousand dollars - and who'll make it two? The people cheered, but some of them cried, "We do not understand.

"What changed its worth?" Quick came the reply,

**"THE TOUCH OF THE MASTER'S
HAND!"**

SAFE WITH GOD:

Ps. 4:3 "As soon as I lie down, I go quietly to sleep: You alone, Lord keep me perfectly safe." Lord, in this hour of peace I want to thank you humbly, that your everlasting wings have brought me to this mountain's peak and protected me from a calamity.

In this hour of peace I thank you for joy and for times of tribulation. You were faithful, You did not burden me with more than I could endure.

And then I lay my head down without a care. - to fall asleep immediately safely with my God. Let me then not fear - the other awakening in my Father's house. You are a God of protection.

I stand on a rock at the entrance of eternity.

11. Programme



Our Planet - Care for it

11.1 Programme Aims

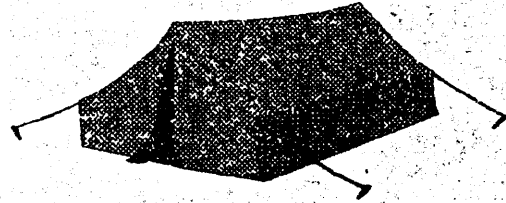
The programme evolved around the theme Environmental Education. This includes the interdependence of the different elements of the environment, which includes the conservation of, the natural environment, religion, culture, history, traditions and language. As well as, where do I fit in. What is my contribution towards the environment?

12. CAMPING:

Here are a few golden rules as you climb the mountain.

- Your ruck sacks must at all times be packed, ready to

- hike
We always hide them under cover. (Hall/tents)
- Everything is done in groups. Braai etc.
 - No fires should be made without permission. These flames must never go higher



that knee high or be nearer that 10m from a tent or ruck sack.

- The camp site must always be tidy and clean. Pick up all papers. Plastic/paper must be thrown in to the fire and tins in the dust bin.
- Clean your braai grid before handing it back.
- Scrape all the left over food in the container.
- Use water sparingly.
- Use basins and toilets as explained.

12.1 RUCK SACKS:

- A ruck sack will be provided to every one who needs one. Handle it with care and ensure that no damage is done to it.
- Do not sit/lie with or on a ruck sack.

- Pick up your ruck sack when sliding over rocks, do not let it touch anything.
- Place your rucksacks in two's against each other and under cover.
- All sharp objects must be covered with a towel or something so that it does not punch a hole in the sack.

13. PACK LIST - FOR THE HIKE:

DO NOT TRY TO USE ALL THE SPACE. IT IS A HUGE RUCK SACK!

- What do I pack? -
* **JUST WHAT YOU NEED!**
SLEEPING BAG / GROUND SHEET
1 SETS OF CLOTHES FOR EACH DAY
TORCH / SPARE GLOBES
BIBLE / PEN / DIARY
EATING UTENSILS
RAINCOAT
WATER A BOTTLE
TOILETRIES / TOWEL
MATCHES/LIGHTER
- (Fold your extra clothes into a plastic bag/towel and put it in your pillow case to be used as a pillow.)

14. HIKING INFORMATION:

- The hiking distance is approximately 3-5 km to the top and takes between 3 - 4 hours.
- Drink at least ½ a litre of

- WATER before you hike.
- WE ALWAYS HIKE IN GROUPS AND GUARDIAN GROUPS.**
 - We will ROTATE, which will give each group a turn to walk in front, rest and fall in at the back.
 - Group leaders and guardians



must do BUDDY CONTROL from time to time to ensure that no-one got lost or left behind because of gaps.

- Drink water after you have rested and cooled off.
- Use short steps when climbing and lock your knees. It uses less energy.
- Pick up the rubbish and throw it in the RUBBISH BAG.

Enjoy your hike and don't worry. If you have chosen **TEAMWORK** as first priority, you will succeed to get to the top.

Conservation and

Wildlife- management.

'Unwittingly for the most part, but



right around the world, we are eliminating the panoply of life. We elbow species off the planet, we deny room to entire communities of nature, we domesticate the Earth. With growing energy and ingenuity, we surpass ourselves time and again in our efforts to exert dominion over fowl of the air and fish of the sea.

'We do all this in the name of human advancement. Yet instead of making better use of lands we have already to our use. We proclaim our need to expand into every last corner of the Earth. Our response to natural environments has changed little for thousands of years. We dig them up, we chop them down, we burn them, we drain them, we pave them over, we poison them in order to mould them to our image. We homogenize the globe.

'Eventually we may achieve our aim, by eliminating every 'competitor' for living space on the crowded Earth. When the last creature has been accounted for, we shall have made ourselves masters of all creation. We shall look around, and we shall see nothing but each other.

Alone at last.'

'WE MAY BE BROTHERS AFTER ALL'

In 1854, the Great White Chief in Washington made an offer for a large area of Indian land and promised a "Reservation" for the Indian people.

Chief Seattle's reply, published here in full, has been described as the most beautiful and profound statement on the environment ever made.

How can you buy or sell the sky, the warmth of the land? The idea is strange to us. If we do not own the freshness of the air and the sparkle of the water, how can you buy them?

Every part of this earth is sacred to my people. Every shining pine needle every sand shore, every mist in the dark woods, every insect is holy in the memory and experience of my people. The sap which courses through the trees, carries memories of the red man.

The white man's dead forget the country of their birth when they go to walk among the stars. Our dead never forget the beautiful earth, for it is the mother of the red man. We are part of the earth and it is part of us. The perfumed flowers are our sisters and brothers. The rocky crests, the juices in the meadows, the body heat of the pony, and man - all belong to the same family.

So when the Great Chief in Washington sends word that he wishes to buy our land, he asks much of us. The Great Chief sends word he will reserve us a place so that we can live comfortably by ourselves. He will be our father and we will be his children. So we consider your offer to buy our land.

But it will not be easy. For this land is sacred to us.

This shining water that moves in the streams and rivers is not just water, but the blood of our ancestors. If we sell you land, you must remember that it is sacred

and you must teach your children that it is sacred and each ghostly reflection in the water of the lakes tells of events and memories in the life of my people. The water's murmur is the voice of my father's father. The rivers are our brothers, they quench our thirst. The rivers carry our canoes, and feed our children. If we sell you land, you must remember and teach your children, that the rivers are our brothers and yours, and you must henceforth give the rivers the kindness you would give any



brothers after all. We shall see. One thing we know, which you may one day discover - Our God is the same God. You may think now that you own Him as you wish to own our land, but you cannot. He is the God of man, and His compassion is equal for the red man and the white. This earth is precious to Him, and to harm the earth is to heap contempt on its Creator. The whites too shall pass, perhaps sooner than all other tribes. Contaminate your bed and you will one night suffocate in your waste.

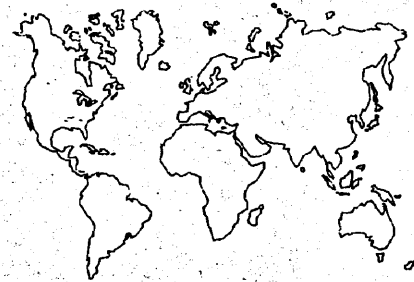
But in your perishing you will shine brightly, fired by the strength of the God who brought you to this land and for some special purpose gave you dominion over this land and over the red man. That destiny is mystery to us, for we do not understand when the buffalo are all slaughtered, the wild horses are tamed, the secret corners of the forest heavy with the scent of many men, and the view of the ripe hills blotted by the "talking" wires.

Where is the thicket? Gone. Where is the eagle? Gone. The end of living and the beginning of survival.

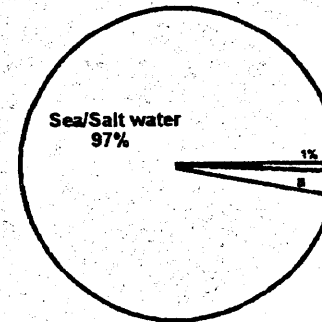
With acknowledgement to: Environmental Policy and Law, 2 (1976).

Water ecology.

Our planet consists of 70% water mass and 30% earth mass. Should we not name our planet "water" rather than earth?



Only 1% of the total water mass can be utilized by animal and man. 2% of the water mass is captured in the icecaps of our planet, and 97% of the water mass is ocean or salt water which cannot be utilized.



The usable water is used as follows:
69% - irrigation, producing food
23% - industries
8% - household

The average town dweller water usage per day, is approximately 140l

Let us take a look at a few other items which are used in everyday life.

ITEM	UNIT	LITRES WATER USED
Milk	1 litre	25 l
Coke	1 litre	3 l
Beer	1 litre	350 l
Paper	1 kg	900 l
Steel	1 kg	20 l
Newspaper	1	10 l

Water wastage and water mismanagement are contributing largely to the water shortage in South Africa.

Did you know? A tap dripping at a rate of 60 drops per minute, waste 45l per day. Exotic plants use up to 5 times more water than indigenous plants

Where recycling fits in



Industry is often blamed for all of our planet's pollution problems, and in many cases it is at fault. However, the consumer - you and I - has an important role to play in curbing the amount of rubbish generated each day. Each year, about 37 million South Africans produce 300 million tons of waste (16 million tons being domestic waste), a study by the CSIR has shown. Johannesburg contributes about 700 000 tons to that figure, and predictions are that, by the end of the century the PWV area will be dumping something like 15 million tons of junk a year.

REDUCE

- Avoid over packaged products; buy durable products instead of disposable ones; write or photocopy on both sides of a Piece of paper.

RE-USE

- Buy products in returnable containers; find other uses for containers that have served the purpose for which they were designed.

RECYCLE

- Ensure that as much of your waste - paper, plastic, glass, metal and organic material - as possible enters the recycling loop. Buy products that can be recycled or contain recycled material.

