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Nature and People

Guest Editors
Urmilla Bob and Catherine Addison

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Introduction
Nature and People

Urmilla Bob

This issue of *Alter*nation is the second of two, guest-edited by Catherine Addison and me that focuses on 'Nature and Power'. The articles (fifteen contributions) in this issue represent a range of thematic concerns that relate specifically to the sub-theme of Nature and People. It draws from the broader fields of environmental studies and the discipline of geography. The first issue, edited by Catherine Addison, were derived from papers delivered at a 'Literature and Ecology' colloquium held in Mtunzini in October, 2007. The sub-theme of this issue was 'Forests'. This issue's sub-theme is 'Nature and People'. It also includes two articles that are more closely linked to the sub-theme of Forests.

The association between nature and people are varied and complex, as illustrated in the array of articles presented in this issue. The focus on nature and power as an overarching theme of the two issues allude to the myriad of influences that human-beings exert over the earth's natural resource base. It also suggests the increasing control we have in influencing how we relate to and use the natural resource base in the future. Some of the articles also underscore a clear warning: that nature has the power to fight back! This is most noticeable in the increasing concern over global warming and problems associated with invasive/ alien species. The need for understanding how ecosystems function and respond to changes is advocated by Ashton et al. (2005:449) who also state that 'ecological processes are important from a human-needs perspective, for the goods and services they provide'. They further assert that an increasing body of literature shows a growing international acceptance of a philosophy which acknowledges and

centralises the importance of recognising that the separation between the ecological system and the governance systems (decisions people make on how to manage and use the environment) is artificial, and that 'humans should be considered as an integral and interdependent part of the global ecological system' (Ashton et al. 2005:450). This perspective brings to the fore, the importance of focusing on nature and people.

Underpinning several articles in this issue is the importance of understanding and promoting sustainability. Maila (2007:78) indicates that the concept of sustainable development is complex and often ambiguous in its clarification. This is reflected in some of the articles. Furthermore, issues of contestation and the challenge of balancing a diversity of demands on the natural resource base, namely social, economic and environmental aspects, are examined. In terms of the latter, retaining the integrity and ecological diversity of the natural resource base becomes paramount. Amongst others, these are the main aspects examined in detail in the articles in this issue. The focal points of each of the articles are summarised below.

The first article by Bob, Swart, Maharaj and Louw, 'Nature, People and Environment: Overview of Selected Issues' examines the main thematic concerns linked to the complex relationships between people and nature in specific contexts/ environments. Given the range of aspects and concerns discernable in the literature and increasingly in the media and political debates, this article selects and discusses key considerations, especially those that provide more clarity pertaining to concerns and aspects that are relevant to the contributions in this issue. The article highlights the intricate relationships between people and nature, particularly the importance of human-beings as the stewards and users of nature. Nature's ability throughout the ages to provide people, either directly or indirectly, with the resources to address basic needs is examined. The implications of the increasing understanding and general acceptance that the earth's resources are finite and that it operates in the context of a single yet complex system are considered. Specifically, the undermining, exploitation and degradation of the nature resource base raises questions related to whether nature's ability to provide resources (often for free) for human inhabitants at the rate and extent it has in the past can be sustained.

Environmental crises and problems throughout the world are rife and increasing rapidly. In relation to these concerns, the article discusses the

following aspects: nature, culture and politics; human population pressures and environmental impacts; resources, natural capital and sustainable livelihoods, together with a summary of key ecosystem services; access and control of natural resources, including globalisation impacts; recreation, conservation and ecotourism; and global climate change.

In terms of nature and culture, the discussion focuses mainly on the connection between nature and the aesthetic, in particular the literary tradition and within the theoretical framework of ecocriticism. Specifically, the dichotomy between people (the agents of cultural production) and nature (the raw materials used for cultural production) is examined. The section on human population pressures and environmental impacts looks at how the exponential human population growth together with an increasing and widespread consumerist lifestyle place enormous pressure on the natural resource base that remains the key provider of life sustaining services. The section on resources, natural capital and sustainable livelihoods examines the importance of natural resources and underscores the services that the natural resource base provides as well as the challenges of attaining sustainable livelihoods. Critical aspects of natural resource use relating to issues of access and control, including globalisation impacts, are then discussed. The section on recreation and conservation examines the increasing commodification of nature, especially in relation to ecotourism. While ecotourism provides an opportunity to conserve and protect natural resources, there are a range of challenges and concerns that need to be addressed which include the rights of and distribution of benefits to indigenous peoples. The last section examines global climate change. The article reveals that environmental problems, including inequitable access and control of natural resources, impact most acutely on the lives of the poor, whose livelihoods are more inextricably and directly linked to the use of and access to a wide range of natural resources in their local environments.

In the next article by Ahmed, ‘Development Pressures and Management Constraints in the Coastal Zone – the Case of KwaZulu-Natal North Coast’, the focus is on examining impacts of increasing development on coastal zones worldwide which are becoming attractive locations for economic, tourist and residential development. This contribution undertakes an assessment of the coastal environment in the context of current development pressures and concurrent management constraints in the north

coast of KwaZulu-Natal. By adopting a case study approach, the article provides a detailed, locality specific examination of development pressures and related environmental impacts on coastal natural resources. Key informant interviews were undertaken with five categories of stakeholders in the area: environment-al groups, developers, community-based organisations, managers and tourist organisations. Particularly, the tensions between commercial, industrial and residential development pressures and maintaining the ecological integrity of the area (as a main driver for ecotourism) are examined. The impacts of infra-structural demands of ecotourism itself in relation to roads, accommodation, recreational facilities, etc. on the natural resource base are also included in the discussion. The first section of the article briefly summarises coastal manage-ment efforts in South Africa. This is followed by a discussion dealing with the current policy context of Integrated Coastal Zone Management (ICZM) in South Africa. The article underscores Paterson's (2007:4) assertion that while planning is a prerequisite for effective management and implementation in any context, in relation to South Africa's conservation legislation environment it remains an ideal rather than a reality. The next section presents the methodological approach adopted. The final section presents the results and analysis in relation to the following aspects: developmental pressures, perceptions of environmental management tools and management constraints regarding developmental pressures. The article reveals that although coastal environmental concerns and agendas are increasing and ICZM is being advocated by governments worldwide, current management approaches on the KwaZulu-Natal north coast remain sectoral and unsustainable. Furthermore, improper land use planning and ineffective implementation of policies is exacerbating the situation and contributing to *ad hoc* development. This has devastating impacts on the biophysical environment and the long-term sustainability of biodiversity in coastal zones. Ahmed also highlights that there exists a lack of transparency, accountability and genuine public participation in the development process of the KwaZulu-Natal north coast area. This article calls for the implementation of a Strategic Environmental Assessment (SEA) to achieve sustainability in this coastal zone.

In 'Nature-based Sport Events and the Physical Environment: A Case Study of the Halfway - Telkom Midmar Mile', Sookrajh examines the

impacts of sport events on the natural environment. The article illustrates that numerous localities, including Durban, are aggressively utilising nature-based recreation and sport events as part of a broader tourism strategy to enhance their image and stimulate economic development. The focus of this study is specifically on events that are closely linked to the use of natural resources, therefore the use of the Midmar Mile as a case study. The article is based on the premise that numerous sport events are linked to the natural environment and are therefore likely to have impacts on the environment as well. This study critically examines research findings relating to the Midmar Mile event and demonstrates the socio-economic and environmental impacts of nature-based tourism events in relation to broader sustainability imperatives. The first section provides a brief overview of relevant literature in relation to sport events. This is followed by a more detailed discussion of events and environmental impacts, including the increased focus on the greening of events. The history of the Midmar Mile is presented together with the methodology adopted. Finally, the primary data collected is examined in terms of the following: demographic profile of respondents, economic evaluation, perceptions of event location, levels of environmental awareness among people attending the events, strategies adopted by organisers to minimise environmental impacts and types of negative environmental impacts associated with the event. The research shows that nature provides an ideal location for nature-based sport tourism events such as the Midmar Mile. Additionally, these events provide an opportunity for environmental education to significant numbers of both participants and spectators. The author argues that based on the above, mutually beneficial relationships can and must be established. An examination of nature-based sport event practices and management in relation to environmental aspects offers opportunities to reflect on the importance of sustainability as well as the implementation of event strategies that promote sustainability imperatives.

The next article, by Moodley entitled ‘Socio-cultural and Spatial Approaches to Environmental Health in Urban Contexts’, adopts a more theoretical stance to examine the complex and multifaceted relationships between human health and the environment. The article utilises a geographical perspective to understand the socio-cultural, spatial and environmental influences on people’s health. Within the geographical

perspective, the focus is mainly on the sub-discipline Medical Geography which has grown in recent years and addresses concerns related to the geographical aspects of disease, nutrition and health care systems. There has also been an introduction of competing concepts and definitions to Medical Geography that has led to an epistemological debate. Conceptual and theoretical approaches are presented and assessed in relation to spatial, social and the natural environment contexts. The author asserts that the most important context is spatial, specifically where people are located and how they interact with the environment. The social context focuses on health and health care in relation to the nature of society. The natural environmental context is discussed in relation to nature's healing powers and properties. The article reveals that these different contexts assist in describing and explaining health and health care in contemporary society. The first section of the article traces the evolution of Medical Geography, highlighting key debates and trends. Key health concepts such as health, public health and environmental health are then examined. A conceptual model of environment and health is then forwarded that integrates environmental considerations. Moodley asserts that there is an increasing need to be more connected to nature. Additionally, because the determinants of health are multi-factorial (because health problems have political, social, cultural and economic as well as biophysical dimensions), more integrated, holistic and interdisciplinary approaches to the provision of health care and promoting overall health and wellbeing among the populace are advocated.

My article, 'Rural Women's Relations to Land Resources in KwaZulu-Natal: Issues of Access and Control', provides a gender analysis of who gets access to and who controls land resources, including natural resources, in rural areas in South Africa. The research presented in the article draws from fieldwork conducted in rural communities in KwaZulu-Natal (Ekuthuleni, Baynesfield and Boiling Fountain), South Africa. The primary concern is on land resources that are potentially useful to rural households and communities such as water, place for shelter, land quality, wood, wild foods, gardens and medicinal plants. The first section provides some conceptual clarifications pertaining to women and land relations. The next section critically assesses African women's multiple relations to land resources. This is followed by a discussion on women's control of and access to environmental resources, especially land, in rural areas in South

Africa. The next section highlights the importance of land and environmental resources for rural women. Finally, aspects pertaining to African rural women and access to communal resources are examined. The article underscores the gendered use of land resources by illustrating that males and females use land for diverse purposes and place different values on specific natural resources. Furthermore, women generally have limited and restricted access to land, including natural resources. This is a result primarily of persistent patriarchy and the inequitable distribution of land and related natural resources. Additionally, environmental degradation which is an increasing problem in rural areas has differential and debilitating impacts on women's lives. Women's responses to the above problems are highlighted. On a more general level, the article also examines whether development initiatives in South Africa consider and are able to positively impact on the multiple facets of rural women's relationship to the land, and whether existing policies and practices in South Africa challenge social, political and economic disparities that tend to reinforce women's inability to own, access and control resources.

In 'Review of Policies Impacting on the Sustainability of Natural Woodlands in Southern Africa' the authors (Ismail and Jaggernath) undertake a critical review of the range of policies that impact on natural woodlands in Southern Africa. Woodlands are deemed to be one of the world's major renewable and sustainable natural resources that are heavily used by local communities. This is particularly prevalent in developing countries (as is the case in southern Africa) where woodland resources are critically important to rural livelihoods and contribute significantly to the national economy. This article summarises the key policy issues and concerns related to the sustainability of savannah woodlands in southern Africa by using a policy review methodological approach. The current policies and strategic frameworks (both international and national) that are promoting the sustainability of woodlands in southern Africa are examined. The first two sections discuss the policy context in general and policy review as a methodological approach specifically. The main international policy initiatives relevant to this study are then critically discussed which include the Tropical Forestry Action Programme and related National Forestry Action Plans, the International Tropical Timber Agreement and United Nations Conference on Environment and Development. This is followed by

a discussion on the implications of specific southern African policies. The focus is on policy statements and strategies that are relevant to South Africa, Zimbabwe, Mozambique and Botswana. The authors highlight key concerns/ gaps and conflicts in policies affecting woodlands in southern Africa emanating from the policy review and analysis which include common conceptual understanding of the resource; lack of institutional capacity; clarity in terms of responsibilities for management; coordination issues; aspects relating to assessment, monitoring and evaluation; and policy making processes. The findings are similar to Paterson's (2007:1) assertion regarding challenges that were identified in relation to the legal framework that is aimed at managing protected areas. The challenges identified were 'divided administrative responsibilities, a profusion of laws, lack of coordination, outdated regulatory approaches, inadequate planning, insufficient resource allocation and a failure to link conservation efforts to the needs of people' (Paterson 2007:1).

Poona's article, 'Invasive Alien Plant Species in South Africa: Impacts and Management Options', focuses on Invasive Alien Plant (IAP) species (commonly referred to as weeds) which is a persistent problem in South Africa. This concern is also highlighted by Doren et al. (2008) who stress the importance of examining the impacts of invasive species that are threatening conservation and restoration efforts worldwide. This study examines the impacts of IAP species in South Africa and the related impacts on biological diversity, ecosystems, and human populations. Specifically, it critically examines how human activities and choices have exacerbated the proliferation of IAP species in specific contexts. The most significant threats presented by invasive aliens on the natural and human environments are highlighted. The author also draws attention to human intervention and technology in the overall management of the risk. Specific approaches to effectively address the problem of IAP species are forwarded which include environmental education programmes, environmental legislation/ policy interventions, and the use of remote sensing and GIS technologies. In terms of the latter, the author asserts that remote sensing and GIS present a coherent set of tools for the identification, characterisation, mapping, and modelling of species' spread and prediction of areas of potential future invasion. The article illustrates that these technologies show promise in assisting land resource managers and natural scientists in better planning and

decision-making to manage IAPs in South Africa. Furthermore, as indicated by Andrew and Ustin (2008), remote sensing technologies in particular offer the capability to rapidly and synoptically monitor large areas. This article also contributes to a more comprehensive understanding of invasive alien plants by examining some of the social and management dimensions evident in the literature. The findings are similar to those of Mgidi et al. (2007) who view alien plant invasions as a serious threat to natural and semi-natural ecosystems. They also call for a pragmatic and multi-pronged approach to address this problem in southern Africa.

The next article, 'What'll We Do With Wattle? The Dualistic Nature of *Acacia mearnsii* as Both a Resource and an Alien Invasive Species, Swaziland' by Traynor, Hill, Ndela and Tshabalala, examines *Acacia mearnsii* (Black wattle) as both a resource and invasive alien plant species in Swaziland. Through interaction with the various stakeholders with an interest in Black wattle in Swaziland, it is clear that the resource is perceived as both a pest and an important commodity. Specifically, some perceive it as an alien invasive plant that should be eradicated and others as a resource that should be managed. This, according to the authors, creates a serious environmental dichotomy and therefore poses several challenges in relation to how Black wattle should be managed. Through semi-structured interviews with stakeholders (officials from the Swaziland Government, a consultant, the Wattle Growers Co-operatives, and three private forestry companies) the authors trace the development of Black wattle as a resource and its social and economic impacts on rural communities within Swaziland. The study reveals that while Black Wattle growers' co-operatives facilitate trading and enable individuals to benefit from the economies of scale, the co-operatives have not been successful due to internal problems. This has resulted in private companies taking advantage of this and co-operative members sell direct to the private companies. The buyers and the Swazi government are aware of the problems faced by the small-scale Black wattle growers and have recently established some initiatives to increase access to secure land for wattle plantations that aim to convert the wattle jungles into managed areas. Thus, the authors consider how a single resource is perceived as both an undesirable alien and as a commodity of value depending on one's perception of the resource. While acknowledging the environmental impact that invasive alien species have upon our natural ecosystems and recognising

the necessity for the control of Black wattle in Swaziland, the authors call for environmental management policies to consider the usefulness of the invasive alien species to local communities.

Rugege and Maleka's article, 'Participatory Mobile Geographic Information Systems (GIS) for the Regularisation of Customary Land Administration into Statutory Law: A Case of South Africa', provides evidence-based justification for employing Participatory Mobile GIS in efforts aimed at modernising and regularising customary land administration in South Africa. This is in keeping for the need to support, modernise and regularise customary land administration in Africa since a significant proportion of African populations still live on unregistered communal lands administered under customary land law. The authors present and discuss the significance of results obtained from an area measurement exercise of a moderate size farm in South Africa. The primary research undertaken is examined in relation to similar studies undertaken elsewhere in the developing world using Participatory Mobile GIS methods in comparison with conventional mapping methods. An assessment of time efficiency, affordability and appropriateness of the technology is discussed in relation to prevailing socio-economic and legislative circumstances that need to be considered when modernising customary land administration. The first section discusses Participatory Mobile GIS alternatives to conventional surveying. This is followed by an examination of the realistic accuracy of GPS surveys. The rest of the article presents the methodological approach adopted and the research findings. The results of this study indicate that Participatory Mobile GIS is time and cost efficient and appropriate and can meet legislated standards of quality in South Africa.

Like Rugege and Maleka, Mutanga and Adjorlolo's 'Assessing the Spatial Patterns of Crop Damage by Wildlife using GIS' examines the spatial analytical capabilities, data manipulation and data storage characteristics of GIS to understand spatial patterns of wildlife damage and thereby contribute to effective management programmes. This article is similar to Waldner's (2008:399) study that illustrates that wildlife species (she focuses on invasive species) have wreaked environmental and economic havoc by modifying ecosystems, damaging crops, threatening native species, and serving as hosts to pests and viruses. Mutanga and Adjorlolo specifically provides a brief history of the human - wildlife conflicts as a result of crop

raiding by wildlife in communities located in close proximity to nature conservation areas. They also underscore the importance of GIS in assessing spatial patterns of crop damage. The discussion is reinforced by an illustration of the application of GIS in combination with participatory mapping (a tool that incorporates local expertise and knowledge with technical expertise) on eland damage in selected commercial agricultural farms adjacent to Kamberg Nature Reserve (KNR) in KwaZulu-Natal Province of South Africa. In particular, the findings reveal that the involvement of communities through participatory GIS enhances a better understanding of the nature of conflicts as well as improving mapping accuracies. This study also shows the potential of participatory GIS in unpacking the spatial distribution and configuration of damaged crop fields by elands in KwaZulu-Natal Province. The authors conclude that several environmental variables in explaining the distribution and configuration of damage are important to facilitate adaptive management strategies.

Perry, Moodley and Bob's article 'Open Spaces, Nature and Perceptions of Safety in South Africa: A Case Study of Reservoir Hills' follows. Crime in South Africa is deemed to be one of the most prominent challenges and persistent problems. This study examines how, within the context of heightened safety and security concerns in South Africa, residential communities perceive open public spaces. A case study approach focused on Reservoir Hills in Durban, is followed. The first section examines security and safety considerations, including current attempts to deal with crime, in residential areas in South Africa. A discussion on place/ location and safety follows which includes a focus on the fear of crime and public spaces as well as spatial and environmental patterns of violence. The next section presents background information on the case study, the methodology adopted as well as a discussion on key results derived from the primary research undertaken. The article demonstrates that from an environmental perspective, open spaces in urban areas are critically important in terms of ensuring the continued presence of nature and related natural resources in built environments. However, the authors reveal that residents tend to perceive these areas as crime hotspots as well as refuge areas for potential criminals. Furthermore, these perceptions are reflective of increased resistance to open spaces in residential areas. The discussion and analysis of primary findings is integrated into a more general examination of

environmental perceptions of crime and violence, especially in relation to spatial and environmental dimensions. The study indicates that several factors have been associated with fear of crime and natural, open spaces that contribute to feeling unsafe in public places.

Chellan and Khan's article, 'Contesting Ecotourism Development in the iSimangaliso Wetland Park in KwaZulu-Natal', provides an examination into the different social, political and economic dynamics in the formerly known Greater St. Lucia Wetland Park (a World Heritage site) which is now called the iSimangaliso Wetland Park (iSWP) and the impacts of contestations over natural resources and natural resource spaces amongst different stakeholders in the region. This article draws from a number of data sources including a social survey involving 100 respondents selected by utilising purposive sampling techniques in two communities residing in close proximity to the iSWP; focus group discussions in one of the communities; in-depth interviews with one Non-Governmental Organisation (NGOs) known as the Wildlife and Environmental Society of South Africa (WESSA) and the Ezemvelo KZN Wildlife, an environmental and ecotourism parastatal; as well as a media analysis of selected newspaper reports pertaining to contestations related to the iSWP.

Similar to Chellan and Khan's contribution, Chellan and Bob's article, 'Sustainable Ecotourism in the uKhahlamba Drakensberg Park: A Stakeholder Analysis', also focuses on ecotourism. The stakeholder approach is used to examine the social, economic and environmental impacts of ecotourism with regard to biodiversity and sustainable development at the uKhahlamba Drakensberg Park World Heritage Site. This article, together with Chellan and Khan's contribution in this issue, provides a critical examination of protected areas (specifically World Heritage ecotourism sites in both the studies) that, according to the ICUN Guidelines for Protected Areas Management Categories (1994:7), are valuable conservation tools that have been used in South Africa to protect the nation's natural and cultural heritage. The introduction includes an examination of sustainability as a concept. The first section presents the conceptual framework (stakeholder approach to ecotourism) used in the study. The stakeholder perspective is useful in identifying the needs and concerns of key role players. Additionally, methodologically it permits an examination of competing interests and perceptions through comparative analysis. The next section

provides a brief overview of ecotourism in South Africa. The importance of ecotourism in relation to promoting sustainable conservation practices and environmentally responsible behaviour among visitors to Parks is underscored. Additionally, the challenges associated with encouraging and ensuring local economic and social development linked to ecotourism are discussed. Background information to the uKhahlamba Drakensberg Park and the methodological approach adopted in this study are provided in section three. In terms of the latter, survey questionnaires were used at the uKhahlamba Drakensberg Park involving key stakeholder groups (tourists, tour operators, local communities and accommodation personnel). The data analysis of primary data collected is finally undertaken. The key finding is that generally all stakeholders felt that the ecotourism industry could contribute to the social upliftment of the community by assisting with various projects and programmes. However, stakeholder perceptions also indicate that incremental increase in economic development may occur at the expense of the natural environment and undermine the very asset that ecotourism depends on. The differing interests and concerns of the stakeholders interviewed also emerge.

Hooper's 'The "Grove of Death" in Pauline Smith's "The Miller"' examines Smith's use of space and spatialisation, a geographical landscape or 'world' she created or constructed by writing. The manner in which Smith uses spatial demarcation and distance in particular are explored. How the 'world' she presents is interpreted or read is also a key focus of the article. In addition to the spatial dimensions, social and power relations are critical to Smith's work. The aspects above are critically examined in relation to 'The Miller', with a specific focus on 'groves' or forests. A comparative analysis of Conrad and Smith's 'grove of death' is also undertaken. Hooper concludes that Smith's ability to accommodate and examine the complexity of individual experience in tension with the cultural life results in the generation of a geographic landscape in 'The Miller' which integrates an ecological ethos that speaks to the encounter between human and natural.

The final article in this issue, Wood's 'The Occult, the Erotic and Entrepreneurship: An Analysis of Oral Accounts of *ukuthwla* Wealth-giving Magic, Sold by the Medicine Man Khotso Sethuntsa', is part of the first issue's sub-theme on nature and power in relation to forests. Wood examines the way in which the economic, the erotic and the supernatural are

brought together in the practice of *ukuthwala* (the Xhosa term for a dangerous, powerful procedure for long-term wealth, widely believed to involve the ownership of a wealth-giving being) with specific reference to oral accounts concerning the leading *ukuthwala* practitioner in southern Africa, the medicine man Khotso Sethuntsa. This study draws on years of research undertaken by Wood into Khotso's life. The research is an examination of oral accounts (derived from interviews conducted between 1997 and 2008 in the Eastern Cape, KwaZulu-Natal and Lesotho). The principal informants interviewed were Khotso's close friends, wives, family members, business associates, people who knew Khotso personally or had information concerning him and resided in the areas where Khotso had lived and worked, and a range of traditional practitioners, including herbalists, spiritual healers and diviners.

The fifteen articles demonstrate that aspects pertaining to nature and people are multifaceted, wide-ranging and diverse. They also reflect the multi disciplinary/ interdisciplinary characteristic of several studies that focus on nature and people. The articles reveal that nature permeates almost every aspect of our lives, including cultural, social, economic and political facets. Additionally, as Maila (2007:79) states, 'People are embedded in their cultural, social, economic and bio-physical environment'. These dynamics and dimensions necessitate interdisciplinary scholarship which presents several conceptual and methodological challenges.

The suite of articles in this issue reflect the components of good governance, which are critical to the effective management of environmental resources, identified by MacKay et al. (cited in Ashton et al. 2005:452). These include:

- Principles: statements of society's values which may be universal (for example, international agreements), national (for example, the Constitution) or sectoral (for example, Land Reform principles)

- Policies: statements of intent by government aimed at defining what will be done to achieve principles agreed upon.

- Legislation: the primary tool used by government for implementing policy. It also sets out how policy objectives will be implemented and enforced.

- Regulation: it provides the quantitative or rigorous detail relating to the relevant legislation, and governs everyday activities of all sectors of society.

- Practice: a general term that covers a wide range of activities, which may be regulatory, but which nevertheless reflect the principles and support implementation of policy.

Several of the articles examine the above aspects and assess the challenges faced on the ground in terms of policy development and praxis.

Our reliance on the natural resource base, exploitation (and in many cases over-exploitation) of natural resources as well as the increasing environmental problems we are faced with demand a greater understanding of the relationships between nature and people. More specifically, there is a need to move away from relationships of exploitation and overuse to those of respect and sustainability. Several articles in this issue call for more responsible and sustainable environmental practices and management strategies. Others highlight the need for legislative and policy reform. Additionally, the importance of integrating local communities' needs and concerns are highlighted. The power dynamics among people in relation to social and economic factors (including class, gender and culture) need to be further unpacked since they influence who wields the most control over natural resources in specific contexts and how nature is used. This occurs across a range of geographical scales from the local to the global. It is critical to emphasise that legislative and policy reform should be underpinned by a broader array of factors including political will, budget allocation and public support (Paterson's 2007:33).