RECOVER

- The energy value of the resource may be recovered during incineration, and the heat used to drive other processes

LANDFILL

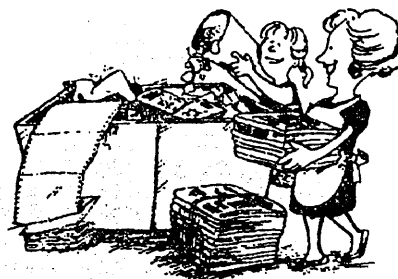
- Only after passing through all these stages is the residue volume of the waste buried in the ground. By this time the waste has been reduced considerably.

Waste Management on recycling:

- * Conserves the Earth's natural resources.
- * Reduces the need for imports and so saves foreign exchange.
- * Requires less energy than the production of new commodities from raw material, and therefore reduces the effects of global warming.
- * Saves using up land usually used for dumping.
- * Creates work for people.
- * Beats inflation.
- * Benefits charities, welfare and community organisations which can make money collecting rubbish for recycling.
- * Reduces South Africa's pollution problem.

1. Paper

Nearly two million tons of paper are produced in South Africa each year, according to the Packaging Council of South Africa. And of this annual production of



1 870 000 tons of paper, 600 000 tons are recycled.

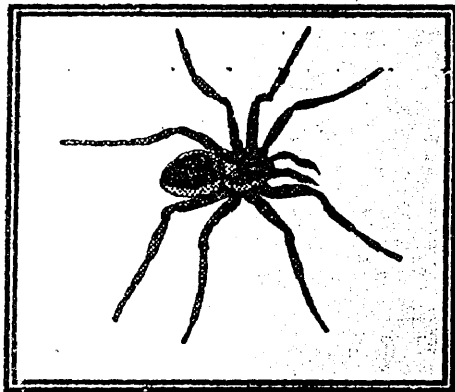
Often, in calling for the recycling of paper people mistakenly state that by recycling paper, trees can be saved. By recycling paper, we in fact save precious grassland ecosystems which would otherwise have disappeared under acres and acres of exotic pine trees.

Remember, when you collect a metre-high stack of newspaper for recycling, one less pine tree needs to be planted on precious food-producing land.

Recycling paper:

- Means fewer pine trees need to be planted.
- Uses 15 percent less water (another precious resource) than processing tree-fibre into paper.
- Reduces the amount of waste filling up our landfill sites. For every ton of 100% recycled paper that is used in place of virgin paper, enough paper to fill a large pick-up truck is saved from being used as landfill.
- Cuts air pollution from the manufacture of virgin paper by 71%.
- Cuts water pollution by 33%.
- Makes an energy saving of up

- reach maturity.
- There are 10 species of violin spiders in South Africa.
 - Only 5% of the Button spider's bites are fatal.
 - The Six-eyed-crab spider can survive on only one meal per year.
 - Red Romans are not spiders. They belong to the order Solifugae and the spiders to the order Araneae.
 - Daddy long legs are not venomous. Not even if it could manage to penetrate the skin.
 - Jumping spiders manage to jump by a sudden increase of the blood pressure in the legs.



"If you wish to live and thrive, let a spider run alive."

Spiders that you should be cautious (aware) of:

- Black Button spiders.

- Venom: Neurotoxic.
- **Brown Button spiders.** Venom: Neurotoxic.
 - **Sac spiders.** Venom: Cytotoxic.
 - **Violin spiders.** Venom: Cytotoxic.
 - **Six-eyed-crab spiders.** Venom: Cytotoxic.
 - **Wandering spiders.** Venom: Neurotoxic. (Not so venomous).
 - **Baboon spiders.** Venom: Neurotoxic. Some of the Baboon spiders are venomous and some not. Harpactirelia lightfooti, a species that you find in the South Western Cape is venomous.

Neurotoxic venom: A venom affecting the nervous system.
Cytotoxic venom: A venom affecting the body tissue.

Like with snake bites, there are certain factors that influence the effect of the venom once it is injected into the human body.

- The amount of venom that has been injected.
- The location of the bite. The closer to the spine, face and head the more dangerous it is.
- The age of the victim. Young children and old people are more vulnerable.
- The general health of the victim.

Most people don't know spiders and must therefore be careful not to handle them.

Other orders in this class:

The order: Scorpiones. (Scorpions) Under this order there are two sub-orders that one can easily tell from one another.

- **Buthidae.** This group have thick tails and small pinchers. This is also the group that is potentially dangerous.
- **Scorpionidae.** This group have thin tails and big pinchers and are not dangerous but the sting is still very painful.

The order: Uropygi. Vinegarones or whip-scorpions.

The order: Amblypygi. Tailless whip-scorpions.

The order: Pseudoscorpiones. Pseudoscorpions.

The order: Ricinulei. Ricinuleids.

The order: Solifugae. Solifuges (Red Romans)

The order: Opiliones. Harvestmen.

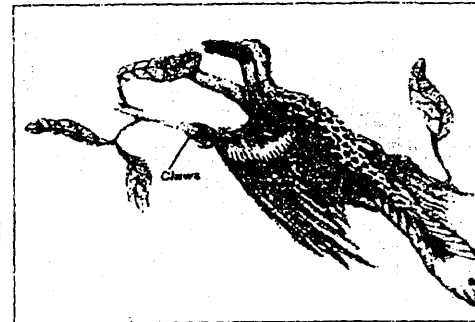
The order: Acari. Ticks and mites.

Your own notes: _____

Compiled by Carel Kilian

Birds

Birds belong to the class of animals called, **Aves**. Birds are the only animal that is covered feathers. The first bird that we know of was called



ARCHAEOPTERYX and existed around about 150 million years ago

Today, in the vicinity of 8900 bird species exists world wide, from which 917 species are found in South Africa.

Birds are highly adapted to a specific habitat

Is your garden a friendly environment towards bird life?

A couple hints:

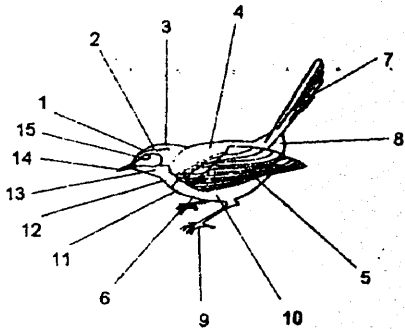
- Plant indigenous trees / plants.
- See to it that there is water in a sheltered area.
- Feeding place.
- Big trees provide a sheltered

place for nesting / breeding.

- ☞ Make sure that insecticides are used responsibly.
- ☞ Provide nesting boxes in trees to encourage breeding.

Easy bird identification

- | | |
|-------------------------|-------------|
| 1. Forehead | 2. Crown |
| 3. Back head | 4. Back |
| 5. Wings | 6. Rump |
| 7. Tail | |
| 8. Under tail - coverts | |
| 9. Claw | 10. Abdomen |
| 11. Lower breast | |
| 12. Breast | 13. Throat |
| 14. Beak | 15. Eye |



Techniques for bird identification

- ☞ Try to remember the main characteristics and write it down.
- ☞ Is it bigger or smaller than a sparrow?
- ☞ General colour patterns like, the back, abdomen and stripes.
- ☞ Beak: - colour, short, long, flat,

thick, bend etc.

- ☞ Claws: - colour and length.
- ☞ Tail: - shape and length.
- ☞ Any other striking characteristics.

Names of birds, identified by myself, throughout the week.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

Did you know?

1. The Arctic Tern fly 18050 km twice a year .
2. The smallest bird of prey is the Pearl-spotted Owl and Pygmy Falcon with a wingspan of 18 and 19 cm.
3. The bird with the biggest nest is the Hammerkop. It can weigh up to 50 kg.
4. The peregrine falcon can reach a speed of 350 km/h when

diving down onto its prey.

5. The biggest bird egg is that of an Ostrich, and it weighs 500 g and is the equivalent of 24 chicken eggs.
6. The biggest bird of prey, is the Secretary bird and is 1,3 m tall.
7. The biggest flock of birds, is that of the Redbilled Quelea. Of up to 100 000 birds in a flock.
8. The bird with the biggest wingspan is the Wandering Albatross with a wingspan of 3,5 meters.

Your own notes:

Compiled by Willem Brits.

Stars

Out there, in our night skies are an abundance of galaxies, some not even visible with the naked eye.

Using the great Mount Palomar telescope in the USA, they can see approximately ONE THOUSAND MILLION Galaxies.

Calculate one galaxy like the Milky Way, there are at least ONE HUNDRED THOUSAND MILLION stars. To calculate the number of stars in total is impossible.

WHAT IS ASTRONOMY?

Astronomy is the knowledge about stars and Astrology is the study on how do stars and planets influence your life from day to day.

In Europe and in Russia rock-paintings and artifacts were found depicting stars or planets. It was established that some of these artifacts were more than 20 000 years old. Nobody knows who the artists were...

Much of what we know about the earliest knowledge of astronomy, we have learned from the old scripts of the Babylonians. But it is clear from these old scripts that they, in turn, learned from people before them.

Well-known constellations such as Scorpio, Pisces, Orion, Taurus and

History of Schoemansdal and Environment

1. Old Nations

1.1 The Bushman

The first inhabitants of this area were presumably the Bushman. They were believed to have been here plus/minus 4000 years ago. Proof thereof are their drawings in the area. The Bushman were banished by the Karanga (Kalanga) tribe.

1.2 The Kalanga

The Kalanga were the fore-fathers of the Venda and the Lemba. Their origin dated back to the bronze period. The Kalanga came from an area somewhere in the north and had many Arabic habits. Archaeologists of the University of Pretoria revealed skeletons dated back to 600 AD. in 1978.

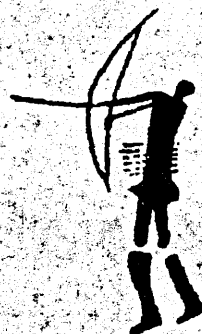
The length of these people were plus/minus 2 metres high. The excavations were being done next to the big rock south of the old school building.

1.3 The Lemba

The Lemba were the metal workers. They were despised by the Venda and their nation pride vanished. The Lemba became part of the Venda majority.

1.4 The Venda

The Venda were the reigning nation with their superior soldiers. During the 18th and 19th century the Venda were a powerful nation. Their empire stretches from east of Phalaborwa to the west of the Blouberg, from south of Yster-berg to the north of the Soutpansberg. Generals who protected this empire usually inhabited the



mountains. The powerful Venda empire were demolished because of internal quarrels amongst themselves.

1.5 The Europeans

In 1780 the first Europeans arrived in this area. They were mostly hunters. Louis Trichardt, Lang-Hans van Rensburg and their trekkers arrived in this area just before 1840. Trichardt's laer settled on the farms as we know them today, Treurfontein, Rampain and Reading. They built a mud dam and dug irrigation trenches. In 1848 the town Soutpansbergdorp were founded. At this stage Hendrik Schoeman was the leader of the trekkers and he changed the town's name to Schoemansdal. On the farm Bristol a Boabab tree was the landmark where merchants and travellers stopped on their route to and from Schoemansdal. After the evacuation of Schoemansdal in 1867 a number of farmers stayed on their farms in this vicinity. The town Louis Trichardt was founded in 1898. The farm Happy Rest was proclaimed a nature reserve because of the natural flora on the farm. This is the Schoemansdal Environmental Educational Centre, as we know it today.

2. Educational history of Happy Rest.

During 1914 the first school was founded at Happy Rest. It was closed down in 1935. Today, only the foundations of the old school building can be seen. In 1936 this was followed up by a school for agriculture which closed down in 1953. Last mentioned was followed from 1954 to 1965 by a reformatory school for boys which in turn had to make place from 1966 to 1973 for an industrial school for girls. During 1974 private tenants occupied Happy Rest. In 1975 Happy Rest was a clinic school. In January 1976 Schoemansdal Veldschool was founded. In April 1981 it became a double Veldschool. From 1976 to 1992 about 70 000 students visited the Veldschool. In 1993 the Veldschool became an Environmental Educational Centre, as we know it today. About 11 000 students have visited the centre annually.

Your own notes:

Compiled by Thys Meintjes

Dear parents,

Now that I've had time to clear my thoughts I've realised how much I actually missed you both. Even though already give me so much, I want to add the following requests.

- * Please DON'T spoil me. I know that I don't always get what I ask for but those things aren't always important - its my way of testing you as parents.
- * Please don't protect me from experiencing the consequences of the mistakes I make. Sometimes I have to learn the hard way and protection against those things numbs my initiative and determination.
- * Don't make me feel that my sins are unforgivable. It unbalances the morals that I've build up for myself.
- * Don't give me too much attention when I whinge because it gives me attention I'm trying to attract.
- * Don't mistrust my honesty. At times I get frightened and tell lies to protect myself.

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- * Don't reprimand me in front of others. I would listen and learn more if you did it when we were alone together.
- * Treat me according to my age. Don't try to "mother" me as it only leads to ignorance and makes me unable to cope when left alone.
- * Don't make use of every occasion to "brag" about me in front of others. It leads to arrogance and I know that there are others that are far better than me.
- * Don't forget that I'm at times unable to express what I'm trying to say. That is why I am not always accurate and able to make myself understood.
- * Don't let me learn bad habits. I don't want to depend on you to correct me every time I make a mistake.
- * Don't always take my side when I moan about something. I am not always right and all the others wrong.
- * Don't forget that I am always experimenting because without this I can not learn about life and experience all that I want to.

- * Don't be abrupt or send me away when I ask a question. If you do that, I stop asking questions and look for answers elsewhere.
- * Don't forget that I am growing up quickly. It is difficult for you to keep up, but please, try to keep up and correct my mistakes when necessary.
- * Please don't tell me that my questions are unnecessary or "dumb". To me they are very real and it will help me a lot if you try to understand.
- * Don't threaten me with something and not follow it through. After a while I won't believe you anymore and as a result won't honour your parental authority.
- * Don't think that it is beneath you to apologise to me. An honest apology makes me feel much closer to you.
- * Don't always nag or moan. It confuses me and I loose trust in you.
- * Don't make promises that you can't keep. It upsets me and hurts me when you don't keep your promises.
- * Don't say that you are perfect

47

or infallible because then it shocks me when I discover that you are fallible and only human.

- * Don't always be busy with so many things that you don't have time for me. I need some of your time, presence, love and guidance.
- * Don't forget that your presence at any school activity that I am involved in strengthens my confidence and trust.
- * Remember that love, patience, fairness, prayer and a Christian example all add to the building of my character and personality.

With love from the Veld School

Instructions on how to bring up the child. They want to reach beyond the child to communicate to the family. The support of family structure.

* Christian nation instruction - military

SCHOEMANSDAL SONG

SCHOLARS ARRIVE AND THEN THEY LEAVE
LIKE CHANGING OF THE MOUNTAIN BREEZE
BEFORE YOU KNOW OR REALISE
OUR WEEK AT SCHOEMIES HAS GONE BY

AT SCHOEMANSDAL WE'RE FREE TO ROAM
AND FOR A WHILE IT IS OUR HOME
AT SCHOEMANSDAL WE LOVE AND LEARN
AND MAYBE ONE DAY WE WILL RETURN

*

ALTHOUGH THE DAYS HAVE GONE BY
OUR MEMORIES WILL NEVER FADE 'CAUSE IN THE SHADOW OF THE MOUNTAIN
WE WERE TOUCHED BY WHAT GOD HAS MADE

* CHORES (X2.)

FROM PARENT TO CHILD

Dear Child,

We gave you life, but we cannot live it for you.

We can teach you things, but we cannot make you learn.

We can give you directions, but we cannot be there to lead you.

We can allow you freedom, but

we cannot account for it.

We can take you to church, but we cannot make you believe.

We can teach you right from wrong, but we cannot decide for you.

We can buy you beautiful clothes, but we cannot make you beautiful inside.

We can offer you advice, but we

cannot accept it for you.

We can give you love, but we cannot force it upon you.

We can teach you to share, but we cannot make you to show honour.

We can advise you about friends, but we cannot choose them for you.

We can advise you about sex, but we cannot keep you pure.

We can tell you the facts of life, but we cannot build your reputation.

We can tell you about alcohol and drugs, but we cannot say NO for you.

We can tell you about lofty goals, but we cannot achieve them for you.

We can teach you about kindness, but we cannot force you to be gracious.

We can warn you about sins,

but we cannot make you morals.

We can love you as a child, but we cannot place you in God's family.

We can pray for you, but we cannot make you walk with God.

We can teach you about Jesus, but we cannot make Jesus your Lord.

We can tell you how to live, but we cannot give you Eternal life.

Your Parents.

Took from: Faith for daily living.



The Tree of the King

by Sally Argent

"Tembe!"

The small group of herd-boys wandering behind a straggly bunch of goats, stopped and looked around. The woman sitting beneath a spreading thorn tree beckoned to them.

"Did you find all the goats?" she asked.

Tembe nodded. "We looked a long time. They had walked all the way to the koppie. They were eating the leaves of the tree on the grave."

"You mean the King's tree - the *umhlankosi*?" she asked.

"The one with the thorns," said one of the boys pointing to a hole in Tembe's shirt. "Look how he tore his shirt when he was chasing the goats away!"

"The branches have two thorns, one straight and the other one curved. When you get free of the one, the other catches you," complained Tembe. His mother laughed as she inspected the hole in the shirt. "That's why the farmers in the valley call the tree the *wag-'n-bietjie*, which means wait-a-while. If you take your time then you won't tear your clothes!"

The boys sat down to rest beside Tembe's mother. "Why is it called the King's tree?" asked the smallest.

Tembe's mother looked at the eager young faces around her. They did not realise the importance of the tree. Perhaps it was time to tell them. "The

umhlankosi is called the King's tree because in the old days it was always planted at the head of a royal grave," she began. "That is a royal grave on the koppie. Do you know what other special uses the tree has?"

"Lots of animals use it," said one of the boys. "Sometimes it is full of guinea fowl and other birds, all fighting over the ripe fruit. I've also seen lots of bees and butterflies drinking nectar from the flowers. And my father says that the leaves are good for the animals when the veld is dry and there is little food."

"I can't see that those thorns can be of use to anyone!" grumbled Tembe, fingering his torn shirt.

His mother's eyes twinkled. "You sound like *ubhejane* (the rhino)," she teased. "They say that he is so bad tempered because the thorns prick his

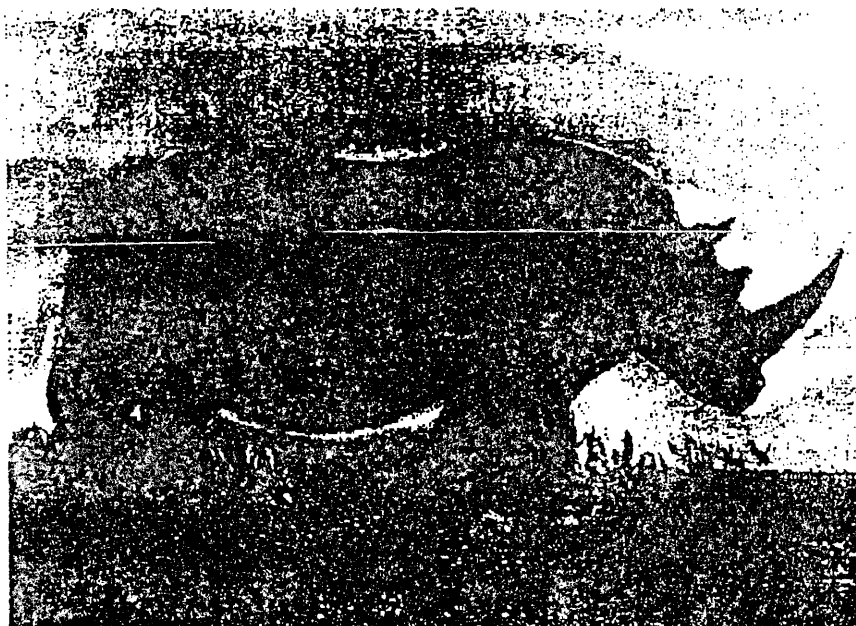
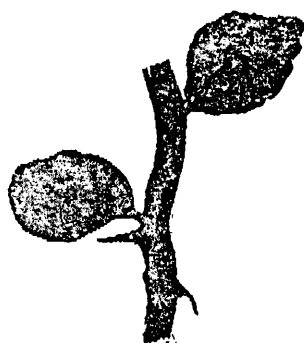
mouth and give him a tummy ache!"