The articles in this issue highlight our reliance on the natural resource base and the power we wield over it. In terms of the latter, the power can include making better choices on how we use and manage nature. Therefore, as human beings we are capable of dramatically changing the patterns of exploitation and degradation that have generally characterised

our relationships to nature in the past. There is overwhelming consensus in the academic literature that human beings are primarily responsible for the environmental and related social and economic problems we see today. It is therefore human beings who have the power to address these problems in ways that are sustainable and underscore respect for nature.

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Nature, People and Environment: Overview of Selected Issues

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Introduction

The lives of humans throughout the ages have been inextricably linked to nature and natural forces. Steffen *et al.* (2004:2) claim that the relationship between humans and the Earth's natural environment has changed throughout the evolution of *Homo sapiens* and the development of societies. They further state:

> The environment at the scale of the earth as a whole—the passing of the seasons, the vagaries of weather and climate, the ebbing and flowing of river systems and glaciers, the rich diversity of life in all its forms—has been something within which people have had to operate, subject only to great forces of nature and the occasional perturbations of extraterrestrial origin. Earth's environment has been a bountiful source of resources as well as a remarkably stable life support system that has allowed human civilisations to develop and flourish (Steffen *et al.* 2004:2).

Nature as a resource provides, either directly or indirectly, material needs for food production, living space, health maintenance (including provision of medicines) and supply of energy and livelihood materials. Hence, the

'dualisms between culture and nature, and technology and nature are blurred' (Hubbard *et al.* 2002:19). People are the stewards and users of the natural environment. There is now general acceptance that the Earth's resources are finite and that it operates in the context of a single yet complex system. Steffen et al. (2004:2) assert that a dramatic transformation of the Earth's environment and natural systems (global change) are now apparent, largely due to the numbers and activities of people. The abundance of nature and its ability to adapt to human impacts is under serious pressure. The linkages and issues pertaining to nature and society are complex and vast. In this context, the aim of this article is to provide an overview of selected issues pertaining to the interaction between people and nature, drawing largely, from relevant scholarly literature. Specifically, issues are examined thematically. These include discussions on nature, culture and politics; human population pressures and environmental impacts; resources, natural capital and sustainable livelihoods, together with a summary of key ecosystem services; access and control of natural resources, including globalisation impacts; recreation, conservation and ecotourism; and global climate change.

Nature, Society and Politics

The concept of nature is complex and difficult to define. Essentialist constructivist interpretations of nature interpret it as a 'fixed, stable concept', and this often underpins 'research concerned with resource management and some environmentalism' (Hubbard *et al.* 2002:19). However, it has become increasingly apparent that nature and humanity cannot be understood in abstraction from each other. The technocentrist perspective generally views nature as existing for human exploitation and domination. This approach is linked with colonial history, where for example, 'the definition of the environment as a natural field to be dominated for productive use, and the definition of the British as a distinctive colonial ruling class over alien peoples, went hand in hand' (Gilmartin 1995:211). From a cultural perspective, Whatmore (2005) illustrates that nature is a social construction, shaped by the human imagination.

Non-essentialist political interpretations emphasise the social construction and production of nature, that is, how people exploit nature to facilitate capital accumulation (Harvey 1996; Smith 1990). This is eloquently expressed by Smith (1990:xiv):

> In its constant drive to accumulate larger and larger quantities of social wealth under its control, capital transforms the shape of the entire world. No God-given gift is left unturned, no original relation with nature is unaltered, no living thing unaffected. Uneven development is the concrete process and pattern of the production of nature under capitalism. With the development of capitalism, human society has put itself at the centre of nature.

Critical social scientists have long held an interest in how social and economic forces impact on nature. A key concern is the uncritical acceptance of knowledge generated by the natural sciences which is 'not complemented by insight into the situated and contingent complexities of human social life' (Fitzsimmons 2004:31). There has been some recognition that environmental issues permeate all facets of society, and that this poses a challenge for interdisciplinary scholarship:

> National security, social justice, the economy and human health are appropriately considered to be environmental issues because each is dependent to some degree on the structure, functioning, and resiliency of ecological systems. Linkages among the social, political, economic, physical, biological, chemical and geological systems present new challenges to scientists (Lubchenco 1998:494).

In an era of genetic engineering, nature is increasingly manipulated to increase profits, notwithstanding long-term negative consequences. Natural resources are unevenly distributed, favouring the wealthy and the powerful. The poor and the disadvantaged bear the burden of negative environmental impacts such as pollution and natural resource depletion (Barrett *et al.* 2005; Zarsky 2002).

The dynamics of power relations in society are closely linked to cultural values and practices. The link between nature and culture is briefly

examined below. The discussion is located in the literary tradition.

Nature and Culture

Culture can be understood in very broad terms as the way of life of a particular group which includes its customs, beliefs, language, norms, values and traditions. On the other hand it can refer specifically to art, literature and music. If we look at the ancient roots of the latter forms of culture, we see that they often have their origin in religious practices. The ancient religions of many cultures have a deep connection with nature. The human sense of the divine projects itself onto the natural world or associates natural forces with the divine. An example is the Greek god Zeus holding a lightning bolt. Then there are other cultures, such as the Native American or the Mayan cultures, which conceive of the natural world, including humankind, as a complex divine system.

This discussion will however focus mainly on the connection between nature and the aesthetic, in particular the literary tradition. Contained in the subheading 'nature and culture' is an implicit assumption that there is a dichotomy between people (the agents of cultural production) and nature (the raw materials used for cultural production). This is known as 'anthropocentric dualism' (Garrard 2004:23). It can be argued that human beings are part of nature and therefore cannot be seen as existing apart from it. Pollan (2001:xxv), for example, poses the question, 'What other species can even be said to have a "relationship to nature"?', since all species of course form part of nature. Nevertheless, positing a dualism allows us to consider the ways in which nature has been represented in the form of culture over the ages and the ways in which humans reveal themselves through their responses to nature.

While images of nature can be found in different cultures throughout the ages, a few examples may be mentioned which bring these images into prominence. In ancient and prehistoric times, cultures such as the Egyptian sometimes combined images of the animal world with the human to create a more-than-human being. The sphinx is such an example. Combinations of people and animals also occur in the Bushmen culture of Southern Africa. The eland had special significance as a key to the spiritual world, and paintings of this animal as well as many others can be found in their rock

paintings. In these images, contact between nature and the human is seen as capable of creating a supernatural hybrid, an empowered being that transcends the possibilities of both worlds.

In the literary tradition of western civilisation, certain periods have highlighted the significance of nature to human beings. The Romantic period (approximately 1798-1848—coincident with the Industrial Revolution), for example, envisaged nature as a place of refuge and refreshment for the soul, as opposed to the tyranny of the growing industrialised cities. The British poets Wordsworth, Coleridge, Shelley, Keats and Byron are exemplars of this attitude. Rejecting any 'anthropocentric dualism', Wordsworth in his early poetry became almost a pantheist in his worshipful apprehension of a benign 'presence':

> Whose dwelling is the light of setting suns,
> And the round ocean and the living air.
> And the blue sky and in the mind of man:
> A motion and a spirit that impels
> All thinking things, all objects of all thought,
> And rolls through all things (Wordsworth 1971:164).

During the modern period, with its sense of dislocation and alienation, emphasis moved more generally towards the city and urban environments. However, since the 1980s there has been a resurgence of interest in the ways in which nature is represented in culture. During this period a new school of criticism known as ecological or environmental criticism (ecocriticism) has been developing. According to Glotfelty (cited in Ambruster 2001:1), 1993 was the year in which ecocriticism, or 'the study of the relationship between literature and the physical environment' really took shape as an academic discipline. Its emergence was for many of its practitioners a response to the environmental crisis. Armbruster (2002:4), for example, writes:

> I am drawn to the work I do out of a sense that human relations with the natural world have reached a crisis point and out of the conviction that I can influence people to develop more sustainable relationships with the natural world by exploring, critiquing, and re-envisioning the worldviews found in literary and other cultural texts

> —especially views of human relationships with nature.

But not all ecocritics regard their discipline as so personal or of such recent origin. Buell (2005:2) points out that environmental criticism has

> very ancient roots. In one form or another, the 'idea of nature' has been a dominant or at least residual concern for literary scholars and intellectual historians ever since these fields came into being.

Buell (2005:7) goes on to claim that ecocriticism has given rise to 'cross-disciplinary and extra-academic alliances'. Notions of 'space', 'place' and 'landscape' have involved conversations between cultural geographers, anthropologists and ecocritics, as well as a plethora of activist groups outside of academia, such as environmentalists and policy specialists.

Ecocriticism initially focused mainly on nature writing, but has since expanded to include other genres, such as Biblical readings, medieval and Renaissance studies, slave narratives, colonial American and African studies, science fiction and film studies. The connection between nature and culture is strongly emphasised by Wallace and Armbruster (2001:4) in their view of the future of ecocriticism: 'A viable ecocriticism must continue to challenge dualistic thinking by exploring the role of nature in texts more concerned with human cultures, by looking at the role of culture in nature, and by attending to the nature-focused text as also a cultural-literary text. Understanding how nature and culture constantly influence and construct each other is essential to an informed ecocriticism'.

The next section looks specifically at human population pressures on the natural resource base. Human population is increasing exponentially. In the last century it has increased from 1 billion to more than 6.5 billion. This increase places enormous pressure on the natural resource base that remains the key provider of life sustaining services. Furthermore, the consumerist lifestyle is underpinned by the extraction and exploitation of natural resources.

Human Population Pressures and Environmental Impacts

Steffen *et al.* (2004:2) state that economic activity has increased nearly tenfold between 1950 and 2000. Furthermore, they assert that the world's

population is more tightly connected than ever before via globalisation of economies and information flows. This aspect is discussed later in this article. Barrett *et al.* (2005:193) state that to meet the United Nation's Millennium Development Goal of halving the number of people living in extreme poverty by 2015 without a massive subsidy from nature that may prove to be environmentally catastrophic; individuals, communities and countries will be required to design poverty reduction strategies that are consistent with resource conservation objectives.

Elleboode-Zwaans (2004:1) states that the simplest (and most widely used) equation designed to measure the impact of humans on the biosphere or the world is I = PAT where:

I represents the impact or the footprint of humans;
P represents the growing number of people (6 billion in the 2000 with an estimated growth of 9 billion by 2050);
A represents the affluence of people. How much water, energy, food, goods and services do we need to meet our needs? How many natural resources do we consume? And how much waste do we throw back into the environment? and
T represents the technology used to meet our total demands on the biosphere.

There is very little debate about whether P (population) and A (demands) have increased significantly. However, whether T (technology) is having a detrimental (increasing demands on resources) or positive impact remains highly disputable, even though it is clear that numerous technologies (including transport, communication, industrial and energy technologies) rely heavily on heavy fossil fuels and are the main sources of pollutants. In fact, Elleboode-Zwaans (2004:1) asserts that technological revolutions made the population explosion and increased affluence possible. Human impacts on the natural environment are certainly increasing. Direct human impacts on the Earth's natural resources include (Steffen *et al.* 2004:14):

- Half of the Earth's land surface has been domesticated for direct human use with significant consequences for biodiversity, nutrient recycling, soil structure, soil biology and climate

- Most of the world's fisheries are fully or over-exploited (specifically 22% of recognised marine fisheries are overexploited or already depleted, and 44% more are at their limit of exploitation)
- Changes in the composition of the atmosphere (greenhouse gases including carbon emissions, reactive gases, aerosol particles) have resulted in global warming and climate change
- Forty percent of the known oil reserves that took several hundred million years to generate has been exhausted in the last 150 years
- More nitrogen is now fixed synthetically for fertilisers and through fossil fuel combustion than is fixed naturally in all terrestrial ecosystems
- More than half of all accessible freshwater is appropriated for human purposes, and underground water resources are being depleted rapidly in many areas
- Coastal and marine habitats are being dramatically altered with 50% of mangroves and wetlands being reduced
- Burning of biomass and land clearing of particularly forests have been a major aspect of land use change in the last 50 years
- Extinction rates are increasing sharply in all ecosystems with the Earth being in the midst of its first great extinction event caused by the activities of a single biological species (humans).

One of the key issues in managing the use of nature is that it is often viewed as a public good and how it should be managed (particularly restrictions on its use) is often vague. Biodiversity issues are viewed as being part of government agendas and very often governments lack the political will and/ or resources required to protect the environment. Also, while geographical boundaries exist to demarcate nation-states, the location and movement of nature (including flora, fauna, air, water, pollutants, pests, etc.) are influenced by natural forces and processes that are not restricted to person-made boundaries. Human mobility has also increased the movement of certain species of plants and animals.

Many of the changes described above are driven by business activities. The World Business Council for Sustainable Development (WBCSD) (2004:17) asserts that biodiversity is at the core of sustainable development which impacts on the quality of human life and is an essential

component of human activity including business. The Council further asserts that conserving biodiversity and using biological resources wisely is good for business since it can help companies improve the triple bottom line—good economic, social and environmental performance. Viljoen (2006:8) adds that from a natural resource and environmental economic perspective, a guiding criterion is to use land and water resources efficiently and sustainably. The next section specifically examines the importance of natural resources. The focus is on the services the natural resource base provides as well as the challenges of attaining sustainable livelihoods.

Resources, Natural Capital and Sustainable Livelihoods

South Africa, like many other developing countries, is grappling with the difficulties of finding an appropriate balance between the demands of economic development and its finite supplies of natural resources (Le Maitre *et al.* 2007:367). Le Maitre et al. (2007:367) assert that research on ecosystem services (natural products and goods) focuses on the links between ecosystems and societies and on the ways in which societies benefit from these products and goods. The range of ecosystem services is detailed by Daily (1999 cited in Le Maitre *et al.* 2007:369). The services include:

- Stabilising and regulatory processes: purification and maintenance of the gas composition of the air, regulation of the hydrological cycle, partial stabilisation of climate, moderation of weather extremes, and control of the majority of potential pest species.
- Regeneration processes: generation and renewal of soil fertility, purification of water as well as the detoxification and decomposition of wastes, pollination and dispersal of seeds/spores necessary for revegetation.
- Production of goods: food, durable materials and industrial products, genetic resources and pharmaceuticals.
- Life-fulfilling functions: aesthetic beauty, serenity, scientific discovery and preservation of options for the future.

The above clearly reveals how critically important ecosystem goods and services are to the functioning of the Earth's systems as well as to the

very survival and lifestyles of humans. More specifically, natural resources and assets remain critically important to achieving livelihood security, especially in poorer communities and in rural areas. Chambers and Conway (1992:2) specifically emphasise the fact that resources and stores are tangible assets commanded by the household. May *et al.* (1995) and Chambers and Conway (1992) illustrate that resources are available items that can be sold, for example, land, water, trees and livestock and farm and productive equipment such as tools, durable possessions and housing; and include stores such as food stocks, collections of valuable items such as jewellery and textiles, and cash savings in banks and credit schemes. The concept of nature as a resource implies that nature is primarily conceived as a means of production and a good for consumption. In the context of a sustainable livelihoods framework, assets and resources include human capital, social capital, physical capital, natural capital and financial capital. Natural capital is specifically the natural environment that provides a number of assets which can be converted to resources. These assets include, but are not limited to, air, water, land, forests, wild plants, minerals and animals. Human life is inextricably tied to a number of these resources. For households that rely directly on natural assets to ensure daily survival and livelihoods, access to environmental resources becomes a critical component of household security. Livelihood activities can often destroy the natural resource base by over-use and degradation that can contribute to desertification, deforestation, and soil erosion, declining water tables and other types of environmental damage.

Anthony and Bellinger (2006:152-153), in their study of the importance of landscapes, flora and fauna to Tsonga communities in the rural areas of Limpopo Province, South Africa, conclude:

> It is essential to recognise the widespread use of the natural environment and the wild products exploited by local people: even seemingly insignificant features of the landscape contribute to sustaining livelihoods. Moreover, by understanding how elements in the landscape contribute to sustaining livelihoods, conservation education can focus on the importance of these areas and the need to preserve, maintain and extend these landscapes for mutual benefits.

Natural environmental conditions (including slopes and terrain, availability of water resources and quality of land) can also be a critical source of vulnerability for people. Environmental conditions can limit the development of infrastructural services needed to provide basic services for enhancing livelihood security. Additionally, climatic conditions strain household coping strategies. Furthermore, extreme weather conditions, such as drought and floods, are devastating for poor communities because they are mostly exposed to such shocks and they do not usually have the necessary infrastructure and resources to deal effectively with these shocks.

Farrington et al. (1999:2) state that 'a livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base'. Ecological systems are often endangered by ecologically unwise human activities and practices. Land degradation in the form of soil loss and declining fertility resulting in soil erosion occur frequently and has undermined agricultural production systems and natural ecosystems worldwide. Contamination of water by pesticides and other industrial pollutants represents a growing problem throughout the world.

Critical aspects of natural resource use are issues of access and control. These are discussed below.

Access and Control of Natural Resources

Ownership and control of natural resources are often associated with influence in decision-making and power to affect outcomes. Hutchison *et al.* (1991 cited in Rugege *et al.* 2007:27) illustrate that ownership, like all real rights, consists primarily of a relationship between a legal subject and a thing or legal object, encompassing complete and absolute control over something as well as possible rights and capacities over it. Land tenure is a key factor in any economy since it confers property rights and defines access and control over land assets, including natural resources that exist in or on the land. Furthermore, it confers rights in relation to the manner in which which people own, occupy and transact land. de Klerk (1991 cited in Rugege *et al.* 2007:26) asserts that whoever owns land controls access to it, determines the use to which it is put and decides the economic, social and

political beneficiaries of production on it. It terms of natural resources, access and control over land influence what types of resources are used, what purposes they are used for, how they are used and how much of them is utilised. They also affect the extent to which activities such as residential and business development, agricultural production and mining take precedence over nature conservation imperatives.

In the context of land and people's power relationships with it, issues of access and distribution are important; predictably, poverty and inequality are relevant to these issues. Viljoen (2006:2) states that while poverty is characterised by the inability of individuals, households or communities to command sufficient resources to satisfy a socially acceptable minimum standard of living, inequality refers to a state of social organisation in which access to resources and opportunities are unevenly apportioned. Inequality is often a consequence of political, economic and social processes that concentrate resources in certain hands at the expense of others. This is certainly the case in South Africa where colonial and apartheid practices have resulted in resources being mainly in the hands of the public sector or whites. The vast majority of the black population have limited access to land ownership and related natural resources, resulting in high levels of vulnerability.

The implications of communal tenure are also important in relation to natural resources. In South Africa, communal tenure is the sharing of land in a system run by traditional authorities. Rangan (1997:1) asserts that common property resources, including pasture, wild foods, medicinal plants, water and wood, are particularly important for poorer rural households. Rangan (1997:1) further demonstrates that for many black rural households their livelihood sustaining activities rely to a very great extent on natural resource extraction from common-access lands. Mini (1995:535) argues that communal tenure is problematic because it confers individual rights without individual responsibility and also points to the possibility that there may be inequality in access to common property resources.

Improvements in access to the natural resources of land and water, according to Viljoen (2006:1), are central to bridging the economic divide in South African agriculture. However, access itself will not be sufficient to reduce poverty. As the National Department of Agriculture (2004 cited in Viljoen 2006:3) states, access to other resources and services are needed as

well as improvement in the ability of people to combine natural resources (land, water, climate and biodiversity) with other resources (capital, labour and management) in efficient and sustainable farming systems. Viljoen (2006:3) writes: 'Changes in policies, acts and institutions as well as development of effective strategies and programmes are needed to improve access to resources and to empower people to the successful management of resources'.

Globalisation and Access to Natural Resources

Globalisation has played, and continues to play, a major role in shaping macro-economic policies and decision-making. Katerere (2000:25) asserts:

> Globalisation is transforming traditional institutions and communities faster than they can adapt and modernise. If not managed, globalisation threatens to marginalise millions, dismantle and degrade the commons, denigrate cultures, and their worth reduced to their value as labour.

One consequence of globalisation is a decrease in international trade restrictions, which, according to Shultz (2000 cited in Bob & Moodley 2003:359), is likely to influence the market conditions for natural resource products as well as the value of nature and the ownership of nature. The impact of global forces and processes on the natural resource base in developing countries has a profound impact on those households whose livelihoods are dependent on access to natural resources (Bob & Moodley 2003:360). Bob and Moodley (2003) specifically illustrate how processes of globalisation have several impacts on African women in rural areas. They show how globalisation influences the way in which the natural resource base is managed and controlled as well as how this impacts on the conditions faced by poor rural women. In more general terms, the problems of access to natural resources, lack of protection of property rights, bias in decision-making and social-economic relations of production are key issues impacted by globalisation and centralisation of natural resources.

The commodification of nature is widespread. The trade in natural resources is also likely to increase. Furthermore, as Bob and Moodley

(2003:359) indicate, the commodification of natural resources is often accompanied by a significant gap between local and global valuation of nature. This is most discernable where economic differences are acute. Within this context, heightened conflict over the use, control and ownership of natural resources is also likely to occur. In particular, Bob and Moodley (2003:382) assert that the globalisation of natural resource products if continued unabated is bound to have a detrimental impact on the lives of people living from them. The extraction and concentration of natural resources negatively impacts the options of various stakeholders within communities. This is highly gendered, since women's reproductive and productive lives, especially in rural areas in developing countries, are intricately linked to the availability and accessibility of environmental resources.

Commodification of nature is noticeable in the recreation and conservation sector. The increase in demand for ecotourism experiences is a worldwide phenomena. However, they are a range of challenges and concerns that need to be addressed. Some of these are discussed below.

Recreation and Conservation

According to Al-Sayed and Al-lanwati (2003:225), wildlife conservation deals with resources that live and move (flora and fauna) and that have a certain capacity for adaptation to environmental changes and that also possess strong instinctive tendencies to fend for themselves. Damania and Hatch (2004:1) state that the majority of species classified as 'threatened', 'endangered' or 'vulnerable' by the ICUN are to be found in government controlled parks and legally protected areas in developing countries. They claim that the public sector has generally been unsuccessful in protecting endangered species with lists of 'threatened', 'endangered' or 'vulnerable' species increasing. The main reasons that they give for this are poaching, corruption (bribe taking), illegal logging, agriculture, mining, intrusive developments and land clearing. This failure of the public sector, they assert, has prompted calls for the use of market-based instruments and other incentives to promote more efficient environmental outcomes.

Kiss (2004:233) claims that, unlike coral reefs and the African savannahs, many of the world's biologically richest ecosystems (for

example, closed tropical forests, deserts and high mountains) are poorly suited to tourism development because of factors such as difficult access, elusive wildlife, uncomfortable climates and vulnerability to damage. Kiss (2004:233) further indicates that while tourists who seek such ecosystems are generally willing to pay more than the average safari tourist, they are rarely able to generate revenue on a scale sufficient to provide an effective incentive for conservation in areas where there is strong pressure on land and biological resources.

Kiss (2004:233) shows that natural habitats in tourism areas are typically manipulated to enhance the tourism experience. This is often done in ways that disrupt the integrity of ecological communities and favour some species over others. She cites Kreg *et al.* (2003:233) who demonstrate how controlled burning, clearing of vegetation, creation of artificial water points, artificial feeding and other management tools have led to ecological changes and decreased resiliency in tourism-orientated protected areas and game ranches in KwaZulu-Natal, South Africa. Kiss (2004:235) suggests that although ecotourism is a fairly good land use for biodiversity conservation, in some cases it is necessary to promote and ensure pure protection. Furthermore, Blangy and Mehta (2006:233) state that ecological restoration of disturbed lands should be an important approach to sensitive tourism planning. Al Sayed and Al-langawi (2003:225) illustrate that there are numerous administrative and technical means for conserving biological resources and biodiversity, which include ecosystems identification, wildlife resources identification, geological aspects of land use, and environmental feasibility of conservation and rehabilitation.

South Africa has impressive conservation areas, preserving a diversity of plant and animal species. Conservation areas have been a major vehicle for attracting tourists, with ecotourism remaining a key sector of the tourism industry. However, conservation areas in post-apartheid South Africa have been debated in the context of unequal access and distribution of benefits as well as a high demand for land.

Ecotourism

Blangy and Mehta (2006:233) state that the fast pace of tourism around the world is causing untold damage to some of the most endangered ecological systems. Specifically, Christ *et al.* (2003 cited in Blangy & Mehta 2006:234)

indicate that between 1990 and 2000 tourism has increased by more than 100% in the world's biodiversity hotspots. Biodiversity hotspots are areas in the world with the highest species diversity; they are extremely vulnerable. Blangy and Mehta (2006:233) argue that ecological restoration of disturbed land can be an important approach to sensitive planning and that ecotourism in particular is a strong force in the field of ecological restoration. Ecotourism promotes an enhanced appreciation of natural environments and environmental educational by exposing visitors and locals to nature and conservation.

Blangy and Mehta (2006:233) indicate that over the past 15 years ecotourism has become one of the fastest growing sectors of the tourism industry, growing three times faster than the industry as a whole. This illustrates the demand for nature as a commodity as well as the desire for people to experience nature. Honey (2006 cited in Blangy & Mehta 2006:233) states that ecotourism is being increasingly viewed by local and indigenous communities as an important tool for promoting sustainable livelihoods, cultural preservation and biodiversity conservation.

Ecotourism incorporates sustainability principles. Sustainability encompasses the broad spectrum of diversity in all its dimensions. This implies that biodiversity conservation includes not only protecting flora and fauna, but also the sustainability of human communities. In terms of the latter, direct and indirect incentives for local communities to conserve and benefit from ecotourism are important. Local people would have greater incentives to conserve the biological resources in their environment if the beneficial effects from tourism filtered down to individual families and households (Dieke 2003; Jones 2005).

Ecotourism sites and natural spaces permit people, albeit those who can afford it, an opportunity to appreciate and experience nature. Kiss (2004:233) states that highly successful ecotourism can support biodiversity conservation by influencing national policy. For example, the government of Mozambique is establishing large conservation areas as a key element of its tourism development strategy.