The boys all laughed. "What else do we use the tree for?" she asked.

"I know," said Tembe. "When my grandmother was sick the *izinyanga* (traditional healer) used some of the leaves to make a healing drink for her, and it made her better."

Tembe's right," said his mother. "And have you noticed that some people have King's tree planted outside their hut? It protects them against lightning."

"Well, my father says that you must never cut it down or you will cause the rain to dry up and there will be a drought!" said the smallest boy in a quiet voice.



The boys looked at each other, wide-eyed. Indeed, this was a powerful tree!

Tembe's mother continued. "People do sometimes cut the tree. There is a branch hanging in our *kagogo* (ancestral hut). It was used to bring home the spirit of Tembe's grandfather. Now we know that his spirit is here to look after us.

The boys looked puzzled. "What does that mean," one asked.

Tembe's mother paused and looked around the circle of boys. "Well," she said slowly, "one day when you are men, you will learn how to do these things. But, you are old enough now to understand our customs, so I will tell you. When a man dies away from home and his body cannot be found, there can be no proper burial. That is not good for the spirit because it then has no resting place.

So our custom is to make a special sacred journey to bring it home. The men of the family who make this journey must speak to no one on the road nor look back along the path. Before they go, they must carefully choose and cut a branch of the *umlahlankosi*. They take it to the place where the person died and use it to call the spirit and tell it that they have come to take it home. That is what we did for Tembe's grandfather."

"What happens when they bring the spirit

home?" asked Tembe.

"People have different customs," replied his mother. "When your father returned, the men brought the best goat to the gate to welcome grandfather's spirit. They fed it some of the leaves from the branch and then both the goat and the branch were taken to the *kagogo* for the night. The next morning they slaughtered the goat and burned parts of it with *imphepho* (incense) in the *kagogo*. We cooked the rest of the meat and set some aside for the ancestors with a calabash of beer. Some families might burn a few of the bones and scatter the ashes in front of the *kagogo*."

"What happens to the branch then?" asked Tembe.

"We hang it up in the *kagogo* and it serves as a reminder to all of us that we have brought the spirit to its rightful resting place."

That night, when Tembe passed the *kagogo*, he glanced through the doorway. In the darkness he glimpsed the *umlahlankosi* branch hanging from the roof. For just a moment he lingered, thinking about

what his mother had told him. Although he had never seen his grandfather, it made him feel good to know that his spirit was amongst them.



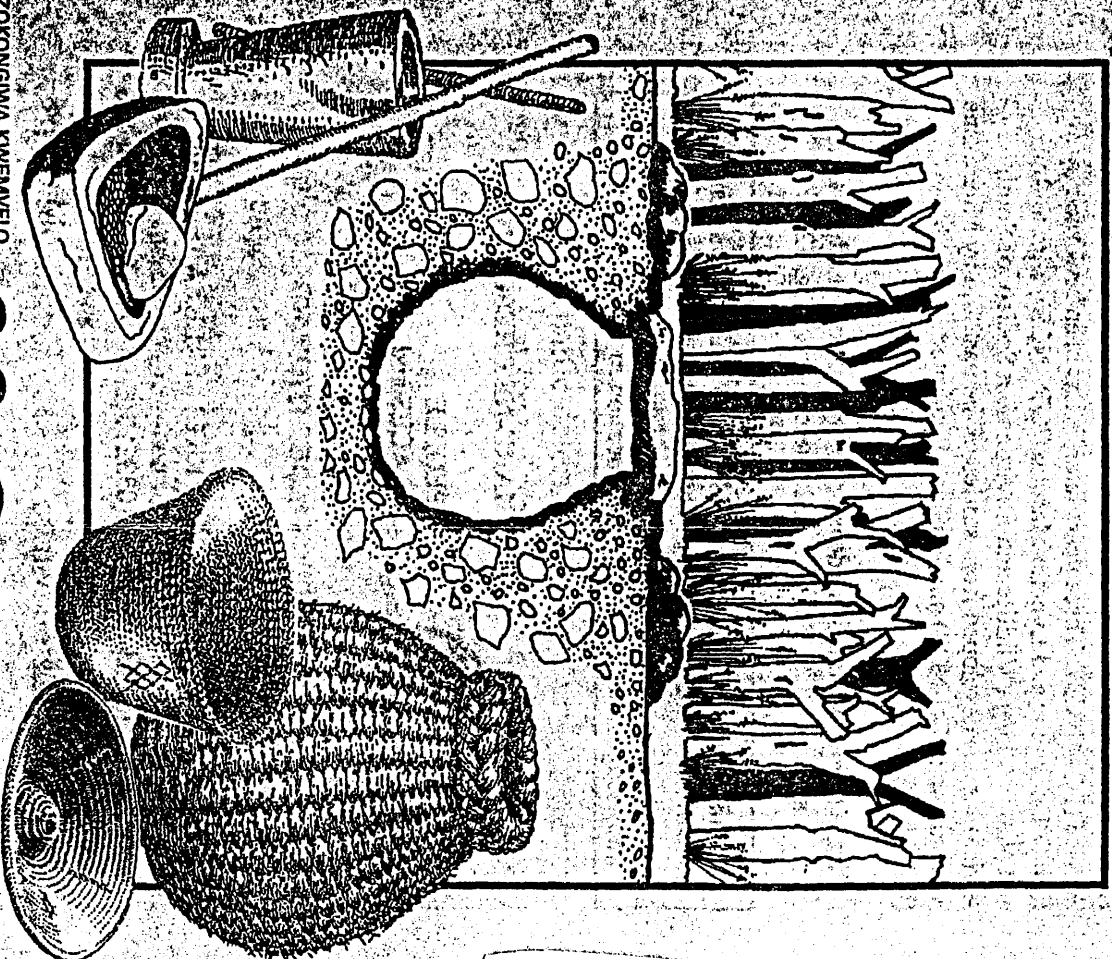
This story is based on information in "Trees, goats and spirits", a leaflet about the significance of the buffalo thorn in Nguni culture.

Order it from Share-Net, P.O. Box 394, Howick, 3290. Price R4.



From Grain Pits to Silos

Indigenous Knowledge Series



APPENDIX 5

IZOKONGIWA KWEMVELO
KWAZULU-NATAL
NATURE CONSERVATION SERVICE



WILDLIFE AND ENVIRONMENT SOCIETY OF S.A.
People caring for the Earth

This series tells of the wisdom behind many community activities which is often lost in our modern times.

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Please send any thoughts, ideas or comments to Lynette Masuku at KZN-NCS, P O Box 662, Pietermaritzburg, 3200.

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May 1998

Today most people buy mealie meal, samp and mealie rice in bags at a supermarket. Before being sold, it has been grown, stored, milled and packaged for us. In the past all these jobs were done in the home. We see and eat maize so frequently, it is hard to think that it has come a long way, both literally and historically.



Maize is said to have come to Africa from Mexico a few hundred years ago. Today most people have come to believe that maize is an indigenous food crop in southern Africa. This is because cattle and maize are amongst the crucial resources that have considerably shaped the way of life in this part of the world. The suitability of land for growing maize and cattle determined where people settled. As a result, the contest for suitable land has resulted in many wars.

The following story illustrates how closely maize, land, and cattle were intertwined in the early development of the Nguni people of southern Africa and how maize was stored. *Comments and scientific observations are in italics so that readers might see the practical wisdom behind some grain storage practices and techniques of the past.*

In the past, and even today, cattle were the primary source of wealth. The number of cattle owned determined the

status of the 'umnumzane' (head of the family) in the community. Gourds that overflowed with fermenting milk and good harvests added to good status.

There was no single indigenous technique for storing grain but people developed and adapted the way they did things according to the season, social circumstances and the area in which they lived.

For the best maize seed

In the past, except in times of war, at the end of every spring the fields were tilled with cattle for planting maize and other grains.

Not all grain was stored in the pit. Sometimes the covering



leaves of dried maize on cobs would be peeled back but left attached to the stem. These leaves were then used to tie the maize to the rafters of the kitchen hut. *Here the cooking smoke would create a film around the seeds.*

Permaculturists say that smoke is a preservative agent and insect repellent. Smoke protects the seed and discourages weevils

from destroying it. The grain from these cobs became the seed for the next planting season.