Indigenous People and Conservation Areas

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2001:3) indicates that there is wide recognition for the need for

local community involvement in the conservation and management of natural landscapes. Kiss (2004:232) specifically states:

> Community-based ecotourism (CBET) has become a popular tool for biodiversity conservation, based on the principle that biodiversity must pay for itself by generating economic benefits, particularly for local people …. The attraction of CBET is the prospect of linking conservation and local livelihoods, preserving biodiversity whilst simultaneously reducing rural poverty, and of achieving both objectives on a self-sustaining (self-financing) basis.

Kiss (2004:232) states that case studies of CBET projects typically claim success in motivating communities to reduce their exploitation of wild plants and animal species, to help control poaching, or to set aside a portion of farming or grazing land as conservation areas. Kiss (2004:232), however, warns that many CBET projects that are cited as success stories actually involve little change in existing local land and resource-use practices, provide only a modest supplement to local livelihoods, and remain dependent on external support for long periods, if not indefinitely. She further indicates that generally the contribution of CBET to conservation and local economic development is limited by factors such as the small areas and few people involved, limited earnings, weak linkages between biodiversity gains and commercial success, and the competitive and specialised nature of the tourism industry.

Anthony and Bellinger (2007:148) state that in developing strategies for resource conservation it is necessary to recognise the widespread use of the natural environment and its wild products, including those under formal protection, by local people. It is also important to understand and recognise indigenous people's local knowledge of the natural resource base. Warren et al. (1995:xv) define indigenous knowledge as 'the local knowledge that is unique to a given culture or society'. Most definitions of indigenous knowledge also refer to the accumulation of experience and the passing of information from one generation to another in a particular cultural context. Typically, indigenous knowledge is:

- Linked to a specific context in terms of place and culture

- Dynamic in nature
- Associated with groups of people with close links to the environment
- Different from modern or scientific knowledge

Knowledge and use of the natural resource base are highly gendered. Women are key environmental managers and users, yet very often their experiences and concerns pertaining to the natural resource base are neglected or ignored. Numerous studies focus on traditional ways of interacting with the environment (Chambers 1997; IUCN 1997; Jackson 1993; Warren *et al.* 1995). They conclude that ecological and social knowledge embedded in indigenous knowledge systems is an asset of incalculable value. Information about environmental and social resources is encoded in languages, customs and practices. Thus, indigenous knowledge systems are vast store-houses of information about nature. Women not only conserve but foster genetic and ecological diversity. This enhances biological resources for future generations. Additionally, women's reproductive and community roles ensure that they are familiar with social systems and practices. Women are central to promoting biological and cultural diversity. IUCN (1997) asserts that women can make an enormous contribution to sustainability strategies as long as their knowledge is protected and they are able to share in the benefits arising from the application of their knowledge. More generally, Anthony and Bellinger (2006:152) state that more comprehensive and local valuations in understanding what species are used for what purposes can help in identifying conservation targets in community-based initiatives, and can inform planners of specific resource needs. They also assert that local realities and externally defined priorities often differ with respect to the ways in which biological diversity and resources used by local communities are defined and valued.

It is important to emphasise that although women tend to be key keepers and managers of indigenous knowledge, they have been marginalised as a result of changes in the nature and the locus of knowledge production and use. Their limited roles in community structures and other

decision-making bodies as well as their continued dispossession from land and natural resources contribute significantly to this marginalisation. Together with children, women remain the most impoverished groups in most societies (Jackson 1993; Warren *et al.* 1995).

The final section examines global climate change. Several of the challenges and concerns highlighted in the article are likely to be worsened in the context of climate change impacts which will be devastating for local populations and ecological systems.

Global Climate Change

Global climate change is a widely debated topic and the issues pertinent to it are complex. Thomas and Twyman (2005:122) state that an examination of climate change needs to include the relationships between global processes (including emission effects, international conventions, etc.), national responses and local outcomes, and particularly the effects of national decisions and policies on local opportunities and abilities to adapt. Thus, aspects relating to livelihoods, political factors and spatial concerns are important to consider.

The drivers of human activities associated with climate change are linked to an increase in demand for a wide range of goods and services including basic needs (food, water, clothing, shelter, health and employment), transport, communication technologies, and entertainment and luxury items. The global demand for energy in particular, which is mostly acquired from the combustion of fossil fuels, has led to increased emissions of carbon dioxide and other atmospheric and water pollutants.

The Table below illustrates what the main drivers are and which compartments of the natural environment are being impacted. According to Steffen et al. (2004:16), proximate drivers are the immediate human activities that drive a particular environmental change, while underlying drivers are related to the fundamental needs and desires of individuals and groups.

Compartment/ cycle transformed	Proximate driver	Underlying driver
Land	Clearing (cutting forest + burning), agricultural practices (e.g. tillage, fertilisation, irrigation, pest control, high-yielding crops, etc.), abandonment	Demand for food (+ dietary preferences), recreation, other ecosystem goods and services
Atmosphere	Fossil fuel burning, land-use change (e.g. agricultural practices), biomass burning, industrial technology	Demand for mobility, consumer products, food
Water	Dams, impoundments, reticulation systems, waste disposal techniques, management practices	Demand for water (direct human use), food (irrigation), consumer products (water usage in industrial processes)
Coastal/ marine	Land-cover conversion, groundwater removal, fishing intensity and technique, coastal building patterns, sewage treatment technology, urbanisation	Demand for recreation, lifestyle, food, employment
Biodiversity	Clearing of forest/ natural ecosystems; introduction of alien species	Demand for food, safety, comfort, landscape amenity

Table 1: Proximate and underlying drivers impacting on the natural environment (Source: Steffen *et al.* 2004:16)

Global change should not be seen simply as climate change. As Steffen *et al.* (2004:4) state:

> Global change is more than climate change, it is real, it is

> happening now and in many ways it is accelerating. Human activities are significantly influencing the functioning of the Earth System in many areas; anthropogenic changes are clearly identifiable beyond natural variability and are equal to some of the great forces of nature in their extent and impact.

Additionally, communities are also changing rapidly, and as illustrated earlier, becoming more vulnerable to exploitation and processes of globalisation. IUCN (1997) states that human cultures are disappearing at an unprecedented rate. Furthermore, the world is increasingly characterised by high levels of consumerism and materialism. This augmented demand for goods and services will place greater pressure on the natural resource base.

O'Brien and Leichenko (2005:1) state that food systems are undergoing dramatic transformations as the result of both globalisation and global environmental change. They specifically argue that these changes are altering the physical and socio-economic conditions that underpin terrestrial and marine food systems. The changes also have direct effects on agricultural production, livelihoods and the viability of rural agricultural economies. Furthermore, O'Brien and Leichenko (2005:1) assert that globalisation in particular is transforming the production and storage of food, the movement and trade of food, access to and consumption of food, and the quality and safety of food.

Steffen *et al.* (2004:21) illustrate the impacts of global climate change on the world's hydrological system, which is deemed to be the lifeblood of the biosphere and the engine of the climate system. The impacts that they identify include changes in precipitation patterns, especially in the high altitudes; changes in the intensity and timing of precipitation, with more heavy rainfall events and associated flooding, as well as more severe and extended droughts; lower evapotranspiration which results in lower precipitation; and changes in the partitioning of incoming solar radiation due to land cover change which in turn affects the amount of water that runs off into riverine systems or infiltrates into soils. Viljoen (2006:1) asserts that it is important to consider the challenges imposed by climate change and biodiversity on the effective utilisation of land and water resources. The above points illustrate that the impacts will vary considerably in different localities and ecosystems.

Climate change is likely to impact significantly on human and animal health. Van Reenen (2007:8-9) cites specific examples pertaining to human health impacts from the Climate Change Futures (CCF) project:

> The CCF study predicts that the area suitable for tick inhabitation will increase by 213% by 2080 and that ragweed pollen growth, stimulated by the rising levels of CO_2, may contribute to the rising incidence of asthma in people. There are also ten other case studies within the report that outline the effects of climate change on infectious diseases such as malaria, which currently kills approximately 3 000 African children a day, the West Nile virus, which cost the United States $500-million (R34.6-billion) in 1999, and Lyme disease, the most widespread vector-borne disease that is on the increase in North America as winters become warmer and ticks proliferate…Human health impacts include an increase in the occurrence of strokes, skin rashes and non-melanoma skin cancers. Indirect health impacts, such as an increase in the incidence of water-borne diseases like cholera, can also be expected as a result of ecosystem changes.

Thomas and Twyman (2005:115) identify the implications of climate change for equity and justice among vulnerable groups at local and sub-national levels. Equity and justice, they assert, are important for the following reasons:

- There is considerable literature suggesting that the poorest and most vulnerable groups will disproportionately experience the negative effects of 21st-century climate change;

- Such changes are likely to impact significantly on developing countries, where natural resource dependency is high; and

- International conventions increasingly recognise the need to centrally engage resource stakeholders in agendas in order to achieve their desired aims, as part of more holistic approaches to sustainable development (Thomas & Twyman 2005: 115).

Natural-resource-dependent societies are those societies where the direct use of agricultural, forestry, fishery and/ or other natural resources contribute significantly but are not necessarily dominant inputs to livelihoods (Thomas & Twyman 2005:116). The impacts of climate change on these households are complex and should also be viewed in the context of a range of social and economic pressures including HIV/AIDS, lack of employment, population changes, etc. Furthermore, local strategies to deal with shocks and stresses need to be considered.

Conclusion

The deterioration in the goods and services that nature provides will have a negative impact on the lives of people and their well-being, especially those groups that are more vulnerable and directly reliant on the natural resource base. Impacts on quality of life include food and water insecurity, worsening air quality, and related health concerns. Additionally, global change if left unabated could negatively impact on the stability of the Earth system itself.

Access to natural resources (whether directly or indirectly), including land, is at the heart of social, political and economic life. Natural resources also continue to have major historical, cultural and spiritual significance. The way in which we perceive nature as well as how we control, extract and use its resources are intensely social, political and economic processes. Steffen et al. (2004:14) assert that the magnitude and rates of human-driven changes to the global environment and natural resource base are in many cases unprecedented for at least the last half million years. The sustainable use of natural resources is most certainly under pressure at local, regional and global levels. The poorer, more vulnerable segments of society are less likely to adapt to climate change and reduced access (whether as a result of distribution or over-use) to natural resources. They are therefore likely to bear the brunt of these changes. As McNeil (cited in van Reenen 2007:8), environment programme manager for the United Nations development programme, states:

> While developed nations are not immune to the impacts of climate change, those populations that are already struggling with myriad social challenges will bear the greatest brunt of climate change.

UNESCO (2001:13) states:

> The challenge to complex conservation problems lies in seeking solutions that are sustainable, mutually agreed upon and equitable to all of the stakeholders involved.

The above statement is extremely laudable but difficult to achieve in practice. This is particularly the case in contexts where there are conflicting and wide ranging demands as well as power dynamics that lead to the empowerment of some groups and marginalisation of others.

Demands on the Earth's resources are likely to increase as development continues. It is socially irresponsible to curb development for the vast majority of human inhabitants who reside in developing contexts and often bear the brunt of poverty and resource scarcity. In this context, the issue becomes one of what kind of development should be allowed rather than whether development should be curbed.

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Development Pressures and Management Constraints in the Coastal Zone—the Case of KwaZulu-Natal North Coast

Fathima Ahmed

Introduction

Coastal zones worldwide are becoming attractive locations for economic, tourist and residential development. Chua (1993 cited in Shi *et al.* 2001:2) states that 50% of the world's population inhabits the coastal zone, which represents approximately 10% of the earth's surface. According to Carter (1988), many coastal populations show signs of growth rates that are expanding faster than national populations.

In addition to this permanent (somewhat predictable) population, coasts experience seasonal 'booms' in large transient populations—the tourists (French 1997). The element of unpredictability is highlighted in that tourist development differs from others in terms of intensity and number of people located in an area, at any given period of time, resulting in concentrated impacts (French 1997). The increase in leisure time and demand for facilities, has witnessed significant portions of the world's coasts having become committed to tourist development.

Development trends in coastal zones worldwide indicate that shoreline real estate is in strong demand (Clark 1995). This demand, which responds to essential needs for economic growth, leads to a linear approach to coastal development (Clark 1995). Linear developments impact upon large areas and encroach on a number of terrestrial coastal ecosystems, such

as land along the water's edge, wetlands, land with beach access and, or sites commanding impressive sea views (Treweek *et al.* 1998:149). Accompanying this growth is the heavy demands placed on water, services and natural ecosystems along the coast.

Coastal zones are intensely dynamic areas containing unique and irreplaceable ecosystems which are critically important to humans. According to Isobe (1998), coastal zones provide three functional roles: firstly they provide resources for human utilisation—energy extraction, industrial, residential use and recreation. Secondly, they play crucial roles in disaster prevention, acting as buffers against tsunamis, rough wave action, flooding and erosion. Thirdly, they provide important ecological goods and services-harvestable goods, water cycling, primary production, etc.

Managing pressures on coastal resources in an integrated manner are critically important given the role that these ecosystems play and to ensure that the human relationship with coastal zones remain harmonious. Environmental deterioration threatens the foundation upon which tourism and residential development rests. Unless initiatives are taken soon to manage this growth, and related development activities, environmental deterioration of coastal resources will eventually undermine productivity and intensify conflicts over the scarce and unique resources in the coastal zone (Hatziolos 1996:4).

KwaZulu-Natal (South Africa) has recently emerged as the focal point of industrial development in sub-Saharan Africa, attributed to the availability of its unequalled natural resources, sound infrastructure and hub of port activities. Concurrently, the development of tourist, commercial, industrial and residential expansion along the northern areas of KwaZulu–Natal has generally been concentrated in the coastal zone.

Simultaneously, there exist vast disparities in levels of development and underdevelopment between the coastal zone and its immediate hinterland. Local municipalities are faced with the daunting task of forging sustainable links between the two. Urbanisation of the coastal zone is likely to increase in the future due to rapid population growth, employment opportunities and to unconstrained development activities. Furthermore, in addition to local development pressures, coastal areas as well as pristine wildlife conservation areas are deemed to be the main sources driving tourism in KZN.

Motivation for the Study

This article provides an assessment of this coastal environment in the context of current development pressures and concurrent management constraints. Although environmental concerns are climbing agendas and Integrated Coastal Zone Management (ICZM) is being advocated by the governments worldwide, current management approaches on the KwaZulu-Natal north coast remain sectoral and unsustainable. In addition, improper land use planning and ineffective implementation of policies is contributing to *ad hoc* development which in turn, impacts on the biophysical environment. Moreover, there exists a lack of transparency, accountability and genuine public participation in the development process of this coastline. This paper advocates the implementation of a Strategic Environmental Assessment (SEA) to achieve sustainability in this coastal zone. The *ad hoc* nature of development and the lack of a strategic focus, has been the catalyst for this research. An SEA has not been tested for the area, and this paper aims to establish whether perceptions on current development issues suggest the need for one.

Study Area

The study area is located on the east coast of South Africa (Fig.1a), within the province of KwaZulu-Natal. It is located on the KwaZulu-Natal north coast and covers portions of both the eThekwini and Ilembe municipalities (Fig.1b). It stretches from Umhlanga Rocks in the south to Salt Rock in the north and up to and including the N2 national road in the west (Fig. 1c). The study comprises an area of approximately 5 534.05ha.

Principle physical assets of the area are its favourable climate, topography and geomorphology, which combine to form the foundation of the coast's natural heritage i.e. sandy and rocky shores, coastal forest, wetlands, estuaries and grasslands which support a range of diverse ecosystems for terrestrial and fresh water organisms (DAEA 2004:1865). Until the mid-1990s this coastline was relatively undeveloped with agriculture (commercial sugar cane) being the dominant land use. The coastal strip was scattered with small towns that were generally high income, low-density residential suburbs, which also held a resort component. This strip of land has, in the last two years, become a speculator's paradise,

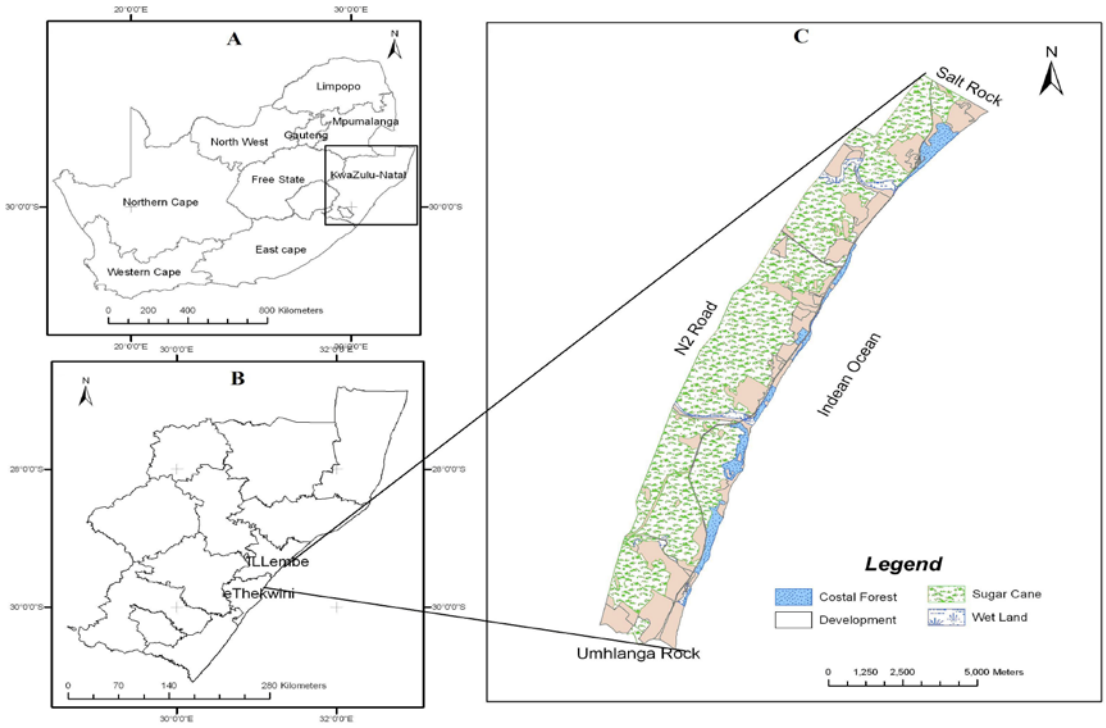

Figure 1. (a) The province of KwaZulu-Natal on the east coast of South Africa; (b) the eThekwini and Ilembe municipalities on the KwaZulu-Natal north coast; (c) the study area from Umhlanga Rocks to Salt Rock and up to the N2 national road.

experiencing unprecedented levels of development (in the up-market residential, commercial and tourist sectors). Property development is a key feature of economic development along this coastline. The Ilembe part of the study area is reputed to have the fastest growing real estate in South Africa (DAEA 2004:1868).

Coastal Management Efforts in South Africa

Environmental management has become a major approach in which we make decisions about the way in which natural resources should be used, allocated and sustained. However, given increasing and often competing demands for natural resources and landscapes management practices often compromise the natural integrity of coastal areas. This is particularly the case in South Africa where social and economic pressures fuelled by transformation and development imperatives have resulted in environmental considerations being undermined. Rather than having resolved the issues surrounding environmental degradation, management responses to development activities in the coastal zone off the KwaZulu-Natal north coast have contributed to them.

In the 1970s and 1980s, a variety of coastal zone management (CZM) activities were executed in South Africa, on a sector specific basis, such as nature conservation, fisheries management, land use planning and so forth. These were inefficient and led to the proliferation of plans and regulations. There was also the lack of integrating environmental issues into economic and development plans. Prior to 1997 (when Environmental Impact Assessment procedures became mandatory in terms of the Environmental Conservation Act of 1989), development applications were assessed on an *ad hoc* basis, and development was controlled through administrative regulations and expert advice (Glavovic 2000). Sowman (1993) concurs by highlighting that the early management of South Africa's coastal resources has been carried out in the absence of any comprehensive, integrated coastal management system, and in a very fragmented manner which reflected centralised, top-down planning.

The shift towards realising the need for Integrated Coastal Zone Management (ICZM) coincided with the broader political transition in South Africa in the early 1990s, when a variety of civil society became actively involved in aspects of public policy, decision-making and management

(Glavovic 2006:892). Glavovic (2006:890) distinguishes four main areas of coastal management over the last three decades: *ad hoc* sector-based management (1970s); coastal zone management and regulations, ecology and experts (1980s); participatory policy formulation (1990s); and people-centred, pro-poor ICM (2000).

Many countries are beginning to implement ICZM strategies to manage their coasts. The distinctive feature of ICZM is that it takes into account the ecological and socioeconomic issues associated with development (Clark 1995). Although major issues in the coastal zone are acknowledged by ICZM strategies, addressing them are extremely problematic (Hatziolos 1996:45). The paper will illustrate the development pressures experienced and constraints faced by managers in the coastal zone under investigation on the KwaZulu–Natal north coast of South Africa. The article will demonstrate that this coastline faces institutional constraints related to the policy environment, administrative and organisational aspects of resource management and limited human and technical capacity to deal effectively with issues which currently undermine sustainable development in the coastal zone.

Current Policy Context of ICZM in South Africa

Legislation pertaining to the coastal zone has become extremely complex due to the introduction of new legislative processes, amendments, the existence of outdated legislation (such as the Town Planning Ordinance of 1949) and ambiguous legislation (such as the Development Facilitation Act of 1995). Many coastal specific legislation such as the National Coastal Zone Management policy and the Provincial Coastal Management policy have not been finalised, and in the absence of a Coastal Management Act (national legislation), development can, at best, be guided but not regulated or managed effectively in a sustainable way (Mather 2005).

South Africa's coastal management is largely guided by the White Paper for Sustainable Coastal Development which is the main policy guiding development at the coast, and has ushered in a new era of thinking on coastal issues. It has set three objectives that coastal development should promote: social equity through improved livelihoods for poor communities, a healthy coastal environment for the benefit of future generations, and economic development that makes best use of available resources (DEAT 2000:4).

The need for environmental assessments and the promotion of sustainable development have both been highlighted through the implementation of Integrated Environmental Management (IEM) and, more recently, in 2006, through the new Environmental Impact Assessment (EIA) regulations passed in terms of Chapter five of the National Environment Management Act of 1998. While EIA has a potential role in sustainable development, its commonest application has hitherto been at the project level, and herein lays its major criticism. It fails to ensure adequate consideration of potentially severe indirect and cumulative environmental effects (Treweek et al. 1998:147). According to Treweek et al. (1998:147), the fact that environmental impacts cannot be identified and predicted effectively if EIA is project-specific, is an important justification for moves towards a Strategic Environmental Assessment (SEA). Furthermore, Haag (2002:12) highlights critical flaws in CZM practices thus far, specifically with regard to integration and holistic planning, and suggests that an alternative to current approaches may be found in adopting SEA of coastal zones.

SEA expands the scope of EIA not only at the project level, but also at higher levels—it assesses and informs proposed plans, policies and programmes to cover all relevant areas of consideration i.e. the environmental implications of a proposed strategic decision happens early enough to have a significant influence on the nature of development (DEAT 2004:5). SEA allows decision-makers to proactively determine the most suitable development type for a particular area, region or sector. According to Govender et al. (2001:144), SEA focuses on the maintenance and enhancement of a chosen level of environmental quality, rather than minimising individual piece meal impacts. Furthermore, through the integration of environmental, social and economic objectives into the policy, plan or programme process, SEA has the potential to assist in the implementation of sustainability.

As both the concept of ICZM and the SEA process are directly linked to sustainable development, the adoption of the principles of latter was considered as fundamental to any management planning process (UNESCO 1994). Mercadié (1999) on the assessment of the potential impact of the SEA Directive on ICZM, highlights that the objectives of SEA Directive coincide with those of ICZM—the synergies between the two

procedures are emphasised with regard to existing variations, essential information, public consultation, financial aspects and overall assessment.

In the European context, the use of SEA approach is suggested as one of the tools that could enhance the establishment of a European legal framework for the ICZM (European Commission 1999 cited in Gremmenas 2005:39) by assessing and integrating existing sectoral policies and their impact on the use and exploitation of land with special reference to the coastal zone areas. According to Shi et al. (2001:11), SEA for the whole of the ICZM decision-making process would not only overcome the limitations of the existing system of individual project EIA, but would also be a positive step towards attaining sustainable development.

Although there is current thinking across the board about the implementation of SEA, it currently holds no specific legislative requirements in South Africa. However, the NEMA makes provision for the development of assessment procedures to ensure that the environmental consequences of proposed policy, plan or programme are considered (DEAT 2004:6). This provision indicates a need within legislation (national) for the use of SEA.

Methodology

The study is based on information collected through interviews with key coastal stakeholders. The sampling method used was the quota system—a non-probability method of sampling. This is a method of stratified sampling in which the selection of respondents is non-random. Respondents were selected from five categories that were considered to be representative of the stakeholder vested interests in the study area:

- Environmental groups—conservancies, Wildlife and Environmental Society of South Africa, Ezemvelo KZN Wildlife
- Developers— Multi-national companies
- Community-based organisations (CBO)—ratepayers associations, residents, politicians, property owner's associations
- Managers—Coastal Working Groups (CWG), planners and managers representing the Provincial Coastal Management Unit of the Department of Agriculture and Environment Affairs (DAEA) which is the provincial lead agent in development

- Tourist Organisations—Tourism KZN, local tourist organisations, tourist establishments

A total of 10 respondents in each of the categories were interviewed, resulting in a total sample of 50 respondents. A questionnaire comprising both open and close-ended questions was administered on a face-to-face basis.

Results and Discussion

This section presents findings in relation to respondents' perceptions of current development pressures, environmental tools, management constraints and sustainable development in the coastal zone off the KZN north coast.

Development Pressures

Development pressures (both external and internal) in this coastal zone are primarily as a result of the availability of large tracts of undeveloped land, land costs, land ownership dynamics and speculative development activities. External pressures driving development emanate from the apparent 'over-development' of the south coast of KZN, where there is little developable land left. Umhlanga Rocks has reached development capacity, and as there is undeveloped land on the north coast, the development inertia is moving northward. The internal pressure, and biggest driver of development, is land cost (Mather 2005). Vacant land is penalised in terms of rates, as municipalities have always favoured policies promoting development (Mather 2005). Agricultural land is rated low in terms of rates, and once it gets residential, commercial or industrial zoning the rates increase. These factors prompt land owners to either sell or develop their land.

Whilst property development in the area is considered spectacular the development boom is placing a burden on current infrastructure, especially roads, electricity and sewage systems. Development is exceeding infrastructural capabilities, resulting in their complete or partial failure, exorbitant costs to rate payers and environmental damage. Several threats have emerged—development is threatening to engulf the last remnants of indigenous coastal forest, undermining the health of estuaries, causing stress

to dune systems, causing habitat fragmentation and destruction of the aesthetics of the coastline, which is its attraction in the first place.

Most of land in the study area is held in private ownership. A large chunk is owned by Moreland (property division of the largest sugar company on the north coast). In recent years, sugar has been performing poorly due to increased international competition, and is under pressure in South Africa (Markewikz et al. 2000). This has led the Company to look to alternatives, and property is currently the most lucrative. Private ownership does not allow municipalities much leeway in terms of negotiating development in terms of the release of land in appropriate locations and at appropriate times (Markewikz et al. 2000).

Furthermore, land owners seek short-term gains from either developing or selling their land, with little consideration of the overall structure of the area (Markewikz et al. 2000). Coupled with this, the fact that each development activity is assessed on an individual basis through EIA, has led to the proliferation of *ad hoc* development in the area. Economic interests thus appear to be an important impetus for many development projects.

In addition to the above, there exists a stark contrast between the affluent communities east of the (national road) N2 and the abject poverty of those to the west of the N2. Municipalities are faced with challenges over that of providing housing and job creation opportunities for the poor, whilst realising the potential for tourism and quality environments for the wealthier people (Jones 1994:14). In light of the need for poverty reduction, municipalities envisage that the spin-offs from the development boom will filter into poor communities by creating employment in the service sectors (tourism) and in the construction industry.

Perceptions of Environmental Management Tools

The total sample perceptions (Table 1) on the effectiveness of current instruments that regulate development, off the KwaZulu-Natal north coast are discussed below. The respondents were asked to rate current environmental tools used to manage the coastal zone. The specific tools highlighted for this study (in keeping with international benchmarks in land use management tools) are:

Zoning schemes: In South Africa, land use zoning is commonly used and applied through Town Planning Schemes. Zoning is a common tool used in many countries where specific pieces of land are identified for a particular use (residential, industrial, commercial, etc.). Zoning indicates property rights, building height, building boundary lines, percentage building coverage and intensity of land use permitted on a property.

Rates and taxes: are taxes on the ownership of property (land and buildings). They are based on the market value of property, and the revenue generated is used to fund various services provided by the municipalities. Property rates are set, collected, and used locally, hence the charges differ from municipal area to area.

Setbacks: is the distance which a building or other structure is set back from a road, a river, a shore, flood plain, or any other place which needs protection. Types of setbacks include: flood and erosion lines, greenbelts, and setbacks that keep septic tanks at a safe distance from water sources to avoid leaching and their subsequent contamination (Clark 1995). The objective of setbacks is to protect important features like estuaries.

Environmental Impact Assessment (EIA): a process for identifying the likely consequences for the environment, of implementing particular activities, and for conveying this information at a stage when it can substantially affect their decisions to those responsible for sanctioning proposals (Watern 1992 cited in Weston 1997).

Strategic Environmental Assessment (SEA): is a procedure integrated in the political decision-making process that is intended to ensure that the environmental consequences of various plans and programmes are identified, described and assessed before being adopted (Mercadié 1999).

Instruments	**Zoning Schemes**			**Rates & taxes**			**Setbacks**			**EIA**			**SEA (should it be implemented)**		
% Respondents	√	x	?	√	x	?	√	x	?	√	x	?	√	x	?
CBO	30	60	10	10	70	20	10	70	20	20	70	10	60	40	
Environment	20	80		40	50	10	100			30	70		80	20	

Tourist	20	70	10	50	30	20	30 50 20	50 40	70 30
Developers	60	40		70	30		60 40	70 30	40 60
Managers	10	90		60	40		40 60	40 60	70 30
% Total Sample	**28**	**68**	**4**	**46**	**44**	**10**	**28 64 8**	**42 54 2**	**64 36**

Do you feel that the following instruments to regulate development have been successful in achieving sustainability of this coastline? Although SEA is not implemented in your area, do you think it could be successful? Please state reasons for your answers.
Effective √ Ineffective X Unsure ?

Table 1. Total sample perceptions on the effectiveness of current instruments that regulate development, on achieving sustainability of the KZN north coast.

Zoning (68%) was found to be the most ineffective regulatory instrument. Managers stated that it has emerged to be outdated and an inappropriate tool for managing growth as, historically, zoning was determined as 'ribbon/strip' development along the coastline, which did not take cognisance of the ecological constraints inherent in that zone. CBO felt that zoning was overly generous in granting development rights that have resulted in inappropriate development, especially on dune systems and their associated vegetation.

Environmentalists questioned whether the municipality has acted in the public's best interests. Tourist concerns are unable to effectively plan public recreational areas along the beach strip as a result of this zoning. Municipalities are finding this zoning difficult to undo. The reason for this is that much land along the beach has gone from public to private. The eThekwini municipality is currently looking at curbing development pressures caused by zoning, through legal opinion which may arise on matters such as the transfer of development rights or matters needing compensation (Mather 2005). However, compensation may not be a viable option for already cash-strapped municipalities.

Rates and taxes were largely found to be effective (46%). The developer, management and tourist sectors felt that rates and taxes were effective in order to maintain an up market residential and tourist area, and to generate income for the municipalities. On the other hand environmentalists found it to be ineffective. They argue that the profits generated from development go to specific user groups and does not allow the gains to filter to the poor or the environment, hence the development boom is enriching the rich.

For example, the key development of Zimbali (a Moreland initiative) is the largest foreign tourism transaction to date in South Africa, however, the Ilembe municipality cannot account for whether the profit gained has filtered to the improvement in the living conditions of surrounding poor communities. They claim that the region gets revenue from tourism and not the municipality hence it was difficult to say exactly how the money was being counterbalanced with environmental management.

CBOs argued that they are currently paying underdeveloped rates for a natural area and this is not fair on them because they are actually conserving the environment and are penalised for this. The eThekwini municipality is currently looking at environmental servitudes, where the land owner will donate a portion of his land to servitudes, still registered in his name, and gets rates relief on that particular piece of land.

Adherence to setbacks is a large non-compliance issue (64%), and is impacting on both municipalities (prioritising budgets), and ratepayers. Some properties in the Ilembe section of the study area operate on septic tanks for sewage and wastewater disposal. The rate of urbanisation and its proximity to the coastline has resulted in sewer contamination of the coastline. There exist no setbacks for septic tanks on properties. Municipalities are in the interim stage of negotiating handling of coastal sewage discharge. Some of the estuaries have reached their designed capacities as to the amount of licensed sewage they can accommodate. Alternate means of dealing with the sewer problems have hitherto relied on bypass systems to pump excess sewer into other systems. Bypass systems, to date, cost in the region of R25 million (US$4 166 667).

There is also non-compliance to designated setbacks such as flood lines, erosion lines and the prohibition of building in the high water mark. Despite warnings to the contrary, from environmental groups and civic

associations, the municipality (motivated by political lobbying) constructed a recreation area at La Mercy in an active zone in an estuary, and well within both the 1: 50 year flood line and potential erosion line from the coast in 2002. A year later, the area was damaged by floods and resulting severe erosion. Rehabilitation of the area cost ratepayers some R5 million (US$833 333). Coastal stakeholders are irate over the spate of development and the inability of the municipality to deal with the environmental problems.

Of the total sample, 54% stated that EIA have emerged as an ineffective tool to assess proposed activities on the environment and the achievement of sustainable development. What is emerging is that in the rush to develop this coastline, developers are applying the least effort to satisfy minimum regulations, there is lack of mitigation measures and lack of follow-up enshrined in environmental management plans (EMP). Non-compliance to EMP is raising serious concerns for managers. The reasons for non-compliance are: punishment is less severe than going through proper processes. There is a shortage of environmental lawyers in South Africa to defend the environment.

IEM guidelines identify compliance and monitoring as vital components of the EIA implementation stage, however, they are not legally binding and hence leave the issue of follow-up to be undertaken voluntarily. The issue of follow-up is neglected in the ECA, and the NEMA provides only a partial monitoring and management of impacts. Respondents cited the following reasons for lack of follow-up: lack of capacity in municipalities, financial constraints on municipalities, loopholes in legislation and lack of enforcement.

DAEA has until recently lacked the capacity to deal with EMP follow-ups. Their Compliance section has only recently been expanded. Similarly, Ezemvelo KZN Wildlife, with only two people who assess EIA, for the entire KZN, in 2004, has expanded its capacity to six in 2006. The Ilembe municipality had, in 2005, no environmental officer to undertake compliance within its jurisdiction. Respondents also raised concerns over the lack of building inspectors with an environmental focus.

The opportunity for stakeholder participation from environmental and CBO in EIA was found to be highly lacking. The reasons cited were that there is lack of transparency in the development process, interested and affected parties do not have adequate time to comment on proposals, they

require more information and access to it is difficult. Many stakeholders state that political decisions play a very crucial role at local government level, and decisions are more or less already taken, thereby ruling out genuine stakeholder participation.

In an effort to integrate CZM, new management structures have been set up in both coastal municipalities—CWG which provide opportunities for attention to be focused on planning decisions at the local level, while assisting residents in networking with relevant levels of government officials. These structures are intended to improve and encourage participation across all sectors of coastal stakeholders.

The majority of respondents stated that they would like to see an SEA done for the area (64%). Reasons cited were that SEA screens out environmentally unfriendly projects or guides projects before irreversible decisions are taken, and it addresses cumulative impacts. Furthermore, it facilitates pro-active public participation. Managers called for the implementation of SEA linked with a Geographic Information System (GIS) which would assist in identifying and predicting (through scenario testing) the likely impacts of development on the environment and hence aid in management of the coast. This would also assist them with building databases on issues such as property ownership, state of natural resources, sensitive areas etc. Whilst realising the need for creating databases, management raised concerns that some of the impediments were the lack of baseline data and the lack of skilled personnel in the use of spatial support systems.

Local authorities and environmentalists stressed that political influence is strongest at the municipal level, and it currently supports development and its' anticipated job creation potential. Hence, it is not easy to get political buying in on policy, plan or programmes that aim to regulate development. Furthermore, SEA has not been effectively tested in South Africa, and is generally found to be context specific where it has.

Managers and CBO were uncertain how an SEA would affect private land ownership. Moreland has come under immense scrutiny for 'monopolising' development in the area. Since they own extensive land, they have done a lot of planning themselves and a lot of it has been done in isolation of the municipality. There are stark conflicts of interest regarding ownership and planning of land between private land owners and the municipalities.

Developers were the principle group unsure about implementing SEA, and were the largest supporters of EIA. Many claimed that they adhered to strict environmental regulations, and included specialist studies, and that there was no need for SEA. Furthermore, they argued that further legislation would delay the development process and would result in time and financial delays. However, CBO and environmentalists claim that there is also a lack of expertise in the consulting arena, with too many generalists and not enough specialists, hence the ineffective coverage of Red Data Species among other things.

Red Data Species are difficult to identify especially in winter and are poorly known (except by experts) and are generally overlooked by consultants. Most private consultants work with small budgets and have three months to comment. Time and financial constraints do not allow for the deferment of projects to ensure the coverage of these species. The environment does not respond to the developer's time frame and important environmental aspects pertaining to seasonal variation is not effectively considered.

Generally, capacity of municipalities to deal with these issues is weak and disproportionate to the tasks. They also face the juggling act of attempting to maintain broad political support, provide services, to maximise residential tax base and maintain a healthy coastal environment.

Management Constraints Regarding Development Pressures

Some of the most important legislation guiding development and the environment emanating from a critical examination of the White Paper for Sustainable Coastal Development in South Africa and discussions with the respondents are highlighted below.

The National Environmental Management Act (NEMA) of 1998: establishes a framework to give effect to the White Paper on Environmental Policy for South Africa. It emphasises co-operative governance and promotes integration and coordination of government environmental functions.

The Development Facilitation Act (DFA) of 1995: facilitates and fast-tracks development programmes and projects in relation to land and principles governing land development in South Africa. It came into effect to fast-track land delivery for low-cost housing, and this remains its focus.

The Town Planning Ordinance of 1949: requires that the developer prove 'need and desirability' of a project from the general public's point of view. It is the principle planning legislation that sanctions development.

In relation to the policies listed above, a range of challenges were also identified. These challenges relate to: policy issues, administrative and organisational aspects of resource management and limited human and technical capacity; and are discussed below.

Policy issues: Problems experienced by coastal managers relate to the dual process that exists between planning and development legislation on the one hand, and environmental legislation on the other. The Ordinance came into effect (and has not changed) at a time when the environment was not a consideration and resources were plentiful. It currently holds more sway in development decision-making than the NEMA, so planning legislation has little to do with the environment. Furthermore, developers can choose between the Ordinance or DFA route. The DFA tends to go through a number of processes very quickly, does not require a 'need' assessment, and there is still question as to how capital projects are using this route which is intended to fast track low-cost housing projects.

Administrative and organisational aspects of resource management: since CZM in South Africa has not enjoyed the privilege of being a distinct activity in the past, it has inherited a plethora of overlapping jurisdictions of government agencies with authority on the coast. What have emerged are conflicts in the interpretation, application and implementation of legislation, and jurisdictional conflicts.

For example, environmental departments would advocate biodiversity issues and the planning departments would side with the developer. There exists confusion in permission-granting processes, e.g., the breaking of new ground for development requires the approval of two departments within the DAEA i.e. sub-department of Agriculture and the sub- department of Environment. Usually, permission is granted by the sub-department of Agriculture, and the developer has already considerably converted the land and its conservation value is lost, before the sub-department of Environment gives permission.

Furthermore, there exists sectoral jurisdiction over the same resource for example estuaries (which are managed separately by the Department of Water Affairs and Forestry, the DAEA, Department of

Minerals and Energy which has interests in sand mining), which results in inconsistencies and duplication of information.

Limited human and technical capacity: current limitations to the execution and management of development are: staff shortages, particularly in the compliance and enforcement arenas. There is a lack of skills pertaining to human capacity in the field of coastal management and resource managers. There is currently lack of personnel with experience and access to latest technologies (remote sensing, GIS analysis) and methods (modelling and scenario testing), to deal with complex spatial dimensions of coastal environmental issues.

Differing interpretations and application of legislation, coupled with the confusion in permission-granting processes, jurisdictional conflicts and lack of municipal capacity to deal with compliance has created loopholes for the current development juggernaut.

Conclusion

The current trajectory of development occurring on the KZN north coast is proving to be unsustainable. While environmental interests are obvious and widely proclaimed, the delivery of truly sustainable products require controls and regulations which do not easily blend with entrepreneurial activities. ICZM is the key vehicle to facilitate the transformation from unsustainable to sustainable. However, in order for ICZM to occur, there is a need for a long-term and strategic focus. More than half of the respondents interviewed called for a SEA for this area in light of the failure of EIA to deliver truly sustainable development.

Current challenges to implementing SEA in South Africa are: facilitating capacity building and training, providing baseline conditions and information, and improving coordination between various institutional structures (DEAT 2004:12). This case study highlights these aspects, and therefore suggests that the lessons learned from this case study can, to an extent, be generalised as the issues facing other coastal areas of South Africa, in terms of development pressures and management constraints.

However, implementing SEA has proved to be context specific to where it has been implemented and therefore there is a need for a clear understanding of SEA and sustainability concepts among government bodies

and other stakeholders within a particular locality. Among other things, there also needs to be appropriate institutional arrangements between stakeholders, government sectors clarifying their roles and jurisdictional responsibilities over coastal resources and harmonising policies that are in line with clearly defined objectives for this coastline in order to achieve ICZM.

Despite the lack of a specific national framework legislating SEA, one of the frequent recommendations made on implementing SEA is: start doing it! (Therivel & Partidario 1996). Finally, improving capacity in the areas of spatial data handling is essential – SEA that is appropriately integrated with the use of spatial data and analysis can assist in achieving sustainability by informing decision making that contributes to sustainable development (Alshuwaikhat 2005:314).

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Nature-based Sport Events and the Physical Environment: A Case Study of the Halfway-Telkom Midmar Mile

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Introduction

Du Toit (2004) observed that tourism (inclusive of sport tourism) is the top job creator in the world, however, it is also one of the least regulated industries which can have serious consequences for ecosystems, communities and cultures around the world. Tourism is a powerful social and economic force. Additionally, it is a factor in the physical environment. An examination of sport event practices and management in relation to environmental aspects offers opportunities to reflect on the importance of sustainability (addressing and balancing social, economic and environmental imperatives) as well as the implementation of event strategies linked to the establishment of environmental priorities, mobilising and establishing partnerships, identifying environmental threats and benefits, and providing incentives for the greening of events. The main intentions of greening events are to minimise environmental impacts and raise environmental awareness.

Numerous localities are aggressively utilising nature-based recreation and sport events as part of a broader tourism strategy to enhance their image and stimulate economic development. For example, Durban is marketing itself as a sport and events capital. KwaZulu-Natal, currently being marketed as 'The Zulu Kingdom' has several established, successful recurring nature-based tourism sport events such as the Dusi Canoe Marathon, the Mr Price Pro surfing event and the Midmar Mile (a swimming event). Schmied *et al.* (2007) shows that sporting events inspire millions of

people every year. They are important for economic development as well as promoting the image of a destination. However, the increase in the mass popularity of sport events 'brings with it greater consumption of resources (of energy and water, for example), increased emissions (of noise and pollution) and further side effects (such as increased traffic volume)' (Schmied *et al.* 2007:84).

This article critically examines research findings relating to the Midmar Mile event. The main intention is to demonstrate the socio-economic and environmental impacts of nature-based tourism events in relation to broader sustainability imperatives. In terms of environmental impacts three areas are examined: levels of environmental awareness among people attending the events, strategies adopted by organisers to minimise environmental impacts and types of negative environmental impacts associated with the event. The research demonstrates that nature provides an ideal location for tourism events (especially water-based sport events) and tourism events provide an opportunity for environmental education to significant numbers of participants and spectators. Thus, mutually beneficial relationships can and must be established.

The motivation for this study derives from the assumption that sport is an important political, social and economic force. Sport events contribute significantly towards driving economic development that in turn could possibly assist in alleviating poverty in South Africa. The focus of the article is that numerous sport events are linked to the natural environment and are therefore to have impacts on the environmental as well.

Sport Events

Tourism is viewed in South Africa as a key economic driver and a significant contributor to the development of the country. To contribute to development tourism will have to sustain existing jobs and create new jobs. This will require investments. Investments generally migrate to regions that enjoy investor confidence. It is thus important that cities and regions create a positive image for themselves. One of the ways in which this can be achieved is by hosting successful events, especially sport events. Several studies focus on the social, economic and image/marketing impacts of hosting events, including sport events, on a country or specific

location/destination (see for example, Chalip 2006; Kim & Petrick 2005; Ohman *et al.* 2006; Smith & Fox; 2007; Turco *et al.* 2003). However, there is a dearth of studies that focus on environmental impacts and concerns. Special events of all kinds have been increasing in number, size and diversity worldwide (Getz 1991). South Africa has been using this strategy for a while now, for example, it successfully hosted the World Summit on Sustainable Development, the biggest global conference of the United Nations. Furthermore, in the last ten years South Africa has successfully hosted several major sport events including the World Surfing Games, the Rugby World Cup and the Cricket World Cup. In 2010, South Africa will host the largest singe sport event in the world, the FIFA World Cup.

Sport was once primarily a form of recreation and entertainment. It has now emerged as an important political, social and economic force. Sport events are big business and their prominence and impacts are on the increase. Swart and Bob (2007) assert that sport tourism is a niche market that has received increasing attention in recent years. Turco *et al.* (2002) hold similar views as sport becomes more important as economic and cultural phenomena, the relationship between sporting events, venues, and visitors will continue to receive attention from industry segments, trade associations, and host cities. According to Turco *et al.* (2002), tourism is a huge industry and sport tourism is a vital segment of this growing business. According to Delpy (1996), sport tourism is one of the fastest-growing segments of the tourism industry and a relatively new focus in destination planning. The sport activity can include competition and travel for recreation, entertainment, business, education, and/or socialising and the sport itself can be either competitive and/or recreational. Bjelac and Radovanovic (2003) define sport events as events that are characterised by a creative and complex content of sports-like, recreational activities, of entertaining character, performed in accordance with a particular predetermined programme, and that achieve touristic effects and have a serious social and economic importance for the place or region in which they are held. It is now widely acknowledged that sport events contribute significantly towards increasing tourist traffic flows and driving economic development in a locality (Turco *et al.* 2003).

A well organised sport event has the potential to deliver the following benefits to localities or communities (Delpy 1996; Getz 1997;

Turco *et al.* 2002):

- Reinforce a locality's profile and create a positive image for the region as a tourist destination.
- Improve a region's competitive position within a country and globally.
- Make the region more vibrant, showcasing its brand and instilling pride and confidence in the host community.
- Increase community support for events.
- Media coverage of events will provide indirect advertising for the region, perhaps to a wider community.
- Ensure maximum use of existing facilities thus increasing revenue.
- Facilities will be well maintained even for use by locals.
- Enhance the organisational, marketing, and bidding capability of the region.
- Improve the institutional and infrastructural capacity of the region.
- Ensure there is a decrease in negative elements, for example, crime.
- Encourage public/private partnerships.
- Can be used as part of regeneration strategies

The sport tourism industry in South Africa is growing but faces several challenges. There are many performance problems within the sport tourism industry. A crucial challenge for sport tourism stakeholders is to develop sport tourism more effectively as an economic development strategy, more especially a local economic development strategy for cities or regions, as well as ensure that events do not have negative environmental and social impacts. Stakeholders should understand the socio-economic and environmental costs and benefits of sport tourism. Post-apartheid South Africa has experienced a phenomenal growth in tourism, due mainly to the hosting of high profile conferences (such as the World Summit on Sustainable Development) and high profile sport events (such as the cricket and rugby world cups and the upcoming 2010 FIFA World Cup).

Schmied *et al.* (2007) assert that large sporting events each year attract millions of spectators. As indicated earlier, most research on sport events focus on image, economic and social impacts. Environmental impacts

are neglected. Furthermore, the International Symposium on Green Events (2004:7) asserts that experiences in greening events are rarely documented and very seldomly published. The next section examines some of the critical issues pertaining to events and environmental impacts.

Events and Environmental Impacts

Numerous studies, as indicated in the previous section, indicate that event-driven tourism (including nature-based sport events) have the potential to be a powerful social and economic force (Auld & McArthur 2003; Gursoy *et al.* 2004; Turco *et al.* 2003). As Shaw and Williams (2002) indicate, it has the power to contribute towards negative, social, economic and environmental impacts, especially in the host destinations. Some of the negative impacts include economic leakages, cultural exploitation, social exclusion of certain groups and individuals, social problems such as increased prostitution, environmental degradation, and noise pollution. Additionally, it is likely that the spatial and temporal concentration of nature-based tourism events lead to a similar pattern in the distribution of the available jobs and because of the seasonal nature of the employment, only people who are close by are able to benefit from it. Also, economic benefits leveraged from events tend to be concentrated in the hands of a few rather than distributed among the general populace. In particular, the accommodation and hospitality sectors tend to accrue direct benefits associated with tourism events. Notwithstanding its potentially negative consequences, tourism events have come to be closely associated with promoting destinations and contributing to economic development.

The United Nations Environmental Programme (UNEP 2007) states that the relationships between sport and the environment includes both the impact of sport on the environment and the impact of the environment on sport. They further assert that all sports activities, events and facilities have an impact on the environment, creating an ecological footprint whose cumulative impact can be extremely significant and can include pesticides, erosion, waste generation and habitat loss. UNEP (2007) also shows that it is important for sport to be pursued in an environmentally sustainable manner, given that the deterioration of environmental conditions reduces the health, well-being and living standards of individuals and communities as well as

their levels of physical activity. A cleaner environment also encourages people to be more connected to the natural environment and to be more physically active. This promotes healthy lifestyles and improves general well-being. Additionally, UNEP (2007) argues that the inherent link between a clean environment and participation in sport is part of what makes sport a powerful tool for communicating environmental messages and encouraging action to clean up the environment.

Schmied *et al.* (2007) assert that environment and sport are two worlds that are often in conflict. Specifically, they argue that events cause too much noise and traffic, make use of valuable countryside or give rise to high levels of emissions. They also indicate that sport events are attracting more and more participants, spectators and media attention. Thus, 'if event organisers actively address the topic of environmental and climate protection they can reach target groups that either have little interest in or are insufficiently informed about ecology' (Schmied *et al.* 2007:21).

Numerous studies (Bird 1996; Pendleton *et al.* 2001; Smith 2002; Thiele *et al.* 2005) have emphasised the importance of understanding the levels of environmental awareness among users of the natural resource base. Micallef and Williams (2002) also assert that it is imperative that the types of negative environmental impacts associated with nature-based events be understood by event organisers and managers.

Thus, the pressures originating from inappropriately managed infrastructure and tourist activities can impact the receiving natural environment. Negative impacts on terrestrial and aquatic ecosystems include destruction of wildlife habitats (reduction in biodiversity); damage to mangrove swamps and estuaries; pollution of sea and other water bodies; changes in salinity; soil and dune erosion; disruption of soil stability; disruption of nutrient cycles; and inadequate waste management and disposal. There is an urgent need to minimise the negative impacts of tourism and to maximise its positive contribution to biodiversity conservation. It is important to note that the relationships between tourists and natural environments (especially water-based ecosystems) are complex since they often require competing demands (socio-economic versus ecological) to be balanced. Schmied *et al.* (2007) show that large sporting events have inevitable adverse effects on the environment.