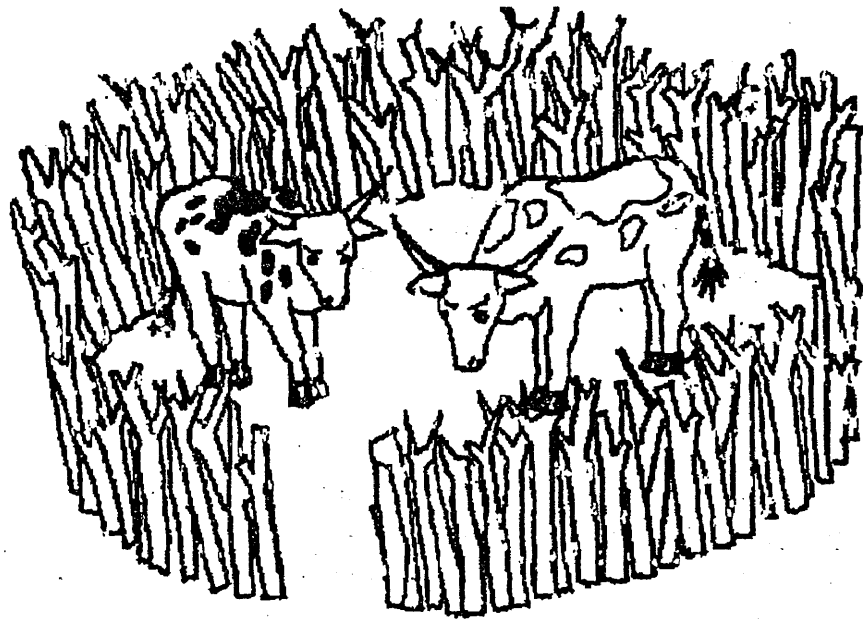
Neighbours, people of different communities and travellers used to exchange good seed varieties. *This practice was useful in that species diversity maintained pest and predator balance. In this manner dominant fungus or pests that favoured a certain type of maize seed did not reach alarming proportions.*

Cowpeas and pumpkins were often planted next to maize and used the maize stalks for climbing. *Peas are known for fixing nitrogen into the soil.* Locusts that were a threat to the maize and roamed the fields were handpicked and roasted by the young. *By 1987 chemical control of locusts in South Africa was still seen as the only method of preventing outbreaks. Organophosphate, pyrethroids and organochloride insecticides are presently used by farmers to control locusts. Organochlorides are known for their accumulation in human beings.*

Making a grain pit

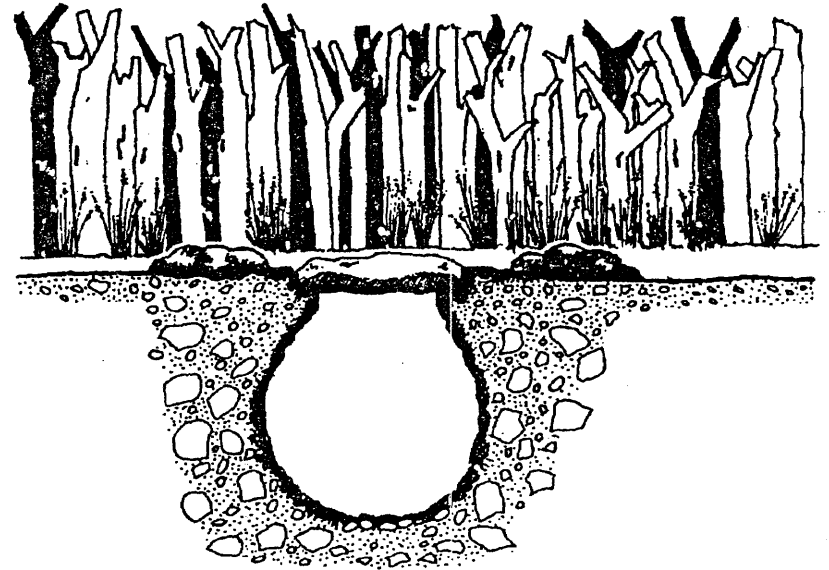
The maize to be stored in the pit was usually left to dry on the cob in the field. It was reaped, the leaves were removed and the grain cobs were stored in a grain pit in the cattle kraal. The spot where the pit was dug would have been pointed out by the 'umnumzane'. Grain was used for bartering, as were cattle, and so it was appropriate that it be stored in the cattle kraal, the main focus of the homestead. The grain was well guarded by the cattle at night. They would bellow loudly if disturbed, thereby alerting their owner of an intruder. *The harvesting of maize usually took*

place at the beginning of autumn when the heavy rains had finished. This increased chances for the pit to stay dry for a considerable amount of time. The threat of moisture came with the light spring rains. In the event of rains, water could not easily penetrate the pit because the movement of the cattle compacted the kraal surface. Most water was absorbed by the cowdung and extra water would run off in the spaces between the kraal posts.



After the head of the family had pointed out the spot, a young boy would be told to dig a hole 1-2 metres deep. The pit had to be shaped like a beer drinking pot. This meant that it would start off as a narrow pit that was

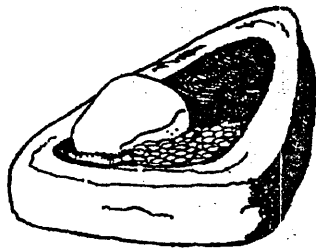
widened as it was dug deeper. The narrow opening was just big enough for one person to get in and out.



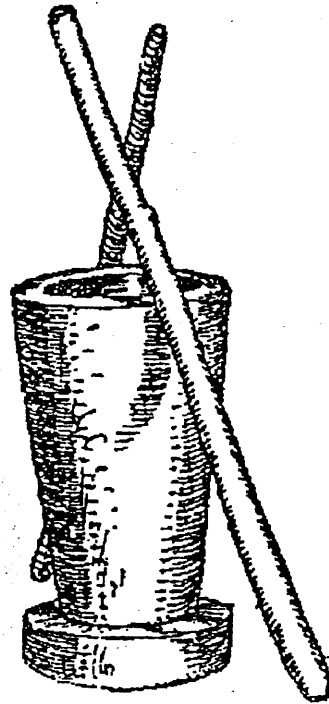
A fire was then made inside the pit which was covered in such a way that smoke could exit slowly. The fire killed off 'ubutumusha' and 'abayeni' - species of biting red ants. When the soil was baked by the fire, moisture was also greatly reduced. Too much moisture in the pit could result in fungus which would destroy the grain. In a well-fired pit only a small amount of maize was affected by moisture. The old variety of seeds that have not been genetically tampered with might have been less prone to fungal disease.

Preparing the Grain for eating

There were many ways to prepare maize for eating. Sometimes it was soaked in water until it fermented. It would then be pounded and cooked to make a delicious sour porridge. Often maize was ground into a powder on a large stone with the use of a smaller stone that fitted into two open palms of an adult person. *In early Europe and the Mediteranean, seeds are said to have been ground by one flat stone upon another leading to the invention of the windmill.* The grain was ground either dry or wet. More recently, small hand mills have been used to grind maize for domestic purposes. Today most maize is ground in factories and stored in large concrete silos.

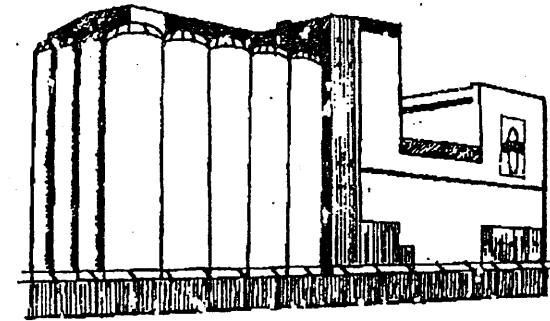


grinding stone



pounder for removing husks

From Pits to Silos



In industrialised countries where grain was produced in surplus to be exported, the challenge has been to keep it fresh for long periods. Today large milling companies store grain in silos. The conditions inside the silos are similar to those in the grain pits.

Scientists explored ways to store maize in the early silos without investigating indigenous African methods. Sophisticated pesticides were developed to kill maize pests. Today people are increasingly sceptical about the use of pesticides for storage. Chemicals are not only expensive but often have hidden side effects which can result in all sorts of environmental ills.

There is much to be learnt from the old ways of doing things. Today CO₂ has reclaimed its active role in the preservation of grain in silos. It is much safer and cheaper than using pesticides.

The pit was then smeared with a mixture of cow dung and anthill soil and left open for a day or two until it was dry. The smearing of the pit was a task for young boys or girls who had not reached puberty. *Permaculturists encourage*



weevil

farmers to use cow dung for the storage of almost all grain in the home. The ash from the firing of the pit and the cow dung prevented insects from moving from seed to seed. It also smothered weevil eggs, reducing the number of weevils.

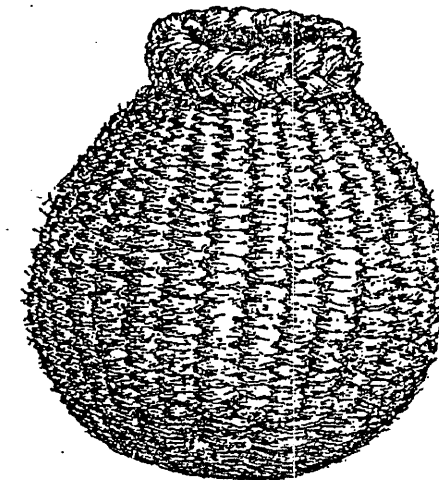
Older girls were not allowed to enter the pit and were told that the pit would capture moisture from them which would spoil the grain. Except for certain ceremonial rites, the cattle kraal was declared a 'no-entry zone' for women. They thus had to rely on the 'umnumzane' to distribute maize and other grain foods.

Storing the grain

The maize grain in the pit was covered with grass and a rock was placed at the mouth of the pit to seal it. Dung was smeared around it as a final seal. These pits were for temporary seasonal storage but the grain was sometimes kept for longer periods in times of crisis. During periods of war or drought it would be stored for a year or more. Different grain was stored in different pits.

Removing the grain from the pit

When grain was required, the cattle would be driven out of the kraal early in the morning. The grain pit was opened at great speed so that 'isimokwe' (the fumes) which came out were not inhaled. Always, two or more men went to remove the grain, for it was well-known that the 'isimokwe' could be overpowering. The pit would be left open for the whole day to let out the fumes before the maize was taken out. *The carbon dioxide (CO₂) fumes produced by the fermenting grain played an important role in the preservation of the grain. CO₂ suffocated organisms such as weevils and rats, thereby sparing the grain from these pests.* If the maize at the pit sides and entrance was spoiled it was used for brewing or was fed to chickens and pigs. The good maize would then be transferred into big baskets smeared with cow dung. These were sealed and stored in the cooking hut to be opened when needed.