Greening Events

Recently, there has been an increase in literature that underscores the importance of incorporating environmental issues in event planning and implementation. This is often referred to as the greening of events. The International Symposium on Green Events (2004:1) states:

> An event can be considered 'green' if it is designed, organised and staged in accordance with sustainability principles, with a special focus on environmental, health and social concerns. The goal is to use as few resources as possible, reduce waste to a minimum, and protect biodiversity and human health. At the same time, opportunities are used for rehabilitating land, improving living conditions, designing sustainable post-event use, saving financial resources and raising awareness among citizens and visitors.

Specifically, the symposium asserts that events that adopt a green approach utilise as few resources as possible which are adapted to available local resources. Waste is minimised and/or recycled and nature, biodiversity, water, air quality and soil are protected. Furthermore, minimal environmental damage is caused while planning and implementing the event. The symposium also illustrates that events, especially nature-based events, provide ideal opportunities to promote green technologies and innovations.

Schmied *et al.* (2007) indicate that the objective of organising sport events in an environment-compatible manner is growing in importance, primarily because sporting events are increasingly being judged by their ecological standards. They state:

> Experience shows that environmental protection in sport leads to a real win-win-situation. The environment and event organisers benefit equally from energy savings and waste avoidance, particularly since the protection of resources also means cost savings and represents a contribution to sustainability (Schmied *et al.* 2007:12).

Greening events are becoming increasing popular and many countries are institutionalising legislation and guidelines to ensure ecologically-friendly

events. A case in point is the 2006 Football World Cup held in Germany which embraced the concept of the 'Green Goal'. The Local Organising Committee (LOC 2006) of the 2006 FIFA World Cup Germany states that in June and July 2006 the world experienced a breathtaking football festival, and for the first time in the history of the World Cup the environment was on the programme. Green Goal, the LOC (2006) asserts, is an innovative and ambitious environmental programme which was successfully carried out at the 2006 FIFA World Cup in Germany, which pursued new paths for large sporting events. The Green Goal was intended to reduce to the greatest extent possible adverse effects on the environment, which is often associated with large-scale sport events such as the FIFA World Cup. The Green Goal programme was also used as an opportunity to sensitise broad sections of the public about environmental and nature conservation beyond the World Cup, and that environmental protection can also be economically worthwhile (LOC, 2006). The Green Goal programme focused specifically on water, waste, energy and transport. The Green Goal progamme is a major aspect of the 2010 FIFA World Cup as well.

The 2008 Beijing Olympic Games is another example of a mega sport event adopting an environmental thrust. The Beijing Olympic Committee of the Olympic Games (BOCOG 2007) states that the International Olympic Committee requires all cities bidding to host the Games to have a comprehensive environmental programme which is followed through during the preparatory phase of the Games. Furthermore, each Games is expected to leave a sustainable legacy and to use the opportunity of the Games to promote environmental awareness, policies and practices. The United Nations Environmental Programme (UNEP) and the BOCOG signed a Memorandum of Understanding in November 2005 aimed at making the 2008 Olympic Games environmentally-friendly—the Green Olympics.

> The Green Olympics logo is composed of people and green trees. In the shape of an interlacing stripe, the green line, made from one stroke, looks like a dense tree crown or a flower in full-bloom filled with vitality and hope. The colour green fully embodies the idea of environmental protection and sustainable development. The lofty tree, formed by the tree crown and the people underneath, represents

> the harmonious unity between human and nature. The Green Olympics Logo is mainly used for activities of Green Olympics communication and education (BOCOG, 2007).

UNEP is also working with the Vancouver 2010 Olympic Games Organising Committee (VANOC) who is organising the Winter Games to develop a Memorandum of Understanding to ensure an environmentally sustainable event.

History of the Midmar Mile

The history of the Midmar Mile is derived from SouthAfrica.Info. (nd). In 1973 some swimmers were not able to travel to East London to take part in the Buffalo Mile because of petrol restrictions. It was suggested that a similar event be held in Natal and the Midmar Dam, Pietermaritzburg was chosen as the venue. Thus, the Midmar Mile was first hosted on 10 February 1974 with only153 male swimmers officially taking part. 1975 saw the introduction of the first female entrants and the number of participants growing to 315 with 105 being women. The event continued to grow and by 1987 the field grew to 3 500 participants and with this achievement the term 'Midmar Mile Mania' emerged. The Midmar Mile continued to grow and began attracting foreign participants with the first foreign swimmer winning in 1998. With this growth many sponsors (for example, Ola, Telcom, Energade, Halfway Toyota, The Golden Horse Casino, Tempest Car Hire, Second Skins, Tourism Kwazulu-Natal etc.) identified with the event and thus ensured its success and continued growth. Currently, because of the huge field (over 15 000), the event is held over two days.

The Midmar Mile is regarded as the world's largest open water swimming event and now attracts over 17 000 swimmers from around the world. The event for this study was The 2005 Halfway-Telkom Midmar Mile which took place on the 12th—13th February 2005 at Midmar Dam.

Location of Midmar Dam

According to SA Places (nd), 'the Midmar Dam and nature reserve, with its large expanse of fresh water, extensive meandering shoreline, open grasslands, good road network, outdoors action and recreation facilities

makes it an exciting family destination'. The Midmar Dam covers an area of 4 600 hectares with a shoreline of over 60 kilometres. It contains the Midmar Resort which covers an area of 2 857 hectares and is situated along the N3 in close proximity to Howick and Pietermaritzburg and forms part of the Midlands Meander Route. The nature reserve features a range of small games species, including antelope.

SA Places (nd) also states that the Midmar Dam hosts several sport events and is frequented during weekends and peak periods by sport enthusiasts who are mainly interested in bicycling, windsurfing, canoeing and yachting/sailing.

Research Methodology

The research utilised both secondary and primary data gathering approaches. The methodology adopted included the implementation of a questionnaire survey to ascertain information from event attendees (both spectators and attendees) during the two days of the event. In total, 200 interviews were conducted (100 on each day) during the event. A purposive sampling approach was adopted to ensure that samples were drawn at various times during the event and at different activity locations. The samples were therefore unbiased in terms of space, time and selection. In addition to the questionnaire surveys, daily volume counts were undertaken. The capturing and processing of data was undertaken using the Software Package for the Social Sciences (SPSS) to generate the necessary tabulations. It is important to note that the survey complemented the study undertaken by Tourism KwaZulu-Natal to assess the socio-economic impacts of the Midmar Mile event. Tourism KwaZulu-Natal (TKZN) was a sponsor of the event and contributed towards marketing the event. This study, commissioned by TKZN, undertook an assessment of the event as a potential benefit to the stimulation and increase in tourism and its socio-economic impacts on the local economy. The socio-economic assessment of the event was conducted by KMT Multicultural Enterprises (KMT 2005).

Data Analysis

Estimates of the Number of People Attending the Event

The volume attendance over the two days of the event was 35 000. The

average number of days people attended the event was 1.3. Thus, the actual number of people attending the event was 26 923 over the two days of the event (KMT, 2005). Thus, the Midmar Mile event attracts a significant amount of people to the dam over a relatively short period. The presence of the people as well as their related requirements in terms of transport, food, seating areas, facilities and amenities, etc. are likely to place demands on the natural resource base and if not properly managed can have serious negative ecological impacts.

Demographic Profile of Respondents

Thirty eight percent of the respondents were males and 62.5% were females. In terms of historical race classification, the event attracted mainly Whites (83.5%). Africans (3%), Indians (12.5%) and Coloureds (1%) were also in attendance. Respondents interviewed ranged in ages from less than 20 years to 70 years. The average age of respondents was calculated to be 34 years. The majority of the respondents (82%) were between the ages of 21 and 50 years old. The average immediate group size of people attending the event was 7.9 persons and ranged from 1 to 60 persons. The groups comprised mostly of friends and family (36%), family members (31%) and friends (20.5%). Other groups discernible were business associates and school groups (6% each). One respondent indicated that s/he was alone. It is important to note that adults were targeted as survey respondents. It was observed by the researcher that groups included children and youngsters.

The event was attended by individuals from a range of income groups. The average income of respondents was R7 398 per month and ranged from less than R1 000 to R22 000. Some of the respondents (9.5%) stated that their income was confidential. Additionally, 18% of the respondents did not earn any income either because they were unemployed, home executives/housewives or students. Occupational categories that were clearly evident amongst respondents were professionals (28.5%), administrators/ managers (13%) and sales/marketing (8.5%).

Almost two thirds of the respondents were visitors (67.5%) with almost a third being local residents (32.5%). Among the visitors, 12.5% were day visitors from other areas in KwaZulu-Natal. The permanent places of residence of the respondents are outlined in the Table below.

Permanent Place of Residence of Respondents (%)

Place of residence	Total (n=200)
Local residents	32.5
Other KwaZulu-Natal areas (day visitors)	12.5
Other KwaZulu-Natal areas (overnight visitors)	12
Other SA provinces outside KZN	40.5
International visitors	2.5

Clearly, the event is attracting a significant number of visitors into the province. The visitors from other South African provinces were from the Gauteng (29.5%), Mpumalanga (4%), Western Cape (3%), Free State (3%) and Northern Province (1%). Foreign visitors were from Botswana, India, United Kingdom, Germany and Swaziland (1 respondent each).

The results reveal that the event was attended by a significant number of individuals from a range of socio-economic backgrounds. This provides an ideal opportunity to embark on environmental, specifically water, education programmes.

A significant proportion of those people who are attracted to the Midmar Mile event are individuals or families with disposable incomes. This bodes well for the economic leverage of nature-based tourism events as these groups are more likely to have disposable incomes which result in an increase in spending at the event and, in the case of tourists, in the area more generally. Understanding income differentiation is important because it reflects the need for different types of accommodation options and activities to be available. Furthermore, income is much more likely to be a determinant of general tastes and preferences for environmental attributes, amenities as well as activities than race or gender. As such, it is probably income and age differentiation, more than anything else, that deserve consideration in differentiated green tourism planning.

Economic Evaluation

The report compiled by KMT (2005) illustrates the direct economic impact of the event on the province's economy by measuring the direct expenditure of people who attended the event. This includes their daily spending as well as the accommodation costs of tourists attending the

event. KMT (2005) states that R 4 013 100 was generated for the local economy in terms of daily expenditure at the event and that R 943 340 was generated by the local accommodation industry from the attendees staying in paid accommodation. Thus, the total revenue generated in terms of peoples' daily expenditure (R 4 013 100) and from the accommodation industry (R 943 340) that can be attributed directly to the event was calculated to be R 4 956 440.

Primary Reasons for Visiting Event Location Area

With the exception of one respondent, the rest who were visitors indicated that their primary reason for visiting Pietermaritzburg was the Midmar Mile event. The main reason for the one respondent was vacation purposes. This respondent, however, also indicated that s/he scheduled their visit to coincide with the Midmar Mile event. The primary mode of transportation to the event for all the respondents was private vehicles (99.5%). One respondent used a rental vehicle. Vehicle travel and parking are key challenges that impact on the natural environment. It was observed on both days of the event that although there were designated parking areas, vehicles were parked in non-designated areas. This was especially the case with 4 x 4 vehicles. It is disconcerting that this type of parking was noticeable even when parking space was available in the designated parking areas. During discussions with some of the drivers who were parking outside the parking areas the main reason forwarded was that they wanted to be closer to the event activities and did not want to walk longer distances. It is imperative that the event organisers plan to mitigate against this type of behaviour which can have long lasting negative environmental impacts.

The main types of activities respondents were attracted to at Midmar Dam were swimming, entertainment and leisure, extreme water sports, shopping, fishing and surfing. Clearly, the majority of the activities are directly linked to the utilisation of the dam resources. The sustainable use of the dam resources therefore becomes prominent.

Factors Influencing Decision to Attend the Event

Most respondents heard about the event via word of mouth (35%), yearly event/ known event (37.5%), watch family/friend participate (19.5%) and newspaper advertisements (5.5%). The majority of the respondents (97.5%)

were satisfied with the information provided regarding the event. Among those who were dissatisfied, respondents stated that the main reason for their dissatisfaction was lack of information about starting times. Forty four percent of the respondents forwarded suggestions to improve the marketing of the event in the future which included more advertising, market outside KwaZulu-Natal and more information about the event. Advertising of a nature-based event provides an ideal opportunity to raise environmental issues.

Future Attendance of the Event

The majority of the respondents (91.5%) stated that they would attend the event if it was held again next year. The rest (8.5%) indicated that they did not know if they would attend the event next year. The vast majority of respondents (85.5%) stated that they had attended the event in previous years. The event thus has a significant following which bodes well for the future of the event. However, the size of the event will continue to place demands on the natural resource base.

Perceptions/ Attitudes toward the Event and Location

The respondents rated their event experience as excellent (28.5%), good (69%), fair (1.5%) and bad (1%). Some of the respondents (22.5%) experienced problems at the event. The main problems experienced were parking and congestion (too many people), poor condition of ablution facilities, lack of sheltered areas, littering, safety and security, registration too long, could not find first aid area, traffic to venue and waves caused by private boats. The responses clearly illustrate that generally vehicles (road and water) are linked to the problems experienced by attendees. Also, the prominence of social and infrastructural problems is noticeable. However, it is important to underscore that the majority of the problems cited could be addressed by appropriate development and management structures.

The positive perceptions of the Midmar dam and the general location were: dam, weather, natural environment/scenery, atmosphere/ entertainment, activities/events, tourist attractions and diverse cultures. The negative perceptions of the dam and general location were: crime and lack of security, dirt/litter, inadequate facilities, congestion and lack of parking. Respondents indicated that the most important positive features of the tourist

destination were the climate and the dam (both natural assets). The main and dominant negative feature is crime, a persistent problem in South Africa generally.

Environmental Awareness Aspects

The main aspects relating to environmental awareness that most of the respondents identified (identified by > 50% of respondents) were:

- Listen to lifeguards
- Littering not allowed
- Night swimming dangerous
- Swim in designated areas
- Importance of biodiversity/nature (both terrestrial and aquatic)
- Take care of children

Additionally, the awareness/familiarity with rules/behaviour among spectators and respondents were:

- Littering prohibited 100%
- Listen to lifeguards 100%
- Take care of children 100%
- Night swimming is dangerous 100%
- Keep change rooms and toilets clean 100%
- Swim in designated areas 99%
- Alcohol prohibited/illegal 99%
- Use of proper swimming attire 95%
- Loud music/noise prohibited 89%

The above results clearly show that the respondents were more aware of rules and behaviours related to social norms and values linked to appropriate behaviour while frequenting the dam. The extent and nature of environmental awareness was limited. There were no environmental education programme, especially in relation to dam life and habitats, involved in the event campaign. It is also important to note that while the majority of the respondents were aware rhetorically of water safety rules, the

actual behaviours observed by the researchers were different. Littering (especially eating and disposing of food), consumption of alcohol, loud music and swimming in non-designated areas were observed. Thus, translating what respondents are aware of into practice is a major challenge.

In relation to perceptions of water quality, 22% of the respondents rated it as excellent, 36% as good and 42% as satisfactory. None of the respondents rated water quality as poor.

Waste Disposal

The researcher observed that there were waste bins throughout the event venue. However, what was disconcerting was the amount of litter, both on land and in the water that was observed. There were several boats and other motorised crafts in the water. Some belonged to lifeguards and race officials while others belonged to spectators. The researcher also noticed several people simply throwing their refuse on the ground and in the water rather than disposing of it in the bins provided. Also, the bins did not encourage the separation of waste so that some of the refuse could be recycled. Most of the waste provided was as a result of the food stalls. The need for environmental education is particularly important to try and curb this practice. Also, the provision of bins for specific recycling products such as cans or bottles will assist in minimising waste and encouraging environmentally-friendly behaviour.

Conclusion

The socio-economic impact assessment of the Halfway-Telkom Midmar Mile indicated that the event attracted approximately 26 923 people comprising a significant proportion of tourists from other KZN areas, other provinces and international visitors. The total revenue generated from the event by people's daily expenditure and accommodation cost was R4 956 440. From the above it can be deduced that nature-based sport events can contribute significantly economically to specific localities if they could successfully host sporting events. Most of the visitors interviewed came specifically for the event. Most respondents were satisfied with the information provided about the event and stated that they would attend future events.

In relation to centralising and funding environmental education and awareness programmes the key issues that need to be addressed are defining whose responsibility it is and what are the effective and appropriate education mechanisms. This requires integrating event and dam management to ensure economic and environmental sustainability.

It is worth recounting the recommendations forwarded by the International Symposium on Green Events (2004: 12) for the greening of events that are particularly relevant in relation to nature-based events such as the Midmar Mile:

- Be aware of the (limited) capacity of existing sewage systems and limit additional event created pressure on the facilities
- Always respect restricted and protected areas and isolate them from any new installations or entrances (event infrastructure)
- Protect nature from brief but massive influxes of people
- Ensure only minimal impact is caused on flora and fauna during all phases of an event (pay special attention to indigenous plants and wildlife, especially in the case of sensitive ecosystems)
- Be especially careful when water-based natural resources (such as rivers, lakes and dams) are being used
- Use the event for making visitors and the general population aware of the beauty (and importance) of nature and biodiversity

In terms of managing waste at sport events, event organisers should include the 3Rs in their planning and implementation strategy: reduce, reuse and recycle. These aspects are particularly important given the Midmar Mile has grown significantly recently in terms of the number of participants and spectators attending the event. The Midmar Mile event organisers should integrate these recommendations in terms of planning and implementation processes.

The Green Goal focus of the 2006 FIFA World Cup held in Germany and the 2008 Beijing Green Olympics clearly illustrate how mega sporting events can provide the platform to integrate and underscore sustainable environment protection as a component of sport events. LOC (2006) asserts that the integration of Green Goal into the planning and organisation of the 2006 FIFA World Cup was an important step for

acquainting the football fraternity with ecological issues as well as providing the environment with a secure long-term foundation in national and international football. The principles encapsulated in the Green Goal and Green Olympics can be applied to sport events generally, including events such as the Midmar Mile.

Sport events, especially those that directly utilise the natural resource base, need to be assessed in relation to environmental impacts. The research should include a cost-benefit analysis (do the economic benefits of the event offset the environmental costs), environmental impact assessments that include research aimed at measuring direct impacts on the natural environment as well as pollution and carbon emissions attributed to the event, and perception studies that examine the attitudes and actions of attendees.

This study reveals that natural environments provide ideal locations for sport tourism events, entertainment and leisure. Simultaneously, sport tourism events provide ideal opportunities for environmental education. If managed and coordinated effectively, a well thought out nature-based tourism event strategy has the potential to bring numerous benefits to aquatic localities such as the Midmar dam. These benefits include promoting environmental education, encouraging integrated and sustainable management practices of natural environments (including clear guidelines on ecosystem management and conservation), the enhancement of destination image, attracting high yield tourists and repeat visitors, driving economic development and improving the quality of life of residents. By linking tourism with environmental education and conservation, we can develop strategies that conserve Earth's vulnerable ecosystems and make a significant contribution to economic development.

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Socio-cultural and Spatial Approaches to Environmental Health in Urban Contexts

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Introduction

Human health is largely determined by the environment in which people live (Glass *et al.* 2006). In contemporary global society there are serious environmental health problems such as indoor air pollution from the burning of biomass fuels, contaminated drinking water, waste disposal, poor housing conditions and environment related stress (Black 2000; Schwartz & Martin 2006). However, the links between human health and the environment are complex (Corvalan *et al.* 1991). Glass *et al.* (2006:454) make it clear in their research that people are exposed to a multitude of influences such as toxic chemicals, physical hazards and pollutants that impact on people's health and their quality of life. These impacts can be direct or indirect, for example, inhaling polluted air or indirect through the consumption of polluted water or unprocessed contaminated food. Due to population growth, industrialisation and urbanisation, environmental hazards are becoming increasingly evident, especially in developing countries (Glass *et al.* 2006). Informal settlements and slum areas pervade cities of developing countries. The author's research in three informal settlements in the Durban Metropolitan area indicated that people live in poor, crowded housing and unsanitary conditions, without access to basic needs such as portable water, sanitation, refuse removal and generally unsatisfactory residential environments that cause risks to people's health. The problem is compounded by people's low socio-economic status. Poor people living in these conditions do not have the power to control nor do they have the inclination to change their living or residential environments, thus increasing

the risk of disease and ill health (Moodley 2002). The magnitude of environmental risk factors is significant as demonstrated by Caincross *et al.* (2003:2) who state that environmental risk factors account for 21% of the overall burden of disease worldwide. Moreover, they assert that about 1.7 million children die each year from diarrhoea associated with inadequate supplies of water, sanitation and hygiene.

To understand the socio-cultural, spatial and environmental influences on people's health, this article utilises a geographical perspective. The adoption of this approach is based on the premise that 'all science tries to make a logical, linguistic reconstruction of reality. This reconstruction is always made in terms of an existing scientific language and within a major (disciplinary) frame of reference' (Lafaille 1993:2). Lafaille (1993:2) goes on to state: 'there is no one reconstruction of reality and similar observations can generate an endless series of interpretations or conversely theoretical interpretations and models can generate their own observations in relation to time, place and context'. Within the disciplinary approach used, this paper is embedded in numerous related contexts such as the spatial, social and the natural environment. Generally though, the most important context is spatial that is, where people are located and how they interact with the environment. Secondly, there is a social context in which health and health care is seen in relation to the nature of society. Finally, the natural environmental context and its healing powers and properties are discussed. These different contexts will assist in describing and explaining health and health care in contemporary society.

Within the geographical perspective, the focus is on the sub-discipline Medical Geography, where, in recent years, there has been a growth in interest in geographical aspects of disease, nutrition and health care systems. The result has been an introduction of competing concepts and definitions to Medical Geography leading to an epistemological debate. Barrett (1986:24) contributes to this debate by asking a fundamental question: 'What is Medical Geography?' By examining various propositions Barrett (1986) concludes that the place of Medical Geography in Geography as a discipline is characterised by the notion of location factors and the environment's influence on health, Therefore, it is easy to establish, according to Barrett (1986:25), that Medical Geography has a place in Geography due to the fact that the primary cause of disease is not found in

the host itself, but the cause of disease is found in the environment as will be elaborated below.

Medical Geography

Numerous lucid statements have been made describing the nature of Medical Geography as a discipline. Emphasis is placed on the basic concept that disease may be regarded as the interaction between agent, host and the environment (Dubos 1965; May 1960). However, Akhtar and Hunter (1991:6) state:

> The discipline of geography does not claim that such dynamic or relational analysis is its exclusive preserve, but what is geography if it is not a discipline that focuses on the analysis of man (human)-environment interactions?

The field of Medical Geography is usually defined as 'the application of geographical concepts and techniques to health related problems' (Akhtar & Hunter 1991:7). Medical Geography studies the geography of health care, the geography of disease and also the geography of nutrition. Studies focus on the lack of health care, the consequences of disease and the attempts to create systems that may restore lost health. There is no direct study of health, but instead, 'meaningful associations are made between health, the quality of health care systems and the environment' (Barrett 1986:26). Reliance is placed on systems related analyses of human-environment interactions through time and over space. Geography is broad ranging and committed to interdisciplinary activities in concept, content and techniques (Philips 1981; Akhtar & Hunter 1991).

Medical Geography is largely an applied and empirical sub-discipline which has developed over several decades (Jones & Moon 1987). A common theme in Medical Geographical studies is the need for dynamic equilibrium between people and their total environment. Here the interactions between physical and socio-cultural factors become vitally important. The way in which humans adapt their behaviour to the changing environment can disrupt the balance and result in the emergence of new diseases or health patterns (Akhtar & Hunter 1991). Stilgoe (2001:243)

reminds us that from the early 1970s geographers such as Yi-Fu Tuan have paid attention to the changing human interactions with the natural and built environments.

According to the stalwarts of Medical Geography (Learmonth 1988, 1991; Verhasselt 1981), the discipline developed methodologically from pure disease mapping to an ecological approach and to spatial analysis. The scope of geographic contributions to health and disease is enormous. Geographers and medical scientists and health professionals differ in their approaches. For example, epidemiologists concern themselves mainly with groups that suffer from particular diseases as epidemiology is the study of the occurrence and distribution of disease usually restricted to epidemic and endemic diseases (Learmonth 1988, 1991; Verhasselt 1981). On the other hand, Medical Geographers concentrate on the region where people are seen in the context of spatial or regional patterns. They tend to look at ground patterns for data extraction and to make inferences. This is called disease ecology and defined by Akhtar and Hunter (1991:4) as 'regional variation in environmental conditions related to disease incidence and prevalence'. The discipline also 'describes, understands and explains spatial variations in health, disease and health care' (Learmonth 1991:51). Attempts are then made to address spatial health problems, define solutions and measure the effects of actions to improve health (Akhtar & Hunter 1991; Singleton 1994).

Since disease and illness vary geographically, Foster (1992:427) is of the opinion that geographers can make a major contribution to reducing suffering and increasing life chances. This is possible if they are able to establish the causal links between specific diseases and the environment. It involves geographers finding marked similarities or differences between a disease pattern and a suspected geographical causal variable. To understand clearly the nature of these dynamics, there is a need clarify some key concepts such as health, public health and environmental health. This is undertaken in the section below.

Some Key Health Concepts

The definition of health is problematic. The traditional way of defining health by the World Health Organisation (WHO) was the absence of disease

or illness. This was a very negative and limited definition that did not indicate what health is. The focus was on physical health issues with little attention being paid to mental, behavioural and social health. To meet these criticisms a broader definition was adopted. In this revised definition, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The WHO also recognised that a high standard of health is 'a fundamental human right regardless of social or economic conditions, religion, race or political affiliation' (WHO 1983:11).

The broadened definition not only stressed the absence of disease but also included non-physical aspects of the quality of life. It includes a tripartite conceptualisation which entails the ability of a person to function in an environment, that is, the mental, physical and social dimensions of health (Kronenfeld 1993). The importance of WHO's definition lies in its conceptualisation of health as a social phenomenon as opposed to the outcome of medical care. The effects of social inequalities on health are also of great importance. For example, in South Africa the highest standard of health care was not attainable by all because political. economic and social inequalities stratified South African society. This determined and still determines illness, disease patterns and health care in the country.

The concept of public health also needs some clarification. The Research Unit in Health and Behavioural Change (RUHBC) (1989:22) considers public health 'as a concept and as an activity as wide ranging'. It is an organised response to the protection and promotion of human health. Concern is with the environment, disease control, the provision of health care, health education and health promotion. The medical model places the individual at the centre of intervention whilst public health focuses on changing individual behaviour to prevent health problems and in this way make improvements. Most current health initiatives emphasise individuals as agents of their own health. This approach is deemed to be ineffective in reducing disease because it draws attention away from social, economic and environmental conditions which create vulnerability to illness and disease. Health promotion is broader as it includes professional practice, policy-making and socio-environmental issues (RUHBC 1989). However, the view that dominated both professional and lay views of reality is clinically orientated and seeks explanation in disease specific models. The majority of disease and the highest causes of mortality are found disproportionately

amongst the least affluent members of society and tend to cluster in areas of deprivation and disadvantage. Trying to change the habits of people in these areas, even if it were successful, would do little to change overall levels of health. The conditions that give rise to health problems would remain the same (RUHBC 1989).

There are three types of individual health behaviour (viz. health enhancing, health maintaining and health damaging behaviour). Health enhancing behaviours are those that are consciously undertaken by individuals to improve health. Health maintaining behaviours are those considered by professionals as behaviour related to prevention. These are independent of the formal medical system, for example, the use of vitamins or self-care. Health damaging behaviours are negative health behaviour such as smoking or drug abuse. These definitions are 'individually based and cannot be applied to collective behaviour but are properties of social systems' (RUHBC 1989:24).

An empirical policy related aspect of Medical Geography (Eyles 1997) which also needs clarification is environmental health. Last (1987:131) defines and helps frame the concept as an:

> Aspect of public health concerned with all the factors, circumstances and conditions in the environment or surrounding of humans that can exert an influence on human health and well-being.

According to Margot *et al.* (2003:669), environmental health is the theory and practice of assessing and controlling factors in the environment that can affect the health of people. Traditionally, the basis of environmental health was the natural and physical sciences such as medicine, chemistry and ecology. Thus practitioners concerned themselves more with the biophysical effects on human health. Environmental health is also 'an essential component of health services as it includes disease prevention, health promotion and health care' (Gordon 1991:5).

The early ideas on present environmental health emerged from the work of Winslow (1920 cited in Eyles 1997:16). According to Winslow (1920), public health is characterised by the science and art of preventing disease, prolonging life, promoting health and well-being through organised community effort for the sanitation of the environment, control of

communicable infections, organisation of medical and nursing services for the early diagnosis and prevention of disease, education of individuals in personal health, and the development of social machinery to assure a standard of living adequate for the maintenance or improvement of health. Environmental health is, therefore, about the prevention of disease and the promotion of health in environments or geographically-defined populations. This includes not only disease prevention and health promotion but also the monitoring of particular environments for adverse impacts on human health (Eyles 1997). Eyles (1997) also demonstrates the importance of traditional applied environmental health practices, especially in urban areas. Housing and neighbourhoods have become significant elements of traditional public health as it impacts on a person's social well-being. Poor neighbourhoods with none or inadequate services and facilities will negatively influence people's health. For example, poor water supply and sanitation may lead to diarrhoea or poor unhealthy living conditions to respiratory infections. In this respect, more and more attention is being placed on sanitation, crowding, zoning, undesirable neighbours and facilities, and people's impacts on the environment. Open fires, home heating, incineration, rubbish dumps, for example, affect residential environments but have different impacts on individual and community health and the general quality of life or well-being of people. The situation becomes even more complex when one analyses the terms health and the environment as discussed below.

The definition of the terms health and environment have sometimes become problematic. Health is often used synonymously with the term quality of life and well-being. Health needs to be seen as a positive state and not only as something which has the potential to improve the quality of life. There is a need for the 'complete physical, social and mental well-being of people' for their effective functioning in society (Eyles 1997:2). The environment has also broadened in scope with emphasis being placed on the relationship between society and the environment. It informs on such issues as the nature of existence, truth and beauty. These worldviews act as partial ideologies that provide an existential orientation to society's members (Dickens 1992). Lynch (1981) suggests three normative theories: cosmic, machine and organic. The cosmic comprises of magical and mystical relations between the environment and the Gods to ensure order and harmony in the cosmos. The machine focuses on the interdependence and

repairable parts whilst the organic rejects the standardisation of the machine and argues for a dynamic, self–regulatory entity. In the organic theory, a balance between diverse elements determines health. This enables the extension of worldviews to include the natural world that is viewed as an ecosystem through which humans could be understood by their relations and impacts on the natural world (Lynch 1981). To understand the dynamic links between the socio-economic circumstances of households, environmental influences, and health and wellbeing of people, there is need to turn to some conceptual models. A review of the literature has drawn attention to numerous conceptual models, the most relevant of these will be briefly explored in the next section.

Conceptual Model of Environment and Health

Placing health issues in relation to environmental influences stands in contrast to the conventional biomedical approach that tends to focus on 'physical health outcomes in relation to access to western medicine' (Beck 1993:41). The environmental health perspective encourages an in-depth understanding of the influence on health of a household's socio-economic context: the socio-economic realities of specific households and communities mediate the interaction of people with their physical environment and health care systems. This relationship is clarified by Songsore and McGranahan (1993:12) who state:

> Household's socio-economic circumstances help determine their members' access to environmental services, exposure to environmental hazards, hygiene behaviour, and capacity to undertake protective measures. Often, it is changes in households' socio-economic status that holds out the best hope for improvements in their environment and health.

Songsore and McGranahan (1993:17) also provide a conceptual model based on the work done by Beck (1993) and Blacker (1991) that elucidates the linkages between the environment, wealth and health. The conceptual logic of this model is that differentials in the population are a function of the interaction of environmental risk factors and socio-economic factors in

specific locations. The rationale is that urban environments are highly contested as different groups and individuals compete for resources and space. In this model, urban spaces are made up of two main aspects:

- the ecological context that is a product of both natural and human created or influenced factors; and
- the prevalence of vectors, pathogens and other hazards that arise from the ecological environment.

The ecological environment includes natural factors such as climate, geology and topology, naturally occurring toxic chemicals, and natural disasters such as floods and earthquakes. The anthropogenic factors include housing type, population dynamics (linked to crowding), adequacy of water and sanitation services, waste disposal methods employed and energy/fuel use (Songsore & McGranahan 1993). Focus is also on the role of social, cultural and economic development as forces which drive ecosystem change at all scales from the local to the global. Attempts are made to link 'health patterns with population growth, resource depletion, environmental deterioration and the cultural and social changes that are the outcomes of globalisation' (Margot *et al.* 2003:671). It is also argued by Songsore and McGranahan (1993:17) that human-beings are both 'biological agents of disease transmission and social agents of stress, violence and substance abuse'. Environmental risk factors are therefore linked to human as well as natural influences that determine levels of exposure to conditions causing ill health.

It is therefore evident that the complexity and magnitude of health issues in cities require the adoption of an integrated approach which considers the wider socio-economic and environmental factors affecting health. Social processes are often of even greater importance in determining the health status of individuals and communities. The political and legal organisation of the policy-making processes can be identified as the major determinant of urban health due to its role in creating possibilities for participation as well as its influence on the content of public policies and distribution of resources (Montiel & Barten 1999).

As early as 1992, world leaders recognised the importance of health and the environment for sustainable development and improvement in the

quality of life. This is reflected in the adoption of the principles of the Rio Declaration and Agenda 21. The central aspect of sustainable development was human health (Corvalan *et al.* 1999). According to Corvalan *et al.* (1999:656), quoting Principle One of the Rio Declaration, 'human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'. Various other international conventions followed which also focused on alleviating poverty and improving health. For example, the Millennium Development Goals (MDGs) adopted by the international community in 2000 focused on alleviating rural poverty. It was recognised by the international community that the foundation of rural livelihoods was the ecosystem which played 'a central role in the health, nutrition and sanitation of rural populations' (World Resource Institute [WRI] 2005:1). Progress towards the key MDGs will be accelerated through improved environmental health conditions, in particular, 'the goal for improved child health, access to water and sanitation and environmental sustainability' (Caincross *et al.* 2003:2).

Caincross *et al.* (2003:2) further state that 'good health is both an end and a means of sustainable livelihoods'. For poor households, health is an essential asset in the pursuit of their livelihoods. However, their home and work environments often threaten their health. 'Improving environmental conditions is therefore basic to the creation of sustainable livelihoods and the elimination of poverty' (Caincross *et al.* 2003:2). The WRI (2005) commenting on the publication, World Resource (2005), states that income from ecosystems can act as a stepping-stone in the economic empowerment of the rural poor. The poor must be able to manage the ecosystem. However, they must be given the power to manage resources that they do not presently have (WRI 2005:1).

There has thus been a major focus on the relationship between development processes and health. Pick *et al.* (2000) show that in developing countries the weakening of economic opportunities and income flows, especially intra-family income flows. This is often accompanied by a weakening of the health status of individuals and families as well as an increase in poverty. Studies pertaining to the impact of HIV/AIDS on individuals and households indicate that changes in the health status can dramatically impact on people's quality of life, including their ability to participate in and benefit from development activities and processes (Bond

1999; Dorrington 2000; Gray 2000). This is because one's health status can influence one's ability to access resources and skills in the development process.

In South Africa, as in the rest of the world, poverty and poor health affect people from different backgrounds including race, gender, age, sexual orientation, location and ethnic differences. However, the extent and nature of poverty and disparity between and among these groups differ considerably. For example, studies show that Africans are disproportionately impacted by poor health and poverty more generally (Bradshaw & Buthelezi 1996; Bond 1999; Curtis and Taket 1996; WHO 2000). A glaring disparity in the South African context is the vast differences between urban and rural areas. Furthermore, research indicates that experiences of poverty and development (including the provision of and access to health care) are highly gendered (Bob 1999).

Werna *et al.* (1999) show that the beneficiaries of health projects where poor and illiterate people are involved are typically characterised by limited participation. They are extremely vulnerable and have limited access to information because of the lack of accountability.Broadly speaking, development initiatives have gone a long way to raise awareness of health issues and place health on the development agenda. However, development initiatives operate within specific social and economic contexts that are not static but constantly changing. According to Doyal and Pennell (1983), capitalist development has meant that the living conditions of people have improved and to some extent ameliorated the physical health of people. Doyal and Pennell (1983) also illustrate that the same process has tended to have negative consequences on the health of populations in developing countries. In both developed and developing countries marginalised groups tend to be the most vulnerable. Additionally, they show that new hazards have been created in developed countries with large scale social, technological and economic changes in its developmental path. Birley (1995: 11-12) provides some excellent examples of the linkages between health and development in the transport, mining, energy, agriculture, public service and manufacture and trade sectors. For example, communicable disease such as HIV and malaria may be transferred along transport routes. Also, lung damage to miners caused by dust and air-borne pollutants through the burning of fossil fuels affects the health of individuals in confined spaces

and crowded cities. It is also evident that many people are still dying prematurely in society and this is related to social and economic conditions. People sometimes cannot adapt to new environmental conditions. Because changes have occurred in the relationship between humans and their natural world, rapid biological adaptation is difficult (Doyal & Pennell 1983).

Health conditions are also rooted in the social conditions of a society. In developed countries, there are two important measures that promote health, that is, improved nutrition and environmental hygiene (Aston 1992). Environmental hygiene comprises of improved water supplies and sanitation to reduce faecally transmitted diseases. In the control of epidemic and vector borne diseases, striking advances can be made as evidenced in China and Cuba (Bradshaw *et al.* 1996). In these countries, environmental improvements clearly show the interconnectedness of health promotion, the political process and the reversal of underdevelopment.

Most people are not aware of the need nor do they have the means to interrupt disease. They are not encouraged to participate in collective activity. People should be encouraged to co-operate in case-finding and treatment to improve environmental sanitation (Gwatkin & Guillot 2000). For example, people should be educated on personal hygiene and ways to treat contaminated water to make it safe for drinking. They should also be taught how to dispose of excreta and other waste safely. They should be conscious of the reasons for undertaking these activities and convinced that it is in their collective interests (Leahy 1996). Another concern identified by Gwatkin and Guillot (2000) is that health care systems tend to be dominated by the State, the medical profession and business interests. These structures and institutions assist in maintaining the system that perpetuates underdevelopment and ill-health. There is an urgent need to change the nature of the medical contribution and create a situation in which health care is no longer a commodity owned by the medical profession. This can only be established by an economic system other than the capitalist system. Only in a few countries has the capitalist system been overthrown and an economic system been implemented to service social need (Sanders & Carver 1985). Changes in health follow rather than precede fundamental social change. However, recent changes and problems in Eastern Europe, for example, illustrate that socialist transitions are highly complex and differential. Furthermore, the impact on health care and general health of populations is

not necessarily better in socialist as compared to capitalist countries. Variations exist between countries with similar political and socio-economic orientations and within countries in relation to individual health, environments and access to health (Sanders & Carver 1985).

The concept of health and illness are complex products of social groups in which they develop. Many factors such as location, political, economic, cultural and phenomenological issues must be taken into account in the social construction of health and illness at micro and macro levels. Variables such as occupation, social class, race, age, gender and ethnicity effect health. The way these factors are mediated through cultural norms and acquire meaning at the individual level have practical implications for health and illness (RUHBC 1989). The reality that is constructed is through human action and cannot exist independently of it. Children learn to see, structure and organise their world from their parents, teachers, the media and the general social environment. The attitudes and judgments that are acquired are not personal and individual but derived from the societal viewpoint (Jones & Moon 1987). An individual's interpretation of his/her bodily state may be related to the search for purpose and meaning generally. It is a form of cosmology in all societies. This worldview extends far beyond the biomedical explanation, that is, only one view of reality (Herzlich & Pierret 1986; Jones and Moon 1987). All members may not accept one worldview. Therefore, the social construction of health and illness takes place with competing cosmologies. Fundamental social change and the alteration of the worldview dominant in a society will be followed by a change in the conceptualisation of health and illness. In addition, certain groups within a society may have the power to determine the dominant form of medical conceptualisation (Unschuld 1986). This is clear in developed countries where the biomedical perspective dominates. Critics such as Illich (1975) and Navarro (1976) claim that scientific medicine has extended to include the social life of people. Illich (1975) calls this process the medicalisation of society resulting in people defining their health problems in medical terms. Navarro (1976) viewed the power of medical groups as emanating from societal forces. Although scientific medicine influences the decisions about human lives, he argues that medicine is dominated by the capitalist system. According to Clarke *et al.* (2003:161), a further shift has taken place in the organisation and practices of biomedicine. This has occurred through the

'integration of technoscientific innovations' which they call 'biomedicalisation'. They state that biomedicalisation 'describes the increasingly complex, multisided, multidirectional processes of medicalisation, both extended and reconstructed through the new social forms of highly technoscientific biomedicine' (Clarke *et al.* 2003:161). With this change health and the management of chronic diseases are individual moral responsibilities that can be fulfilled through such aspects as improved access to knowledge, self surveillance, prevention and self-help. Technoscience also produces new individual and collective identities, for example, DNA profile and high risk profiles (Clarke *et al.* 2003:162). It is important to underscore that this approach does not adequately incorporate environmental concerns and is likely to widen the gap between the haves and haves not in relation to health. The latter is because the approach places emphasis on individual rights and responsibilities but does not consider that much of what is expected at the individual level depends on access to resources and information which are highly skewed in society. In relation to nature per ser, this approach centralises control over nature and exploitation of natural resources primarily for profit.

As mentioned above, health and illness are affected by cultural factors. Culture involves beliefs and customs that a society develops and it is embodied in language as the primary means of communication (Donovan 1986). Anthropologists have a long tradition in studying the medical beliefs and practices of non-western societies using descriptive and qualitative methods. Work undertaken by medical anthropologists focus on indigenous explanations of health and illness, epidemiology and medical ecology (RUHBC 1989). Medical sociologists have used qualitative and observational methods to a large extent. The main trend in this type of work has been survey research and quantitative methods within the biomedical model (Fabrega & Manning 1979; Friedson 1970; Kearns 1993). A classic study is that of Fabrega (1974) who attempted to develop a theory of human disease that includes the criteria by which social groups defined a particular disease, their understanding of disease, behavioural and social effects and the way the disease was expressed socially. He also considered structural factors that were developed to deal with the disease. These included institutions, changes in medical orientation over time and the success of dominant groups in controlling the disease. The cultural complexity of

everyday behaviour also has implications for health and illness, for example, eating habits, diets and nutrition. Different social groups vary in their ideas on food, appropriate food for different ages and the circumstances of members. Generally, social groups also have ideas on the effects of food on health (Eckstein 1980). In the same way, Degefie and Aseffa (2001) show that boiling water from a contaminated water supply is deemed problematic in some contexts because of basic beliefs and customs on water consumption. Boiled water has meaning attached to it. Some people associate it with sickness and do not boil water if they are well. In addition, ideas about domestic cleanliness in relation to sharing food and drink may be influenced by social norms rather than any theory of germs and contagion (RUHBC 1989).

Lay concepts provide important information to understand social construction of health and illness. These concepts are embedded in everyday social life, some of which are not directly health related. This reflects the pluralistic nature of health systems despite the dominance of the biomedical perspective. It is also necessary to break away from biomedical assumptions and adopt a socially-based approach to explore alternate rationalities used by people in their everyday lives (Crawford 1984). All cultures have systems of healing to explain and treat ill-health. Early systems were religious with biomedical systems developing alongside. According to (Gopel 1993:28), the biomedical model is becoming inadequate and 'a variety of new and formerly repressed patterns of explanation, offering a more appropriate approach to human suffering, are making their (re)appearance'. In primitive societies, there is no distinction between humans and the environment. Everything was considered to have a living soul and an inexplicable force determined those who lived. All natural phenomena influenced life and individual spirits harmed humans causing illness. With cultural development, illness was associated with a higher objective by the Gods. Gods punished those who were bad and rewarded those who were good. In order to avoid illness, people had to ask the Gods for mercy, or please the spirits that caused disease by offering sacrifices. Magic was also used to identify and exploit natural phenomena for healing purposes. Remedies to cure illness came from animals, plants, fruits, stones or metals which possessed special powers. Star watching was used to assess the potential impact on people's fortunes and on phenomena such as famines, epidemics,

illness and death (Gopel 1993). Moreover, '… humans and nature are part of a divinely inspired cosmic harmony' (Gopel 1993:33). To restore harmony, healing draws from these natural and cosmic laws. The basic elements of the cosmos are air, water, fire and earth. These elements operate in both humans and nature. Treatment was aimed at restoring the balance between humans and nature.

Frumkin (2001) suggests that nature has the power to heal and also threaten people's health. As Frumkin (2001:234) states, 'contact with the natural world may be directly beneficial to health'. Landscapes that have healing properties include open spaces, grassy vegetation, scattered trees or groups of trees and water. Frumkin (2001) identifies four domains of contact with nature. These are animals, plants, landscapes and wilderness experience. Using various examples from case studies he shows that there is a link between animals and human life and health. Similarly, he contends that plants and natural landscapes make people feel good. He states that 'people react most positively to savannah-like settings, with moderate to high depth or openness, relatively smooth or uniform-length grassy vegetation or ground surfaces, scattered trees or small groupings of trees, and water' (Frumkin 2001:237). Moreover, the natural landscapes he describes decreases fear and anger and increases mental alertness. Attention and cognitive performance also improves. Additionally, wilderness areas have a therapeutic effect. Emotions such as self-awareness, humility and appreciation are brought out from individuals. Frumkin (2001:234) asserts that people 'find tranquillity in certain natural environments—a soothing, restorative, and even a healing sense. If so, contact with nature might be an important component of well-being'. The basis for Frumkin's conclusion is that human biology has been part of the natural environment for a large part of human existence. The idea that nature impacts on human health, he states, has a long history in philosophy, art and popular culture beginning from the time of ancient Greece (Frumkin 2001:235).

Commenting on Frumkin's work, Wilson (2001:241) states that he 'reminds us that other animal species are adapted to the environment in which they evolved…' and humans 'feel an innate preference for the natural environment that cradled us'. According to Stilgoe (2001:243), the work of Frumkin (2001) 'does a great service to many disciplines beyond medicine by emphasising the extent to which humans may have evolved in response to

natural systems and the way such systems promote health'. It is clearly evident from the work of Frumkin (2001) that nature has enormous healing properties. This was recognised from ancient times by people using natural phenomena for healing purposes.

Conclusion

Changes in thinking on health and health care are not a national or local phenomenon. Debates by social scientists at an international level indicate that there has been a shift from medical to health concerns (Kearns 1997; Moon 1995). This is illustrated succinctly by Kearns (1997: 271) who states that:

> As citizens and geographers we are both participants in, and observers of, turbulent times. In the health sector, we witness people disillusioned with a commercial re-orientation, which sees patients re-cast as customers. In modest ways, we witness a striving to reclaim health as a quality rather than a commodity, something less medicalised and more connected to everyday experiences.

There is also an increasing need to be more connected to nature. The determinants of health are multi-factorial because health problems have a political, social, cultural and economic as well as biophysical dimension. It cannot simply be described as the provision of hospital and medical services. Like most complex phenomena involving human-beings, health problems defy compartmentalised thinking and segmented solutions. This is due to the product of myriad interactions within the total environment (Bowling 1997; Hunter 1974). Hence, the need for a holistic approach that takes account of the different factors that influence health. Due to the varying degrees of health care, coupled with various social dimensions (gender, location, class, religion, and ethnicity) that impact on health and health care there is need for transformation of geographies and landscapes linked to health. An endeavour to solve health and health care problems will require innovative and creative solutions. A holistic approach should consider not only the biomedical perspective, but also lay views of people, and the healing properties of nature. Health and environmental concerns should also be part

of sustainable development. There is a dire need to link the physical environment to public health. Public health should be based on equity, efficiency, quality and accessibility with users having a say in and control over the type of services provided (Davies & Kelly 1993; Kaplan *et al.* 1995). Generally, there is a lack of a clearly articulated vision to address inequalities within health care programmes. Problems in implementation, monitoring and budgetary matters are also becoming increasingly apparent. Health policy-makers sometimes tend to ignore environmental data and this leads to a failure to solve public health problems. There is therefore a need to link the physical environment with public health (Black 2000), using the numerous perspectives available to social and natural scientists.

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Rural Women's Relations to Land Resources in KwaZulu-Natal: Issues of Access and Control

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Introduction

Gender, socially constructed relationships between men and women, is a critically important concept that shapes the experiences of specific groups in society as well as the distribution and access of resources among these groups. The question of who gets access to and controls land resources is often highly political and gendered. In rural Africa, studies have shown that access to land resources is critical to food production as well as household stability and continuity. The majority of the rural poor in South Africa are women and children. Additionally, a significant proportion of rural households are headed by females.

This article provides a gendered analysis of African rural women's relations to the environment, drawing from fieldwork conducted in rural communities in KwaZulu-Natal, South Africa. The primary concern of this article is on women and land. This includes aspects of land rights and land use practices as well as an interest in environmental resources. The focus is thus not on land *per se* but the aspects of land that are potentially useful to household and communities such as water, place for shelter, land quality, wood, wild foods, gardens and medicinal plants. In particular, the gendered use of land resources, the ways in which limited and restricted access to natural resources and environmental degradation impacts women's lives as well as women's responses to these problems are highlighted. Some of the concerns are whether development initiatives in South Africa consider and

are able to positively impact the multiple facets of rural women's relationship to the land. An additional consideration is whether existing policies and practices in South Africa challenge social, political and economic disparities that tend to reinforce women's inability to own, access and control resources more generally.

It is important to point out that the primary concern of this article is women and land in the context of widespread and persistent patriarchy in South Africa's rural areas. It is acknowledged that other historical forces such as colonialism and apartheid has played a central role in denying women access to and use of land resources. These processes often reinforced patriarchy at the local level.

A multi-conceptual framework coalesces several themes relating to women's access to and control of environmental resources, including historical dimensions, distributional concerns and culturally-based patriarchal tendencies. Real and long-lasting improvements in women's social, political and economic well-being are directly linked to them having control of and access to land resources such as forests and water. It is essential therefore to understand and critically examine rural women's relations to the land as well as reverse trends that tend to disadvantage and marginalise women. This is critical for women's empowerment and successful rural development more generally.

Rural development strategies that focus on women and environmental linkages are investments in future generations and the welfare of rural areas. The majority of South African women and children reside in rural areas. This also applies to the African continent more broadly where the majority of African women in rural areas are often impoverished and constitute an important source of latent productive potential (Beneria 1992; Claassens 2007; Hoff & Hodne 1994; Wieringa 1994). Cross and Hornby (2002:34) state that in South Africa women heads of households had fewer and smaller plots of land than male heads. Additionally, they were less likely than men to use their land for crop production.

The International Centre for Research on Women (ICRW) (2006:1) states that women own less than 15% of land worldwide and that 'without official title to land and property, women have fewer economic options and virtually no collateral for obtaining loans and credits'. Land and the environment have both economic and social meaning in rural areas. Davison

(1988:3) highlights that despite the symbolic association between women and land and the widespread cultural perception of Earth as 'mother', women only own less than one percent of the world's land. In the last two decades this figure has not changed significantly. South Africa is no exception in this regard. Thus, women have unequal access to land and the environment which impedes development and harms women's wellbeing.

Land and environmental resources more generally are vital rural assets; they diversify rural livelihood options and provide a sense of security in contexts where formal employment opportunities are limited (Bonti-Ankomah 1997:5). The environment and land in particular have both economic and symbolic meaning. As a result, real and long-lasting improvement in women's social, economic and political well-being is directly linked to them having access to and control of more and better quality environmental resources (Agarwal 1996; 1997). Gladwin (2002:1) states that soil fertility is the number one natural resource in Africa and soil quality is generally declining with devastating consequences for poor people generally but rural women in particular.

For most rural African women in South Africa the lack of legitimate access and rights to land and other natural resources are significant. Ahonsi (1995:88) states:

> ... apart from the fact that women make up more than half of the adult population of Africa, they play critically important multiple roles in economic production, social reproduction and the exploitation and management of local natural resources. But they as a group, remain socially subordinated to men and benefit less from the fruits of economic production.