ISIJINGI



Ingredients

- 2 coffee mugs of seedless chopped melon or pumpkin
- 1½ coffee mug maize meal
- 1½ dessert spoon sugar

Method

1. Boil either melon or pumpkin until very soft in 4 coffee mugs water.
2. Add the sugar then the maize meal and do not stir. Cover the pot and reduce the heat.
3. Let it simmer for at least 15 minutes and then while on the stove mix or mash together with a wooden spoon making sure there are no lumps.
4. Cook on low heat for 10 minutes. Stir the mixture to make sure that the heat has been well distributed. Cook for another 10 minutes.
5. The maize granules should look like they have softened when the porridge is ready. Also, the porridge should not stick to your wooden spoon.
6. Serve hot with your favourite relish or gravy.

SUGGESTIONS FOR SCHOOL ACTIVITIES



a) *Local Interviews, Indigenous Stories and Change*

Interviewing local people and collecting stories can develop a sense of how things have changed. Local information and stories can play an important role in helping us to understand the interrelation between the biophysical environment and our everyday social practices.

Work out a set of questions to ask local people, particularly older folk. Record what you find out about:

- ▶ grain storage,
- ▶ grain pests,
- ▶ method of pest control in the home without the use of chemicals.

Also record what you found out about historical change and societal problems in relation to:

- ▶ chemical pest control,
- ▶ methods of getting the best maize seed,
- ▶ commercially ground and sold maize meal.



b) *Grain Pests*

Visit a local commercial farmer and ask for a cob of dried hybrid maize. If you know a farmer who grows the old variety of maize not suitable for commercial purposes ask him for a maize cob. Store the different types of maize in different separate open containers. Monitor and observe which of these seeds will be attacked by weevils more quickly. It might take a month or two before you can see any results. Discuss the results.



c) *Farming Practices & Pesticides*

- ▶ Briefly describe the overall settlement pattern in your area. List the communities living here.
- ▶ Are there any major different types of farming? List them.
- ▶ Discuss the differences between monoculture and mixed cropping.
- ▶ What methods of controlling pests are used in your area?



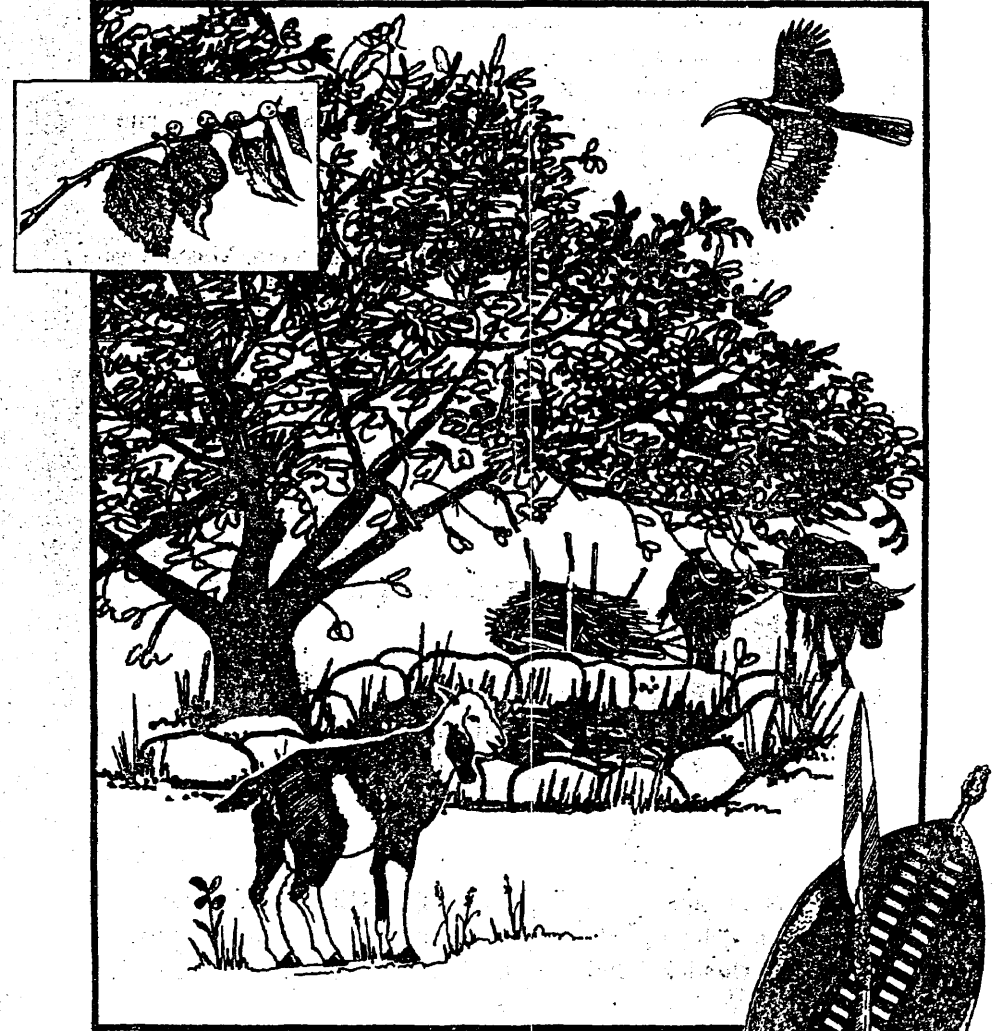
d) *Food Preparation*

There are many ways to cook with maize meal. There are three main types of maize porridge. The watery fermented breakfast porridge is called 'umdokwe'. 'Uphuthu' is a stiff kind of porridge that is popular and can eaten with all sorts of sauces and stews. 'Isijingi' or 'isijabane' is a mixture of maize meal and vegetables. 'Isijingi' used to be eaten either on its own or with milk. Nowadays people eat it with a rich meat gravy. A recipe for 'isijingi' is on the next page.



Trees, Goats and Spirits

Indigenous Knowledge Series



EZOKONGIWA KWEMVELO
KWAZULU-NATAL
NATURE CONSERVATION SERVICE



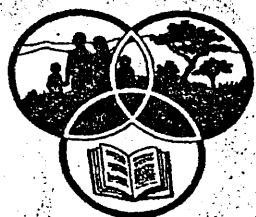
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May 1998

'Umlahlankosi' or 'umphafa' (commonly known as the buffalo thorn and scientifically as *ziziphus mucronata*) is no ordinary tree in southern Africa. A spiritual bond that developed between the Nguni people and this tree in the past, is still strong amongst some Nguni people even today. Stock farming communities besides the Nguni in South Africa also regarded the buffalo thorn tree as important. This booklet looks at the importance of this tree in southern Africa. *Comments and scientific observations are in italics to explain some of the practical common sense wisdom behind the practices of the past.*



ZIZIPHUS MUCRONATA

The ziziphus mucronata occurs in open scrub, grassveld, bushveld, rocky koppies, forest margins and stream banks. It does not grow in dense forests.

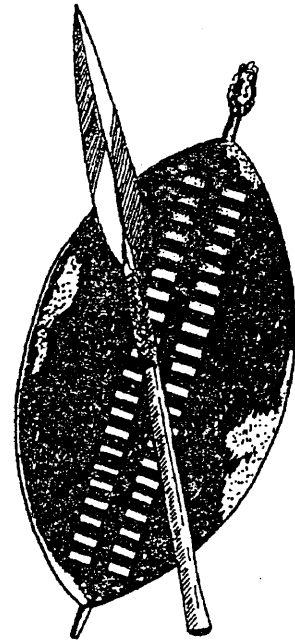
<i>height</i>	<i>9 metres</i>
<i>shape</i>	<i>rounded crown, drooping branches</i>
<i>bark</i>	<i>grey to dark grey, fissured</i>
<i>wood</i>	<i>pale brown, hard, twisted grain</i>
<i>leaves</i>	<i>shiny green, 4x3 cm</i>
<i>flowers</i>	<i>inconspicuous, yellowish, Nov-Dec</i>
<i>fruits</i>	<i>round, 1.5 cm, russet-red when mature, Mar-Aug</i>
<i>root</i>	<i>tap root</i>

In the past, the Nguni people coped with a death in the family or community through an intimate and spiritual relationship connected to the buffalo thorn tree. *In all societies certain societal rituals are usually performed in order that people can cope and accept a death. Today with the collapse of many rituals, we see an increase of social and moral ills related to a failure to cope with a death.*

The buffalo thorn tree is one of the Nguni 'chosen' trees. To guard against its extinction, felling (if at all) after rains was discouraged. The old maintained that felling at such a time would bring a drought. It was also never used for firewood.

Fetching the spirit

When a person died far away from home the elders of the family would be troubled until the spirit could rest in peace through a proper burial. They had to perform a 'symbolic' burial with the spirit of the dead person. If the spirit was left to wander far from its homestead misfortune would befall the relatives.



In earlier times this is what happened. When a regiment went away to war it was not possible to

bring back the corpse of the soldier. A dead soldier's stomach was pierced to avoid it swelling to cast a bad spell on the regiment. *In the past there were no mortuaries. The cool temperatures in mortuaries slow down the process of decomposition. When a dead body has been left out in the sun it becomes bloated and decomposes much sooner than it would when blood has been allowed out. Piercing the stomach would appear to have been a practical way to stop bloating and to retain the honour of a dead colleague. A dead warrior with a big wound looked much more honourable than a bloated one!* The warriors would make a quick study of the area before retreating or continuing to fight. When the battle was over they would report the death to the late one's relatives. A party would then be dispatched to the spot where the person had died in order to bring back the spirit. Before they left a goat was selected to welcome the spirit. Only men could carry out this very important task.

The party would carry a branch of the buffalo thorn tree. At the spot where the person had died they would call out the name of the dead one and announce that they had come to take his spirit home. The person who had called out the name had to carry the branch all the way home speaking to no one. If he had to communicate with anyone he would use sign language. He would stay away from well-used footpaths to avoid meeting too many people.