Many studies indicate that women are overwhelmingly responsible for housework and other reproductive responsibilities (Momsen & Kinnaird 1993; Ostergaard 1992; Parpart 1989). Furthermore, women's household labour, reproductive and nurturing responsibilities are often provided on an unpaid basis. Water and wood, for example, are collected generally by women. Domestic labour also contributes significantly to surplus value. Kalabamu (2004:1) states:

> Although women in most parts of southern Africa have traditionally been responsible for growing food crops and, in some communities, building houses, they never owned the land on which they carried out these activities.

Kalabamu (2005:1) further argues that while women were largely excluded from land ownership during the pre-colonial era, patriarchy has since been selective on the type and nature of land rights that women may enjoy.

It is important to recognise from the outset that the relations between rural women and land resources are influenced by specific historical, socio-economic and physical environments under consideration, and are location-specific. It varies with, for example, whether one is focusing on landless rural women in the former homelands, female farm workers or women who own land independently. The nature of women's activities and their varied relationships to land differ significantly across these contexts. Furthermore, the availability and uses of land resources are also influenced by diverse situations. For the purposes of this article, we are mainly concerned with African women in historically disadvantaged rural communities in South Africa.

This article draws from secondary sources as well as primary research conducted in three rural communities in Kwazulu-Natal province, South Africa: Ekuthuleni, Baynesfield and Boiling Fountain. Ekuthuleni and Baynesfield are in the uMgungundlovu District Municipality while Boiling Fountain straddles both the uMgungundlovu and Umzinyathi District Municipalities. An in-depth interview schedule was used to interview 20 women from each of the communities. Additionally, focus group exercises incorporating various participatory methodologies including mental mapping, ranking exercises, gender activities' profiles and Venn diagrams were used. The focus groups comprised of 8-10 women who were interviewed at each of the case study sites. The women were selected purposively to ensure a cross-section of interests, needs and socio-economic experiences. This study incorporates some of the pertinent findings of the research in relation to the issues under investigation.

This article is divided into six sections. The first section provides some conceptual clarifications pertaining to women and land relations. The next two sections critically assess African women's multiple relations to

land resources as well as their control of and access to environmental resources, especially land. The fourth section underscores the importance of land and environmental resources for rural women. The fifth section looks at African rural women and access to communal resources. Finally, concluding remarks are forwarded.

Women and Land Relations: Some Conceptual Clarifications

Gender, property relations, and land need to be conceptually linked. Gender relations to land are rooted in patriarchal systems. Kalabamu (2005:2) asserts that in contemporary academic discourses patriarchy is conceived as a concept for analysing power and kin relationships among men and women in society. The exercise of power is central to the definition of patriarchy:

> … power relations are expressed not only through the exercise of agency and choice, but also through the kind of choices people make … (and which) derive from a 'deeper' level of reality, one which is not evident in daily life because it is inscribed in the taken-for-granted rules, norms and customs within which everyday life is conducted (Kabeer 1999:441 cited in Kalabamu 2005:2).

The connections between gender and property need to consider not only the distribution of property in terms of ownership but who controls it, that is, power dynamics in relation to decision-making and use. This is important in both private and communal property systems. Many studies indicate that gender equality in legal rights to own property does not guarantee gender equality in actual ownership or control (Agarwal 1996; Payne 2004; Rao 2005; Tripp 2004). There is a need to distinguish between legal and social recognition of land rights, and between recognition and enforcement. Also, the distinction between the ownership of land and effective control is important. du Guerny (1997:14) argues that land arrangements can be divided up into physical and rights-based characteristics. Physical characteristics refer to the size and degree of fragmentation, location and quality of the land holding. Rights-based characteristics refer to the rights, security, conditionality and legal status that are conferred on an individual or collective piece of land.

There are different types of rights to land including use, ownership and control. Land resources include the land itself that can be used for cultivation or grazing purposes, as well as forests for foraging, medicinal plants, fuelwood and building materials, natural water sources that include surface water and ground water that can be used for domestic and irrigation purposes, and minerals in the land such as gold. Land can also be used for farming, for residential purposes, for investment, to enhance social status and/or as a source of security. It is clear that access to land and related natural resources is critical to strengthen rural livelihood options and strategies, especially for women who are involved in cultivation, collecting water or fuel, building/ construction, etc. Access to land can be through ownership and use. It can also be through informal concessions granted by individuals to kin or to friends. There are numerous ways that women can have access to land that does not necessarily confer rights to land. Control on the other hand implies the ability to decide how land is used, how its produce is disposed of, whether it can be leased out, mortgaged, bequeathed or sold. In this regard, rights vested in individuals and rights vested in groups need to be separated. The importance of control is stressed by Gasson (1988: 302) who states: 'What women *do* is important but what women *control* is crucial'. Ownership exists when the owner of the land has a title deed specifying a particular parcel of land. Although ownership legally confers to the deed holder property rights, it is possible that actual control over the parcel of land might be in the hands of someone else. For example, an elderly widow might own the land on paper but her adult son makes the decisions pertaining to the management and use of the parcel of land.

African Women's Multiple Relationships with the Rural Environments in which they Live

Agricultural production and food production are increasingly becoming female activities and responsibilities. In some cases women are important agricultural producers of both cash and subsistence crops. Many studies have illustrated that in most cases agricultural activities are highly gendered (Agarwal 1997; Momsen & Kinnaird 1993; Parpart 1989). Women are generally responsible for maintaining food gardens and looking after small animals such as poultry and pigs. In many developing countries women are

the principal producers of food. The majority of women in these areas are immersed in multiple agricultural activities including land preparation, planting, weeding, harvesting, and caring for animals (especially smaller livestock such as poultry and goats). Gladwin (2002:1) specifically asserts that African women on small rain-fed farms produce up to 70-80% of the domestic food supply in most sub-Saharan African societies and also provide 46% of the agricultural labour. The cultivation of crops, especially mixed crops, is more labour-intensive than raising cattle which is generally viewed as male responsibility. Women are also responsible for post-harvest activities such as transportation, food storage, food processing and waste management. Women's involvement in agriculture varies by region of the world, ethnicity and class. Although official statistics are unreliable as a guide to women's participation in agriculture, there are indications that agribusiness has responded to the economic crisis by reducing costs through the feminisation and casualisation of labour (Agarwal 1997; Carney 1993). Family farms and businesses also survive by intensifying female labour.

A key debate in terms of sustainable environmental practices is related to population control. Concern is whether rapid population growth and pressure exacerbates the exploitation of resources beyond the point of sustainability. The North advocates population control in the South while the South argues that environmental problems are attributed to the wealth and lifestyles of the North. Ahonsi (1995:85), writing about gender relations in Africa, suggests that one significant consequence of the continuing relative landlessness of women, especially in patrilineal settings has been women's lack of security. To minimise the risk of divorce or desertion and enhance their old age security, women in such situations tend to have many children in order to have at least one son through whom family security is assured. Thus, poverty-alleviation programmes aimed at reducing rural population growth and family size is threatened in part by women being unable to access and control land. It is therefore questionable whether interventions to control population growth can reduce environmental degradation. Poor families may want more children to diversify incomes as a risk reducing mechanism. On the other hand, the difficulties of maintaining large families could lead to a reduction in family size. Joekes *et al.* (1994:137) stress that most environmental damage has nothing to do with population pressure, but is related to inappropriately specified resource access and use arrangements.

It is also possible that land in women's hands will lead to a different and more environmentally sound use of resources. The Chipko movement, discussed by Agarwal (1996), in India illustrates this issue. The movement was aimed at protecting and regenerating the forests. In the tree planting schemes men preferred fruit trees for cash while women opted for fuel and fodder trees for subsistence. Also, women successfully resisted the axing of oak trees for a government scheme to set up a potato farm. The village men supported the government because of the potential cash benefits.

> These women's direct concern with the protection and regeneration of the forest as a source of 'fuel, fodder, food, fibre, and fertilizer' and of 'soil, water, and pure air', has had significant positive implications for the ecological preservation of the region (Agarwal 1996:37).

Agarwal (1996:37) warns, however, that women's concern with environmental protection needs to be viewed in connection with the prevailing gender division of labour and not in some biological affinity with women and nature.

It is also clear that what is necessarily better for the environment may not be necessarily better for women (Jiggins 1994). A case in point is that more labour intensive crops and mixed cropping systems are often advocated as more environmentally sound practices. Yet, this ultimately increases women's workloads. Thus, it is imperative that women's needs and environmental sustainability be integrated to ensure that the new fetishism with environmental sustainability in poor rural areas does not leave women further disadvantaged as do many other development programmes. This point does not detract from the need to develop policies to pursue more ecologically appropriate and productive farming practices.

Results from the primary research conducted show that although the women exhibited a wealth of indigenous knowledge about their environment (such as knowledge of specific species including edible and medicinal plants and animals, vulnerable areas that are prone to erosion and methods of conserving wildlife), many practices mitigate against sustainable environmental usage. This can directly be attributed to the poverty levels of the communities and their lack of access to sufficient natural resources. A

case in point is that although respondents claimed not to harvest live wood, there was plenty of visible evidence to the contrary.

Women's Control of and Access to Environmental Resources, Especially Land

Payne (2004:170) argues that gender is a key issue in tenure policy and in many countries women do not enjoy equal rights to own or inherit land or property. Claassens (2007:1) asserts that unequal property relations have had far reaching and serious consequences for women. For example, Davison's (1988) study shows that better off women generally have access to more and better quality land than the wives of peasants. Although African patterns of landholding historically were inclusive, nonetheless, the amount and quality of land acquired or inherited depended upon an individual's status and position in a family, lineage or community (Davison 1988:3). Women's access to land is often dependent upon their relationship to men and their marital status. Moreover, the first wife in polygamous households had greater access to land than co-wives. Wives are often given access to land while unmarried women who are prevented from inheriting land in patrilineal societies have little access to land. They must depend upon fathers or brothers to provide them with land or seek wage work elsewhere. In most of Africa, inheritance patterns favour male-to-male patterns, with surviving sons usually inheriting their father's land. Ezumah and Domenico's (1995) study in Nigeria illustrates that women are precluded from inheriting land as a measure to ensure that family land is not dispersed. Yanou (2006:61) argues that the restriction of the Black woman's capacity to access land in South Africa falls within a wider context of the tendency that regards women as unequal to men, specifically the prevalent practice in communal areas to enthrone the male head of household as the only true person and holder of family property. Hansen *et al.* (2005:115) state that generally inheritance patterns are important aspects of tenure that influence how individuals acquire land and related resources such as trees.

Women are therefore generally dependent on men for their access to environmental resources. The control that women exercise over the land on which they produce much of the food remains tenuous, even in matrilineal societies. Inheritance laws make it difficult for women to own their own

land. Ezumah and Domenico's (1995) case study in rural Malawi shows that when husbands died the household property was expropriated from the wives by the respective husbands' families although the wives played a major role in contributing to production. Sharp and Spiegel's (1990) research in South Africa demonstrates that women in households without land often yearn for independence from men, citing the fact that their men are not faithful and are often violent. Women married to men with land sometimes suffer from similar abuse but are often reluctant to leave their husbands. The importance of land, even when accessed indirectly, is crucial for women. Female-headed households in particular are generally economically insecure. Most female-headed households find it difficult to farm since they lack equal access to the means of agricultural production such as land and cattle. Claassens (2007:2) illustrates women's reliance on men in South Africa to access land resources and warns against joint vesting of land rights:

> Much of the lobbying for women's land rights in Africa has focused on joint vesting of ownership between husband and wife as the primary 'solution' to the problems faced by rural women. However, this may not be a sufficient solution for a range of women (in particular for the increasing numbers of women who do not marry) and may, in fact, backfire on single women's living on family land.

Primary research conducted in Kwazulu-Natal illustrates numerous ways in which women are negatively impacted by the gender bias in resource allocation and control. Women's working days lengthen with the depletion and reduced access to forests, water and land. Extra time devoted to gathering reduces time available for crop production and can adversely impact crop incomes especially in communities where due to male migration women are the main cultivators. Women are more directly exposed than men to water-borne diseases. Population displacements result in a disruption of support networks. Gathering of food and medicinal items help them to acquire knowledge about their environment. Thus, limiting access to environmental resources and redistributing low quality land reduce this learning environment. This in turn will undermine the ability of poor households to deal with subsistence crises.

The mental maps compiled by groups of women in each locality under study represent women's perceptions about resource use and control in the community and the household. From the maps, the landscape can be seen as one of gendered conflict, complementarity and cooperation. The control of most land, except for the garden plots, is vested primarily in men. However, labour inputs and responsibility is subdivided between men and women in different contexts. The perception of control is extremely complex. In most of the group exercises women indicated that they shared control. But when asked who decides about what crop is grown or how monies accrued is spent, they stated that it was usually men. Thus, participation may be confused with control.

Men often control meanings attached to property and gender constructs. The private property doctrine that is a fundamental component of capitalism, reduces the earth to a commodity that can be bought and sold. Women, in a patriarchal system, are also viewed as men's property. Both women and land are thus viewed as objects that can be manipulated and controlled. The exploitation of the natural resource base and the exploitation of women are linked.

Blaikie (1989:41) suggests that understanding the political economy of the environment and social change will lead to a greater comprehension of differential gender access to and control over land, livestock, labour and decision-making at the household level. It is at this level that the 'simple reproduction squeeze' (Bernstein 1979:427) is most acutely felt. In African rural areas, women are dramatically and negatively impacted by this process. Carney (1993:329) also shows that as relations of production change and the means of production becomes increasingly scarce, the household comes under economic stress and becomes a more deeply contested terrain. One result, as women strive to meet household responsibilities, is to increase pressure on the land. Blaikie (1989:428) indicates that under these circumstances, the continuous undermining of the resource base results in a cycle of environmental decay that increases rapidly the reproduction costs of the household. Women tend to bear the brunt of this process in the short term as well as the long term as the sustainability of the resource base is threatened. Cross and Horny (2002:28) illustrate that the opportunities and obstacles to women's access to land are inextricably tied to a web of traditional social values, attitudes and stereotypes in communities; the

traditional institutions that support and enforce these values; and the policies, legislation and particular implementation strategies and practices of government-led land reform programmes.

In the case of South Africa, government has embarked on a comprehensive land reform programme. One of the main objectives of land reform is to prioritise historically marginalised groups, such as women, in the provision of land. Some of the main legislative aspects of land reform includes the Land Reform Act 3 of 1996, where labour tenants are provided with grants to purchase land; the Interim Protection of Informal Land Rights Act (IPILRA) (1996) which was intended as an interim measure to prevent changes in land access or tenure rights (in former 'homelands') that may be driven by rural elites attempting to unjustly benefit from any possible confusion as a result of imminent land reform changes; the Communal Property Association Act, 28 of 1996 which creates a legal mechanism enabling a group of people to purchase and hold land collectively; the Extension of Security of Tenure Act (ESTA), 62 of 1997, whose objective is to help people to obtain stronger rights to land they live on, and to land which is situated nearby; the Prevention of Illegal Eviction from and Unlawful Occupation of Land Act, 19 of 1998 which seeks to improve the rights of tenants by prohibiting the unlawful evictions; and the Communal Land Right Act 11 of 2004 which gives the Minister of Land Affairs the powers to transfer ownership of communal land to communities to be held under the new order rights. Additionally, the publication of the Land Redistribution for Agricultural Development (LRAD) policy promulgated in November 2000 has signalled a shift in centralising agricultural development in land redistribution efforts in rural areas. The key objectives of the LRAD are to stimulate growth from agriculture, improve nutrition and incomes, empower young people and women, and de-congest former homelands. The Acts and policies specifically highlight the importance of addressing women's land needs and rights in the context of redressing gender inequalities. However, several challenges arise in terms of addressing traditional patriarchal practices that generally view women as subordinates. It is for this reason that while several laudable policies and legislation are in place and intentions to address gender inequalities are articulated, the key challenges experienced are to translate these into practice.

Resource	Access	Control	Comments
Land	M/F	M	Women tend to have access to less land. Government land registration or titling system tends to reinforce male power.
Labour	M/F	M/F	Generally, men control and access household labour, especially for agricultural production. Women, however, tend to rely on daughters for labour for child rearing, subsistence production and domestic chores.
Water, wild foods, wood and medicinal plants	M/F	M	Location of standpipes and boreholes are often determined by men. Females are primary collectors and managers of water, medicinal plants, wild foods and wood. Females collect these resources from areas that are often under male control and/ or ownership.
Credit/ finance	M	M	Credit is generally not available for subsistence producers who are often women. Land ownership is usually required for loans, effectively limiting most women's access to credit.
Decision-making power	M	M	Generally decisions within households and communities are made by men. Female membership, if it exists, tends to be passive.
Extension	M	M	Where extension services exist they

services			are effectively available to men

M: Male F: Female

Table 1: Land resource linkages: issues of access and control

Table 1 summarises and synthesises the land resource issues identified at the community level in the fieldwork undertaken. It illustrates the prevalence of male domination in terms of both access and control to a range of household resources including land, labour, natural resources, credit/finance and extension services. Where women have access to land, permission is usually vested in male hands and they retain decision-making powers. Women only have control of domestic labour linked to reproductive responsibilities including child rearing and subsistence production.

The Importance of Land and Environmental Resources for Rural Women

There are multiple facets of rural women's relationship with the land, and the importance that many attach to having a field of one's own (Agarwal 1996). For most women access to and control of arable land that is an increasingly scarce and concentrated resource, is the single most important source of security against poverty. Rao (2005:1) specifically states that control over land resources is vital for food security. Land defines social status and political power at the community and household level. Land also plays a crucial role in structuring relationships both within and outside the household.

Cross and Friedman (1997:18) assert that women and men conceptualise land rights and land use differently. They argue that while men value land for its place in organising social and political relationships, women value it mainly for its productive and reproductive use.

> Land was (under older African tenure systems), and still is, used as a means to form and maintain groups, to establish leadership and to obtain followers. Since land has become very scarce, its social and political value, as a vehicle for organisation and power, has tended

> to keep its value as a means of production relatively peripheral (Cross & Friedman 1997:23)

Given the scarcity of available land to African households, even with the land reform initiatives, women have to compete with men for land. The historical forces of vesting land in male hands together with pervasive patriarchal notions that inform social, political and economic processes stack against women winning this battle.

The importance of rural women having even a small field of their own increases their and their families' security against poverty. This aspect emerged repeatedly in the literature (Agarwal 1996; 1997; Carney 1993; Cross & Hornby 2002; Davison 1988; Kabadaki 1994; Kalabamu 2004; Payne 2004; Rao 2005) and responses from the field. For the vast majority of rural households, access to arable land to meet subsistence needs remains the single most important source of household security. Rights in land could reduce households' and women's risk of poverty and destitution. The reasons for this stem partly from the general positive effects of giving women access to economic resources independently from men. It is also associated with specific advantages with rights in land resources. The risk of poverty and the physical wellbeing of women and their children depend on whether they have access to income and productive assets such as land. For female-headed households with no adult male support, the link between well-being and direct access to economic resources is particularly great.

Many households interviewed indicated that they used multiple sources of fuel. This was particularly noticeable among households that had access to electricity but used wood for cooking. Many respondents whose households had access to electricity stated that they could not afford to use electricity. Thus, for poor rural households with limited access to cash income, it is not only accessibility to basic services that is important but also whether households will be able to afford these services. Some wood is also sold by a few women. Thus, the collection and access to wood can be a critical household survival resource that generates income.

Without ownership of land or tenure security women face an uncertain future. Land access helps in both direct and indirect ways. As illustrated earlier, the direct benefits are accrued by utilising land for production purposes, for residential security and to access environmental

resources. The ability of land to enable production is dependent on the type and quality of land available. The indirect benefits of land relate to facilitating access to credit and can also serve as mortgageable or saleable assets during times of severe crises. Furthermore, for vulnerable groups such as widows and the elderly, ownership of land and security of tenure strengthens their bargaining power within the household and the community.

Land, especially a sizable portion of productive land can also bolster household welfare by keeping families intact. For example, in South Africa, past policies and capitalist production, especially in the form of rural-urban migration and labour tenancy on White farms, made it impossible for poor families to remain together. Often, able-bodied adults (especially men) were forced to leave their homes in search of work. This devastating impact of apartheid is still evident in rural areas. Most women are usually left alone to rear their children. Others leave their own children to become domestic workers in urban areas, taking care of other peoples' children. The fragmentation of the Black family in both rural and urban areas has serious social, psychological and political repercussions. In terms of production, family fragmentation has often resulted in labour bottlenecks. Under these conditions, women often bear the burden of taking care of themselves and their families with meagre resources.

Responses from the primary research conducted pertaining to how acquiring land or tenure rights have changed women's lives show that there are both advantages and disadvantages. These are summarised in Table 2.

	Access to land	**Ownership to land**
Advantages	> opportunities for subsistence production: in this regard they being able to support their families was stressed > opportunities to earn an income by selling agricultural crops > access to grazing land	In addition to the points raised in terms of access to land the following issues were highlighted in relation to land ownership. > one woman said that she was happy that no one could evict her > independence and control over decision-making were highlighted.

		> self-fulfilment: one woman stated that she felt like a total person ('I am now really a mother and parent in the true sense of the word') > one woman who employed other women to help her on her farm felt that she was helping other women > were able to control family labour
Disadvantages	> felt that they had no control > women said that they did not feel secure since their land could be taken away from them	> raised concerns over maintenance of the land

Table 2: Advantages and disadvantages of land rights

It is clear from the above table that the respondents linked land access and rights to positive changes in addressing the practical needs such as the potential to engage in subsistence production and generate income. Additionally, land rights in particular seem to provide women with strategic benefits related to a greater sense of security and confidence. This is linked to the idea of having increased control over their lives which often contributes to women's stronger fall-back and decision-making positions. Women perceive their bargaining capacities to be much greater when they are accorded land rights and not just access to land. In terms of disadvantages associated with accessing land, respondents felt that they had no control and that they did not feel secure since the land could be taken away from them. In terms of disadvantages associated with ownership of land, one issue emerged which related to maintaining the land. In addition to concerns raised by the respondents, Rao (2005:1) states that while a right to land for women is a positive development, it may also be leading to an

enhancement of work burdens without much change in terms of status or decision-making authority. This situation, Rao (2005:1) argues, is linked to the decreased contribution of agricultural production to household subsistence in the context of diversified rural livelihoods. Furthermore, men have been able to access the better paid, non-farm jobs, while leaving women behind to manage agricultural production.

The arguments presented above indicate that one of the most serious obstacles to increasing productivity and income of rural women is their insecurity of tenure. Women farmers whose numbers make up close to 60% of agricultural producers in developing countries need access to and ownership rights to land, management control of land-based resources and economic incentives that security of tenure best provides. This will go a long way in ensuring that land is used more efficiently and thereby make a greater contribution to food security. The governments in developing countries, including South Africa, must understand that granting security of tenure for rural poor women is a key link in the chain from household food production to national food security. The provision of land to women could have other indirect effects such as reducing outmigration to the cities. Furthermore, improving women's economic status could generate a higher demand for non-farm goods and services that could contribute to the creation of local jobs in rural areas.

The above discussion clearly illustrates that in rural areas access to land resources is central to the care and production economy, especially in terms of providing shelter, water, fuelwood and subsistence foods. In the context of developing countries a pertinent question is whether the care economy will continue to be in a position to respond to the demands made on it. Evidence indicates that the severe stress placed on the care economy has greatly reduced its ability to function. Women bear the brunt of the overburdening of this sector. Capacity building in the care economy will require serious investments in the form of service provision, adequate remuneration for underpaid work (especially in the informal economy and the domestic sector) and undertakings in human resource development (access to education and training). In the latter instance, a fundamental question is whether human and environmental resource development could be improved if women had greater access and control over land.

African Rural Women's Access to Communal Resources

Communal tenure is taken to imply some form of sharing of land in a system run by traditional authorities. Control exercised over arable land under communal tenure varies significantly by region. Usufruct rights to land are important because in South Africa where land is scarce and access is highly disproportionate, for the vast majority of Africans having access to land use is crucial. Rangan (1997:8) asserts that common property resources that include grazing land, wild foods, medicinal plants, water and wood are particularly important for poorer rural households. A key issue is how the existing structures of land reformation processes are likely to affect the existing common-access lands and natural resource-based extractive activities occurring in the rural areas of South Africa. Walker (2005:313) argues:

> At the heart of current debates on gender policy in land reform lies an unresolved dilemma about where, optimally, to locate rural women's interests within the communities in which they live—in pre-eminently individualist or pre-eminently collectivist constructions of rights and identities, or in some as yet uncertain (still aspirational) synthesis of the two.

Addressing women's rights to land in the context of customary practices remains a contested and complex issue in KwaZulu-Natal.

Wangari (1991) shows that land tenure reforms and land classification programmes have deprived women of access to common gathering areas where firewood, water, fodder, fibre, medicinal plants and wild foods are found. This resulted in increasing women's labour burdens and expenses and decreasing sources of income and subsistence. Rangan (1997:1) illustrates that the current trends of South African agrarian reform policies are likely to have negative impacts on a large number of Black households, particularly women and young adults. These groups' livelihood sustaining activities rely to a much greater extent on natural resource extraction from common-access lands.

The literature clearly indicates the importance of access to communal resources to women (Deshingar 1994; Rangan 1997; Wangari 1991). Many women are able to access communal resources. This depends

on the location of the resources and whether access is granted. It is important to stress that access does not imply control. For most women access to these resources is not secure. It is important to note that in the case studies, water and fuelwood points are not the same for each household. The results illustrate that women and girls are generally responsible for fetching water and collecting firewood. They also manage these resources. Their access to communal resources such as forests, wood and water are critical to household survival. Furthermore, the distance of these resources impinges greatly on women's workloads. Variations in land use can dramatically impact demand for labour, including women's labour.

The importance of access to public or communal land was expressed by most of the respondents. This illustrates that the historical advantages of accessing common property, forests and other public lands remain. This has provided multiple resources to households, especially among historically disadvantaged groups. In periods of food insecurity, for example after a poor harvest or loss of income generating activity, women spend a considerable amount of time gathering and processing wild foods. Their access to these types of resources is important in times of crisis and is generally essential for poorer households. Women in one community said they were sometimes imprisoned or harassed by neighbouring farmers because they were forced to steal water and fuelwood from surrounding farms.