When the party arrived back at the homestead the spirit bearer would wait at 'esangweni' (the gate). The goat which represented the ancestors was then led to the gate and told that the spirit had been brought home. The branch and the goat were kept at 'kagogo' (the ancestral hut). When the goat had eaten some of the leaves it would be killed the next day. The fat around the duodenum, and the kidneys would be removed and burnt with 'impepho' (incense) in the ancestral hut. The next day the meat was cooked. The 'impepho' and the fat was burnt again and the ancestors were invited to eat. Some meat would be put aside together with traditional beer and kept in the ancestral hut. A few selected goat bones would be burnt in front of the huts. The branch which had been in the hut all along would either be buried in a hole in the kraal or hung in the ancestral hut.



The spirit burial

It is important to note that different people conducted the bringing back of the spirit ritual in different ways. Some would feed a few leaves of the branch to the goat, whose intestines would be buried in a grave while others would bury the branch. Common to all the rituals was the tree which played an important role in helping people deal with death.

New homesteads and *Ziziphus*

When people moved from an area the graves in the area also had to be moved. The branch of "umlahlankosi" came into use again. The spirits' names would be called. Each spirit was represented by a branch. These branches would be buried in separate new graves in the new homestead. A goat was slaughtered and sometimes trees were planted on the new graves. This would ensure that peace with ancestors was maintained.



A *ziziphus* tree at the head of the grave of a king or chief is a symbol of status.

The practice of bringing the spirit home is still often observed when people have died far from home in mines, car accidents and fires and their bodies cannot be found.

Ziziphus and farmers

The Afrikaner and Nguni have a long history of keeping cattle for farming. The Nguni people were highly respected by most Afrikaner stock farmers for their

Record what you found out about historical change and in relation to:

- ▶ the value of trees,
- ▶ the burial of our people,
- ▶ the value of at least two indigenous trees besides the *ziziphus mucronata*,
- ▶ spiritual attachment or relationship with some of our domesticated animals,
- ▶ ancestral and other religious beliefs with regard to trees, goats and spirits.



b) *Vegetation*

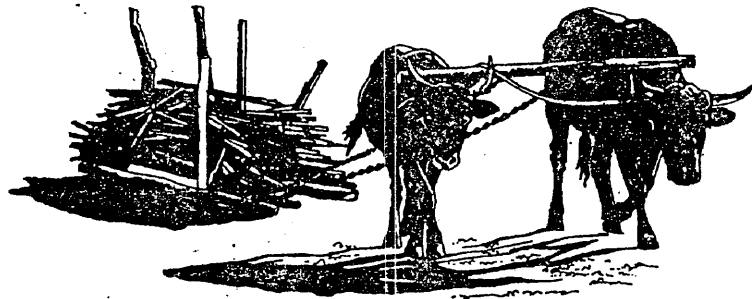
- ▶ Briefly describe the overall settlement pattern in your area. List the communities living here.
- ▶ List the types of trees that are grown locally.
- ▶ List the types of trees that are indigenous to your area. (The National Botanical Institute has produced a series of *Greening* booklets with information about plants indigenous to particular areas.)
- ▶ Observe and record alien trees and plants in your area. (If you are in KwaZulu-Natal, the Catchment Action booklet *28 Alien Plant Invaders in KwaZulu-Natal* from Share-Net would be useful for this activity.)



c) *Spirituality*

- Most of us have beliefs that influence or guide our relationship with what lives and grows. We need to learn about peoples religious beliefs and respect these.
- ▶ Explore the practice of “vegetarianism”. Speak to people who are vegetarian and inquire about reasons for their choice.
 - ▶ Explore the different ways that people have learnt to cope with the loss of a human being or a pet.

practical and useful knowledge of looking after cattle. These stock farmers also attached some importance to the



ziziphus tree. The Afrikaners used its wood in the 'trek' period for the construction of their wagons as well as for making ox-yokes. They refer to it as the 'blinkblaar-wag-'n-bietjie' (wait-a-bit) because its thorns force one to wait a bit if clothes have been hooked. In their search for water the sight of a *ziziphus* tree brought joy as it indicated the presence of underground water. *Ziziphus* was also good fodder for animals in times of drought. When farmers suspected that their calves had worms the root of the *ziziphus* was pounded, water was added and it was given as a de-wormer. The high nectar content of *ziziphus* flowers attracts bees and birds so beekeepers also consider this a valuable tree.



In game reserves the *ziziphus* is a source of food for birds, rats, mice, nyala, impala, warthogs, monkeys, giraffes and black rhino (ubhejane). It is one of the rhino's

favourite foods and it is said that if we were to eat the sharp thorns we would also become bad-tempered like the 'ubhejane'!

Other uses of *ziziphus* in the home

A *ziziphus* tree in the homestead was always well cared for as it was believed that it was protection against lightning. It was and still is widely used for human medicinal purposes. The leaves can be pounded, boiled and while warm, placed on boils and other septic skin swellings. Small quantities of the roots can be chewed to cure dysentery. When the leaves are boiled the vapour can be inhaled for chest troubles. For throat infections a concoction of boiled leaves can be used for gargling.

SUGGESTIONS FOR SCHOOL ACTIVITIES

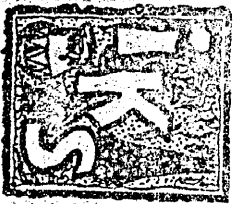


a) *Local Interviews, Indigenous Stories and Change*

Interviewing local people and collecting stories can develop a sense of how things have changed. Local information and stories can play an important role in helping us to understand the interrelation between the biophysical environment and our everyday social practices.

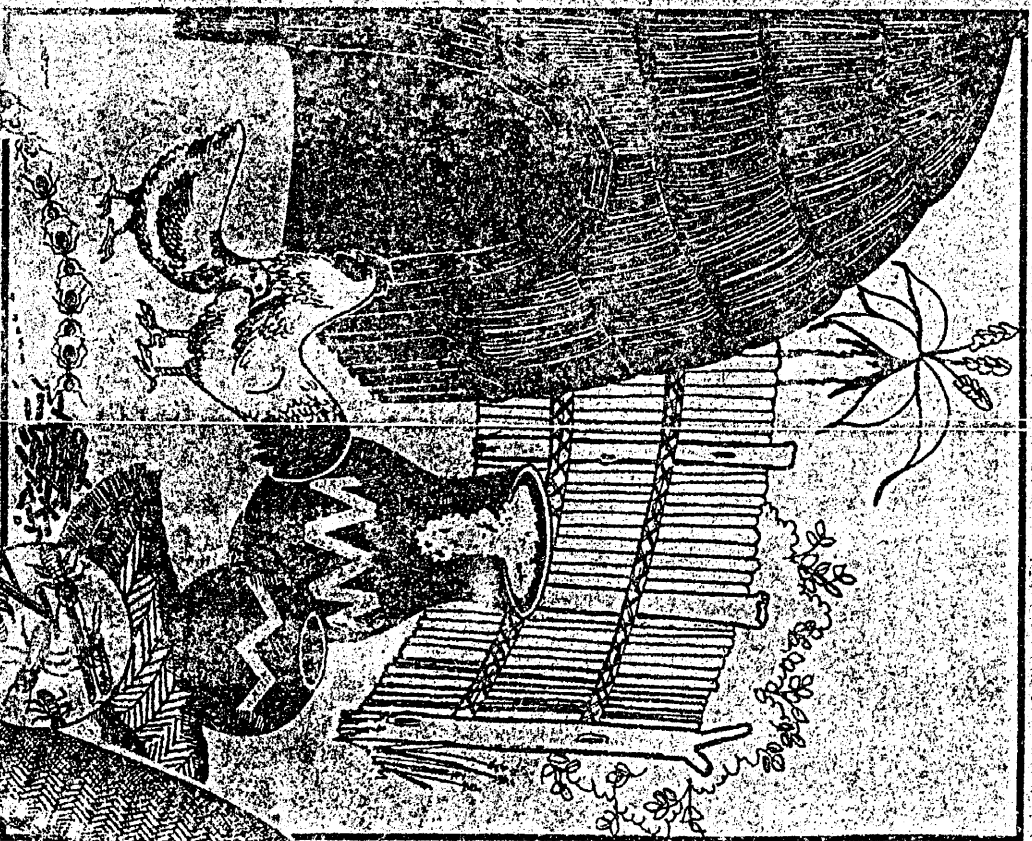
Work out a set of questions to ask local people, particularly older folk. Record and discuss what you find out about:

- ▶ the *ziziphus mucronata* and other trees,
- ▶ goats,
- ▶ spirits.



Beer, Ants and Ancestors

Indigenous Knowledge Series



EZOKONKONVA KWE MEVELO
KWABUUNUWA
NABU

9800



WILD TREE AND ENVIRONMENT SOCIETY
PO BOX 1000
141, E-111

Commonsense ways of doing things played a crucial role in earlier times in southern Africa. This passage looks at the interconnectedness of many issues in the everyday life of the Nguni people and how what we call "indigenous knowledge" today has contributed to addressing a number of problems in those earlier times. *Comments and scientific observations are in italics so that readers might see the practical wisdom behind some of the practices of Nguni people.*



Beer drinking has always been a popular activity in southern Africa. Beer was more than simply a pleasant drink for social gatherings; it had an important role in Nguni culture (*Nguni people lived in eastern southern Africa*). A home that had its pots bubbling with 'umqombothi' (sorghum beer) was usually regarded as a solid and happy home. Without beer, people would have felt unprotected by their ancestors and their huts would have been consumed by insect pests!

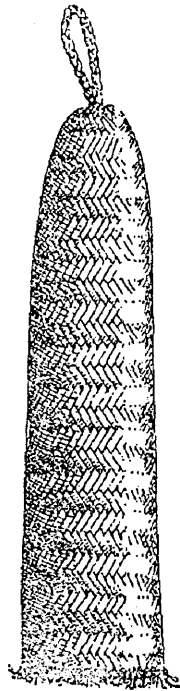
Beer & Nutrition

People usually washed down their food with gulps of beer. The thick beer did not only quench thirst but suppressed hunger. Its sedative effect meant that it was relaxing to drink.

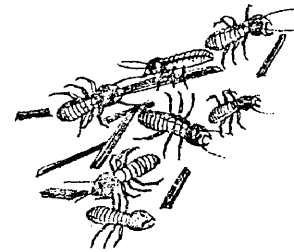
Sorghum - 'amabele' - is an indigenous cereal grass and one of the staple foods of Africa. It has a high sugar content. Sorghum beer has an alcohol content of between 3-5% which is similar to the popular commercial canned and bottled beers. The thick consistency of sorghum beer and its high nutritional content has promoted the belief that sorghum beer has a lower alcohol content. Compared to other alcoholic beverages such as fortified wines (15-24%), brandy (37%) and whisky (41-43%), sorghum beer is much healthier to drink.

Nothing was wasted from the beer making process. The froth at the top was skimmed and kept in the hut for baking purposes as it has a high yeast content.

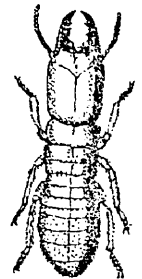
Women frequently made dumplings (ujeqe) with the yeast from beer making. *The froth was a result of alcoholic fermentation which takes place because the sprouted sorghum that was added in the last stages of brewing contains sugars, glucose, and fructose. These decompose into alcohol and carbon dioxide. The enzymes responsible for decomposition are zymase, maltase and invertase. The active ferment in this case is yeast or saccharomyces, and the process is called alcoholic fermentation. Because the surface froth in sorghum beer has a high content of yeast, it was traditionally used for brewing and baking.*



The residue that sank to the bottom of the beer pot was kept moist in the hut and used as a base for starting off other brews. 'Amavovo' (the beer residue that stayed afloat) was sprinkled around the huts. Women could often be seen sprinkling this from their 'incema' grass (*juncus kraussi*) sieves. This was done to leave a trail smelling of beer to attract and lead the ancestors to the homestead. Swarms of ants would be attracted to the sweet residue.



The beer residue outside distracted the ants from the sweet strained beer ready for drinking inside the hut. Termites would also descend on the dried-up leftover residue. The termites would be attacked by ants and lizards. When sorghum residue was sprinkled after the summer rains, winged termites would come out of their nests to pair off and start new colonies. People would come out of their huts with water containers and handpick termites to roast for snacks. Termites are a rich source of protein and considered by some to be a delicacy. Chickens would also join in the feast pecking on the wingless termites. Termites are closely related to cockroaches. Wood and grass are important in the diet of termites so huts made from wood and grass suffered from these pests. Because the termites were kept under control

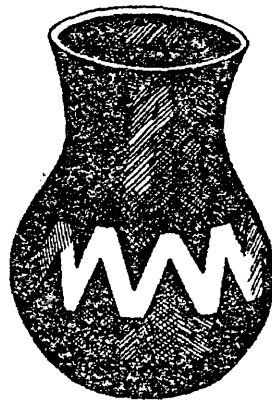


by the ants attracted by the beer residue, the thatch roofs and rafters of the homestead were protected from termite devastation. Smoke from indoor fires that penetrated the grass thatching also played an important role in reducing termite numbers.

'Amavovo' was also considered an important part of a pig's diet and pigs living on it quickly doubled their weight. Pigs supplied people with meat and grease for softening leather. Leather skirts that are only worn for special occasions often harden and become smelly from infrequent use. Grease was sometimes mixed with fragrant herbs to soften and perfume skirts. It was also used to make candles and soap and for soothing and protecting cracked heels.

Beer & Ancestors

Beer was first and foremost a drink for the ancestors. After it had been brewed it was kept in the 'emsamo' (a place behind the hearth) of the ancestral hut so that 'those who went ahead' (ancestors) could take the first sip. Once the ancestors' thirst had been quenched, the rest of the homestead and guests could drink. If a pot fell and broke this was interpreted as an ancestral request for a drink. Even today some people will spill a little beer on the ground before drinking to

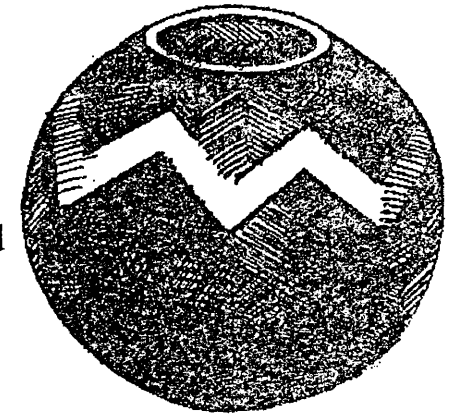


appease the ancestors. When the beer was absorbed into the ground they would be happy that the ancestors had accepted their offer. Thus beer was and still is a medium of communication with the ancestors. This is important because of the belief that ancestors have to be appeased with meat and drink for the protection of a homestead.

Beer & Ceremonies

Beer drinking was an important social ritual, not an everyday or individual activity. Generally, every occasion that brought people together was accompanied by beer and meat.

When women needed help in the fields, other community members would be invited and when the work was finished, beer was served, accompanied by traditional music and dance. Most chiefs occasionally invited community members to their residences, requesting that they 'bring some beer'. The elderly women and men would enjoy tasting the various beers served. This was an occasion for the women to show off their beer making skills.



Beer brewing was a task for women and was known to be a way to a man's heart. When serving beer, a woman

would always take the first sip to display that it was tasty and safe to drink. Children and pregnant women were not allowed to drink except for an occasional sip at ceremonies.

There was always plenty of meat and beer at celebrations like weddings. A marriage is regarded by the Nguni people as a union between two families and the ancestors of both families have to be offered generous amounts of meat and drink to look after the beginnings of a new home.

At a funeral, the dead person is supposed to “move on” and join the ancestors. The person has to be united with the ancestors involving the use of ‘impepho’ (incense), blood from a slaughtered animal and an offering of beer.

When young people came of age they had to take a sip of beer as a symbol of acceptance to adulthood. Also, when two families or communities had serious misunderstandings, a peacemaking discussion would be concluded by beer drinking.

A mixture of blood whipped together with medicines and beer until it was frothing is what a ‘sangoma’ (diviner) had to gulp down on her graduation ceremony.



SUGGESTIONS FOR SCHOOL ACTIVITIES



a) *Local Interviews, Indigenous Stories and Change*

Interviewing local people and collecting stories can develop a sense of how things have changed. Local information and stories can play an important role in helping us to understand the interrelation between the biophysical environment and our everyday social practices.

Work out a set of questions to ask local people, particularly older folk. Record what you find out about:

- ▶ beer
- ▶ meat
- ▶ ants and termites
- ▶ ancestors

Record and discuss what you found out about historical change and societal problems in relation to:

- ▶ beer drinking
- ▶ ancestral and other religious beliefs in relation to beer, meat and spirits



b) *Food & Drink*

- ▶ Briefly describe the overall settlement pattern in your area. List the communities living here.
- ▶ List foodstuffs grown in the fields and gardens locally.
- ▶ How are the foodstuffs used? What is made with them?
- ▶ What are the general drinking patterns in this area?
- ▶ Are there any notable social problems that are related to the over-consumption of alcohol?



c) *Decomposition & Pest Control*

The *Hands-On Soil & Compost Life, Household Life, Schoolyard Life* booklets from Share-Net could be useful for these activities.

- ▶ How is waste disposed of in a) your home, b) your school, c) the community?
- ▶ Investigate the kinds of waste around your school that is decomposed by insects such as termites and cockroaches. Also look closely at any wood or grass structures in your school for signs of termite activity.
- ▶ What would you consider to be the beneficial role of termites in the ecological cycle? Draw a food chain including termites.
- ▶ Using *Hands-On: Soil & Compost Life* booklet identify some of the insects you find in the area where school waste is disposed.

Are there any insects considered as pests in the school?

What methods are used for the control of such pests?

Investigate methods that are considered to be 'environmentally friendly' for the control of these pests.

What makes a product 'environmentally friendly'?



d) *Food Preparation*

In the story we learnt that the yeast froth that was skimmed off from the beer was used for baking purposes. 'Ujeqe' a popular Nguni dish is made from this yeast froth. There are three types of yeast that one can buy from the shop. These are compressed yeast, active dried yeast and instant yeast. You could try and find out from your local baker about the differences between these yeasts. Ujeqe is usually eaten as a substitute for a carbohydrate or starch dish in a meal. It is also a good substitute for bread. Here is a recipe to try.

Ujeqe (people) - Ivy recipe

Ingredients

- 1 packet (10 grams) instant dried yeast
- 2 coffee mugs cake flour
- 2 coffee mugs bread flour
- 1/2 teaspoon salt
- 2 dessert spoons sugar

Method

1. Mix flour, salt and sugar in a bowl. Add all the yeast into the dry ingredients and mix. Add like warm water and using your hands knead the dough until all the ingredients have been thoroughly mixed. Do not knead for more than 10 minutes.
2. Make sure that the dough is not runny nor too thick as the dough will then not rise properly.
3. Place the dough in a warm spot, it could be outside the house but not directly under strong sunlight. Cover the bowl, making sure that there is enough room for the rising dough.
4. The risen dough must be patted with fists at least 5 times.
5. Boil water in a big pot.
6. Roll the dough into a ball and place in a greased metal bowl that will allow the dough to rise without spilling over.
7. Immerse the metal dish into a pot with boiling water. Do not cover the metal dish. Cover the pot and boil gently. Make sure there is enough water as the pot lid should not be opened for at least 30 minutes.
8. After 30 minutes, check if there is enough water. If there isn't add it cautiously and do not let it drip on the 'ujeqe'.
9. Continue boiling gently for an hour. Prick with a fork or a knife and if it comes out dry, the 'ujeqe' is ready.