Conclusion

The subject of women and land is particularly neglected in research or in policy. Researchers, policy-makers, and most NGOs (including those that address women's concerns) seem preoccupied with employment as the indicator of women's economic status, to the neglect of property rights. However, as this article asserts, women's struggle for their legitimate share in landed property and resources can prove to be the single most critical entry point for women's empowerment. In legislative terms, women in South Africa are accorded rights to ensure extensive access to and control over land resources. However, the ability to enforce these laws and make them into widespread practices remains elusive. Furthermore, it is important to heed Rao's (2005:11) warning:

> While equitable resource is a legitimate control for women, one needs to remember that this is accompanied by responsibility. Focusing all resources on women, and legitimising this on grounds of food security can end up both alienating men from contributing anything to the household as well as intensifying work burdens for women.

Since gender and land relations are complex, it is imperative that policies and programmes aimed at enhancing women's access and rights to land resources should be critically examined to ensure that they benefit women as well as challenge existing patterns of inequalities. As Rao (2005:12) states, the conception of gender equality must be broadened to include not just women's unequal access to resources, but also women's exclusion or inclusion in decision-making processes and the differential valuations of gendered work in relation to production and reproduction. Cross and Hornby (2002:24) assert that land access needs to be looked at in the context of what it can do for the poorest and most disadvantaged rural women:

> That is, it is often a case of looking at what women can do with land that will improve their lives and their families' lives, and what the impact will be on rural poverty more widely. Tenure security is integral, as is the question of transforming gender roles and relations in the countryside.

The issue of women's land and environmental rights should be given the centrality it necessitates by policy-makers and academics who are concerned with gender and development issues. Meeker and Meekers (1997:35) illustrate that in rural Africa many development programmes, including land reform initiatives, fail to achieve their full potential to benefit women, because of a lack of understanding of how family relationships, landholding customs, household power structures, and other familial and social realities may constrain women's access to limited resources such as land.

This article illustrates that the gendered nature of land and environmental politics at the community and household level cannot be neglected or ignored. This is particularly acute in rural areas in South Africa where high levels of poverty persist and where the re-invention and re-

assertion of tradition is strengthening patriarchy. Furthermore, scarcity of environmental or natural resources is widespread. Based on the arguments above, it is clear that women's relationships to land resources are influenced by land use; land availability; power dynamics; relations of production; size and composition of the household; social status of the woman; household consumption patterns and need; natural environmental considerations; type of ownership or tenure arrangement; historical processes; and cultural practices.

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Review of Policies Impacting on Sustainability of Natural Woodlands in Southern Africa

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Introduction

Willis *et al.* (2000) state that the variety of tenure arrangements as well as management objectives which exist make the savannah woodlands of southern Africa a complex yet essential resource to manage, monitor and sustain on national and regional levels. Furthermore, Shackelton *et al.* (1999) and Watson *et al.* (2001) have identified a lack in policy frameworks which will help in promoting sustainable woodland use. The issues pertaining to natural resource management (including savannah woodlands) in southern Africa are embedded in a myriad of complex concerns that need to be equitably addressed. These include questions of accessibility, natural resource management aspects, ownership patterns as well as policy and legal concerns. For the vast majority of people who live in poverty, especially in rural areas, livelihoods and household survival are directly linked to natural resources.

Woodlands are one of the world's major renewable and sustainable natural resources which are managed for many different reasons and for a wide range of management objectives (Grayson 1993). Woodlands generally form part of the larger savannah biome and, according to the National Forests Act (1998) of South Africa, a woodland is taken to mean a group of indigenous trees which are not a natural forest, but whose crowns cover more than 5% of the area bounded by the trees forming the perimeter of the group (Shackelton 2000). Increasingly, woodlands are now being managed to provide a variety of complementary benefits which include timber

production, economic regeneration, access and recreation and the enhancement of biodiversity. Within the southern African context, woodlands are indispensable to the country's heritage, beauty, wildlife and environment. Shackelton *et al.* (1999) indicate that woodland resources are regarded as extremely important, not only for the maintenance of rural livelihoods but also as a potential contributor to the national economy. It is for this reason that the article focuses on woodlands and policy issues. Furthermore, the research conducted was part of a broader collaborative research programme which focussed on understanding the role of non-timber forest products and rural livelihoods in southern Africa.

This article aims to encapsulate the key policy issues and concerns related to the sustainability of savannah woodlands in southern Africa. By adopting a policy review methodological approach, the current policies and strategic frameworks that are promoting the sustainability of woodlands in southern Africa is undertaken with the intention of promoting efficient and effective woodland management in the future. The uses, values and benefits of woodlands have often been consistently understated, and conservation and management given low priority in government development plans (Munro 2003). It is through informed policy intervention that significant improvements can be achieved in rural livelihoods while concurrently addressing sustainable management of these natural resources.

Policy Context

In any review on policy issues it is always useful to consider the nature and importance of public policy.

> In a democracy it (policy) serves the functions of providing transparency and accountability. Policy in essence becomes a tacit social contract between government and the governed about what is being done, by whom, for what purpose, and within the parameters of public resources and in the public interest (Wildshcut and Hulbert 1998:31).

Furthermore, public policy:

> communicates what a society values, provides guidelines for the many decisions and actions that organisations and institutions take daily, embraces a very broad sphere of governance, confers predictability on the process of government and it provides a basis on which to foresee outcomes and yardsticks, for evaluating the performance of public institutions (Leonard and Thomas 1995:2).

Bob and Banoo (2002) state that there are numerous shortcomings of and conflicts over environmental legislation both internationally and in southern Africa. These include fragmented and minimally enforced environmental legislation and policy, lack of co-ordination, capacity, resources and skills and also inadequate administrative systems to effectively manage, monitor and sustain natural resources globally.

With regard to woodlands in southern Africa, there has been a lack of sufficient information pertaining to the value and status of natural woodlands. This has resulted in the woodlands being controlled by various policies and legislations which have governed this savannah biome in the past. For example, in South Africa's more recent forest developments, the government has taken on the responsibility of ensuring the sustainability of woodland resources by identifying 'woodlands' as a type of natural forest (Department of Water Affairs and Forestry—DWAF 1996). This has drastically changed the government's perspective on the importance of woodlands in South Africa which are home to approximately 9.2 million rural inhabitants and 5.6 million urban inhabitants (Solbrig *et al.* 1991). Thus, being home to a substantial percentage of the population, it is critical that policy-makers and natural resource managers identify the elements which will ensure future sustainability of woodlands as well as provide efficient and effective management through policy in southern Africa.

Policy Review as a Methodology

There has been long term uncertainty over social, economic and political imperatives which have hampered a straight forward policy planning perspective. Furthermore, there has been a lack of social consensus and this has forced planners to develop new policy review tools to incorporate

various types of conflicts among different stakeholders, localities and policy objectives.

In modern policy processes and planning there is a tendency to focus primarily on a cost-benefit analysis. However, despite its many merits it is also recognised in modern analysis that this tool has some limitations, because not all relevant modern policy initiatives can be expressed in the measurement of monetary value (Nijkamp and Pepping 1998). Dovie *et al.* (2006) states that in public policy evaluation, especially in studies of environmental impacts and sustainability issues the implications of using a cost-benefit approach becomes troublesome. This equates to a scenario where all advantages and disadvantages of policy options have to be translated into a common monetary unit. Therefore, qualitative data of an unpriced and intangible nature cannot be included in the decision-making procedure based on the principles of a standard cost-benefit analysis.

To cope with the weaknesses of monetary evaluation, various modern assessment methods have been developed over the last ten years to complement cost-benefit analysis and to offer new perspectives in which qualitative aspects can also be incorporated. Many of these methods simultaneously investigate the impacts of policy strategies on a multitude of criteria which are referred to as multi-criteria methods or multi-assessment methods (Nijkamp and Pepping 1998).

The lack of policy processes recognising the need to incorporate often intangible and unseen values of natural resources, based on basic cost-benefit analysis, has been the catalyst in promoting informed environmental policy reviews around the world and even in southern Africa (Nijkamp 1994). Policy review as a methodology has steadily been gaining prominence as an accepted form of research methodology within modern social research. Reviewing of existing policy documents enables future policy development to improve on current gaps, overlaps and conflicts which are often synonymous within the environmental policy arena.

This article reviews selected international and national policies that directly relate to woodland resources. It is important to note that the review relies heavily on the South African context were more detailed research was undertaken. Moreover, the focus is primarily at the national level. The next section briefly summarises some of the key international policies and related issues.

International Environmental Policy Initiatives: Implications for Southern Africa

Deforestation as an environmental issue has gained global prominence in the past decade. In response to the global threats of deforestation and degradation and the complexity in dealing with the issue, many governments around the world have embarked on international initiatives to promote global co-operation and compliance to ensure the security and sustainability of the world's forests. International environmental agreements and treaties are important as they are the key mechanisms whereby nation-states manage natural resources and co-operate to find equitable and efficient solutions to problems which arise from the inter-relationships between natural and human systems (Geach 1999). The main international initiatives relevant to this study are discussed below.

The Tropical Forestry Action Programme (TWAF)

The TFAP was aimed to promote international donor co-ordination in the development of National Forestry Action Plans (NFAPs). The TFAP has also promoted collaboration between the NFAPs of several countries at the regional level. The success of the TFAP has been relative. Sizer (2000) asserts that many critics of the programme have claimed that it has stimulated minimal institutional and policy reform at the national level and generated insufficient information on the status of forests. TFAP's problems can be traced partly to the programmes inception and launch which was implemented as a sectoral policy exercise and did not take into account the root causes of deforestation. Also, there was a lack of donor investment in most of the proposed national exercises.

The International Tropical Timber Agreement (ITTA)

The ITTA is a binding commodity agreement between the consumers and producers of tropical timber as is governed by the International Tropical Timber Organisation (ITTO). The question of whether sustainable management of tropical forests designated for industrial use is widely viable, has still remained a debated issue by scientists and policy-makers (Agarwal

and Narain 1989). This concern remains true today. Many Non-Governmental Organisations (NGOs) who initially had supported the institution have voiced concerns about ITTO, stating that it is strongly influenced by timber trade interests and politically biased. Poffenberger (1990) states that there had been growing concerns over the ITTO's resistance to embrace new initiatives, such as timber certification, which had been globally called for by various governments.

United Nations Conference on Environment and Development (UNCED)

At the UNCED, much of the environmental thought was focused through the identification of fundamental principles such as those of Agenda 21 and the Rio Declaration which had governed environmental development globally. Southern African countries have subsequently signed and ratified many of the international environment related conventions and agreements. The following is a brief look at some of the main international environmental conventions and agreements and the possible implications they may have on the sustainability of natural woodlands.

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): This convention highlights the importance of conserving wild fauna and flora which are of extreme importance to natural ecosystems of the earth. Under the convention South Africa, for example, has adopted measures to combat smuggling of species to ensure its biodiversity, also promoting sustainable utilisation of species by trading and hunting. Although CITES in theory encourages the conservation of such species and indirectly promotes the sustainability of woodlands, illegal trade is still common in southern Africa.
- Convention on Biological Diversity (CBD): The aim of the CBD is to effect international co-operation in the conservation of biological diversity and to promote the sustainable use of living natural resources worldwide (Department of Environmental Affairs and Tourism—DEAT 1999). It also aims to bring about the fair and equitable sharing of the benefits arising from the utilisation of

natural resources. In theory the above convention bodes well for the woodlands. However, the issues of budgetary and financial constraints need to be considered. Also, implementation of conservation strategies for biological diversity at local and household levels, especially in rural areas, has not as yet been devised.

- United Nations Framework Convention on Climate Change (FCCC): The convention addresses the threat of global climate change by urging governments to reduce the sources of greenhouse gases. Woodlands are significant with regard to this, as they are involved in the process of carbon sequestration. Davidson *et al.* (2003) state that climate policies in the context of developing countries remain marginal and sectoral. What is needed are climate strategies that are congruent with integrated development approaches.
- Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention): The convention aims to promote co-operation among nations to protect natural heritage which is of such outstanding universal value that its conservation is of concern to all people (DEAT 1999). The relevance of heritage sites in the context of woodlands is aptly illustrated in relation to the St. Lucia Wetland Park which enjoys world heritage status. The significance of enjoying such world heritage status and the associated conservation of this area, coupled with promoting increased tourism and creation of employment in communities near this site will ensure some form of protection for the woodlands and promote their sustainability. However, there is already evidence that increased tourism is having the opposite effect, that is, increases in fuelwood harvested to supply lodges and camps as well as craft wood to make curios and other wood related products may have a detrimental impact.
- Convention to Combat Desertification (CCD): The convention is aimed at encouraging integrated development which prevents or reduces land degradation, rehabilitates partly degraded land and reclaims desertified land (Geach 1999). Southern Africa needs to pay particular attention to the CCD as a significant proportion of the land is arid to semi-arid and this makes it susceptible to

desertification and degradation. Furthermore, most of the woodlands on commercial farms and on communal lands are used to graze cattle and overstocking is a major problem in both categories of land use. This has also led to bush encroachment and extensive soil erosion over vast tracts.

Specific Southern African Policies: Implications

This section critically examines relevant policies in southern Africa impacting on woodlands. The focus is on policy statements and strategies that have been extracted with specific relevance to South Africa, Zimbabwe, Mozambique and Botswana. However, it is important to state that there are various unique factors which prevail in each of these countries pertaining to natural resource management but many environmental issues extend beyond the boundaries of one country, or are beyond the resources of a single country to address.

South Africa

Social, economic and environmental policies in South Africa fostered forced removals by conscious land dispossession and the withdrawal of rights to make use of natural resources (Peart and Wilson 1998). Willis *et al.* (2000) indicate that instead of aiding the conservation of natural resources, these policies led to massive poaching of wildlife and uncontrollable destruction of resources vital to local people's subsistence. In addition, Peart and Wilson (1998) assert that historically there has been little ownership of environmental problems or common agreement on causes, as a basis on which to take action. Key South African policies that impact on natural resource management and woodlands specifically are briefly discussed.

The Constitution of the Republic of South Africa provides the state with a development mandate to implement sustainable development and demands that the state addresses, within its means, the realisation of social, economic and environmental rights enshrined in the Bill of Rights (Section 24 to 27). The Constitution does make provisions for an act of parliament to establish structures and institutions to promote and facilitate intergovernmental environmental relations. The National Council of

Provinces is one of these, but no coherent policy framework is yet in place (Lebert and Westaway 1999). Furthermore, the priority which environmental issues are given at an economic policy level provides some indication of the likely commitment of government to implementing environmental policy and the financial support it will provide.

The Department of Agriculture and Land Affairs (2001) states that several policies provide a framework within which conservation, development and sustainable natural woodlands management should take place in South Africa. Additionally, the framework provides guidance for the establishment of sustainable institutional and organisational frameworks for natural resource management and development. However, most of the government structures are still weak and inexperienced in development planning for the sustainable use of natural resources and this includes the use and management of natural woodlands in South Africa.

Given the societal transformation and redress imperatives in South Africa, national and provincial governments tend to focus more on social spending. This has significant implications for the achievement of sustainable development which requires the integration of environmental and development considerations. If less money is made available for environmental considerations there will be a negative impact on woodlands because government officials charged with regulating the management of woodlands will be unable to do so effectively. Therefore, although South Africa has promulgated excellent environmental policy and legislation in recent years, the apparent lack of priority given to environmental issues indicates that these are unlikely to be effectively implemented.

The White Paper on Environmental Management Policy in South Africa is another framework policy (DEAT 1997a). Specific subsidiary and sectoral policies to carry forward the detailed tasks of everyday governance fall within this framework. They subscribe to the vision, principles, goals and regulatory approach set out in the framework policy. The policy applies to all government institutions and to all activities that impact on the environment. Through this policy government undertakes to give effect to the many rights in the Constitution that relate to the environment. They include rights relating specifically to the environment, as well as those relating to governance such as the legal standing of parties, administrative justice, accountability and public participation. The policy furthermore

defines the essential nature of sustainable development as the combination of social, economic and environmental factors. It takes ownership of sustainable development as the accepted approach to resource management and utilisation in South Africa, thus entrenching environmental sustainability in policy and practice.

The government's subsequent development of the National Environmental Management Act (NEMA), together with the White Paper on Environmental Management provide a framework within which all environmental management plans have to be formulated. NEMA was assented to in November 1998. NEMA is regarded as a 'landmark statute' in environmental affairs in South Africa because it is the first 'umbrella' national legislation which endeavours to establish an integrated framework through which most of the currently diverse and fragmented sectors of the environment will be transformed and coordinated (Willis *et al.* 2000).

NEMA does not address woodlands specifically, however, it will have positive implications for the sustainability of woodlands. It clearly addresses, through its various principles and elements, the importance of such aspects like the conservation of biological diversity, civil society participation in environmental governance and co-operative governance procedures, which collectively may well be the mechanisms of overcoming the constraints of the fragmented management of the woodlands in the past.

Several sectoral policies are also likely to impact on woodlands. For example, the White Paper on South African Land Policy (Department of Land Affairs 1997) addresses the issues of land through three main programmes: land redistribution, restitution and tenure reform. Of particular significance with regards to the sustainability for the woodland resource are the programmes of land redistribution and tenure reform. Tenure reform is perhaps the most significant component in terms of the impacts it may have for the sustainable management of woodlands. As with many developing countries in the world, insecure tenure arrangements have led to constraining factors on land-based livelihoods (Shackelton *et al.* 1999). The major assumption is that land reform, especially the redistribution and restitution processes, will move people onto new land. Thus, there will be a decrease in the numbers of people and livestock in the over-populated former homelands. This reduction in the total number of people and livestock will give the former homeland range-lands a chance to recover and will promote

the sustainability of the woodlands.

The White Paper on the Conservation of Biological Diversity (DEAT 1997b) recognises the role of and need for incentives which support the maintenance of biological diversity at user level. It highlights South Africa's unique biological diversity with its variety of genes, species, ecosystems and ecological processes occurring in the country generally and in savannahs specifically. A loss of woodland would result in a loss of some of our world renowned faunal diversity and much of its tourist appeal for South Africa.

Agriculture is one of the principle means whereby natural habitats are converted to other land-uses. South Africa is characterised by a scarcity of high potential agricultural land and a key challenge in South Africa is meeting the food needs of the rural poor. In attempting to provide this basic need for all South Africans, agricultural policy may have significant impacts on the natural woodlands. It has been increasingly recognised in recent years that land-use policies have in the past failed to take into account the inter-linkages between woodlands and agricultural production, and the indirect contribution of forest and woodland resources to the national economy (McNamara 1993). Agriculture poses the largest threat to the woodlands due to land clearance to plant crops and overstocking of cattle that has led to bush encroachment and soil erosion.

The White Paper on Sustainable Forest Development in South Africa (DWAF 1996) is committed to the overall goal of promoting a thriving forest sector, utilised to the lasting and sustained benefit of the total community and developed and managed to protect and to improve the environment. The government has achieved this through the preparation of a strategic plan, the National Forestry Action Plan. Furthermore, the promulgation of the National Forests Act (NFA)—Act 84 of 1998 provides the necessary legislative support for the implementation of the forest policy. The government of South Africa has for the first time taken on the responsibility of managing woodlands by identifying them as a type of natural forest.

The White Paper on Sustainable Forest Development addresses forests of all types, but it also highlights more specific issues concerning woodlands. DWAF recognises the importance between woodland resources and rural livelihoods, and addresses this issue in the section called

'community forestry'. Community forestry has been designed and applied to meet social, household, and environmental needs and to promote local economic development (DWAF 1997). Furthermore, the economic value of woodlands to rural households provides a significant proportion of the incomes generated in these areas and makes the sustainable management of woodlands vital in ensuring the maintenance of rural livelihoods. The main resource base is the natural forests and woodlands, followed by industrial plantations, then home gardens and woodlots. The White Paper also discusses government's involvement in international initiatives like Sustainable Forest Management and development tools like criteria and indicators.

The forestry sector of South Africa has undoubtedly made considerable progress in the past few years with the development of the forest policy and a plan of action. These combined with the necessary legislative support from the Forest Act have changed the way forests and woodlands are now managed and utilised. The need for integration and multi-sectoral approaches is centralised.

Some of the key indicators surrounding natural woodlands which have been neglected in the sectoral policies are a lack of clearly identified management structures, efficient conflict management within woodland areas and a lack of identifying responsibilities for implementation of resource conserving strategies at local levels. Also of significance is the lack of private sector input into natural resource management. Additionally, monitoring and evaluation of woodlands is only on the research agenda of forestry and none of the others policies address these imperatives.

It is important to note that most of the government's policies fail to address the issue of local capacity building. This is crucial given that all natural resources including the woodlands are consumed and utilised at the local and household levels. With a lack in recognising the need to improve local capacities and also trying to change existing practices in woodlands within rural communities the detrimental impacts on the sustainability of the resource will continue unabated.

Zimbabwe

Zimbabwe as a whole is relatively well endowed with woodlands. There are also a range of policies that affect them. The woodlands cover approximately

53% of Zimbabwe's total land area (Forestry Commission 1997). However, the land hosting most of the resources is very unevenly distributed amongst the population.

Zimbabwe's distribution of land, people and woodland can be broken down into four major land tenure categories. These are communal, resettlement, commercial and state-owned land areas. Almost 74% of Zimbabwe's rural population, or a little over half of the total national population, lives in the communal areas which cover 42% of the land area and contain about 43% of the country's woodland and scattered trees (Nhira *et al.* 1998). A further 6% of the rural population live in the resettlement areas which occupy about 8% of the land area. The commercial farms occupy about 31% of the land area, supports 19% of the rural population, and hosts 30% of the woodlands. Clearly, the picture painted is one of inequitable access to land and woodlands which inevitably have many implications for the sustainable management of woodlands and the policies that affect them.

Nhira *et al.* (1998) indicate that the legislation on use and management of woodlands inherited at independence in 1980 reflected the dualistic nature of the colonial period, that is, voluntary self-policing and investment in commercial lands and state enforcement and regulation in communal lands. In an attempt to redress these inequalities, the Zimbabwe government initiated CAMPFIRE—The Communal Areas Management Programme for Indigenous Resources in the mid-1980s. The aim of the programme was to place proprietorship of natural resources in communal lands with local communities, based on the supposition that through direct benefits derived from their management of these resources, communities would perceive a vested interest in their conservation. The programme has enjoyed some level of success with 32 districts (more than a quarter of a million people) engaged in the programme by the late 1990s (Watson & Dlamini 2000). It has served to increase an appreciation for the need to manage woodlands more sustainably due to its focus on local resource use.

Forests and woodlands have not held a prominent position in national development strategies since Zimbabwe's independence. Although forest management was part of the central growth with equity framework it was given minimal priority. Agriculture on the other hand had clear national priority over forestry and other associated land uses. Therefore, the lack of a

national vision of the role for the forestry sector in development is the underlying cause of conflicting approaches to woodland management in Zimbabwe.

The progressive decline in woodland cover has been attributed to both practice related and policy related activities. The most significant direct cause has been agricultural expansion, with 70 000 ha cleared for cultivation annually (Watson & Dlamini 2000). Some of the other direct causes are:

- infrastructural development (dams, roads, power lines);
- industrial uses (brick making, tobacco curing);
- poor land use practices (overstocking, burning too often); and
- firewood and construction material collection.

Chipika and Kowero (2000) state that one of the fundamental issues in the policy context has been the recurring question of land in Zimbabwe. Concerns about land tenure insecurity prompted government to set up the Land Tenure Commission in 1993. In 1994 the commission concluded that radical changes in tenure and rural governance systems in both communal and commercial areas are needed. However, with comprehensive land redistribution, if settlement is not accompanied by support services and effective incentives for conservation, widespread stripping of woodlands is likely to occur due to high levels of productive and reproductive demands on the natural resource base (Nhira *et al.* 1998). Furthermore, Munro (2003) asserts that questions of political will, definitions of property rights, and incipient community conflicts are central to the development of resource management policy in Zimbabwe.

Botswana

Watson and Dlamini (2003) examine the key issues relating to woodlands in Botswana and these are summarized here. Woodland products have been utilised by people of Botswana for a variety of purposes. The significant contribution that woodland products make toward food security and income generation particularly for poor rural households has only been researched over the past two decades and only recognised at national policy level in the past few years.

The major uses of the woodlands in Botswana is that of pastoral use, fuelwood, construction and fencing wood, and other ancillary uses like basket making, worm harvesting and medicines. The woodland products are under greatest pressure from land clearing, harvesting of wood for fuel, construction and fencing. Fuelwood scarcity in particular increases the distances travelled to collect more wood and threatening the sustainability of the woodlands in greater areas.

Botswana's development of policy regarding forests and woodlands had been limited in the past. However, by being a signatory to international conventions like the CBD, CCD and the FCCC, as well promoting the principles outlined by Agenda 21, the Botswana government has committed itself to protecting its natural resources nationally. Several research programmes have been initiated by government or relevant NGOs with a view to identifying ways to reduce the demand for woodland products, especially fuelwood, and promote their long term sustainability for future generations.

The government's capacity to conduct forest research is limited, but modest forestry research initiatives have been made by NGOs and the University of Botswana. However, the most significant realisation to emerge from governments efforts thus far and is an important lesson for southern Africa is that the most effective means of securing savannah products and services is not through an extensive planting scheme, but through multi-sectoral savannah management. There is still a need for improved co-ordination and strengthening of existing institutions in order to improve local capacity to undertake forestry research in Botswana.

Botswana's realisation of its obligation to regulate the transformation of its woodlands is reflected in the culmination of the New Forest Policy that takes general responsibility for the country's forests and woodlands. The New Forest Policy has benefited from the many international experiences on forest policy such as those of the UN forestry principles and lists several objectives.

Mozambique

Cuco (1996) states that almost 71% of Mozambique's land area is described as forest and woodlands. The post-independence development policy of

Mozambique was aimed at stimulating all productive sectors so as to achieve economic self-reliance. The government of Mozambique considered that agricultural development constitutes a fundamental base for the country's economy (Bowen *et al.* 2003). Development policy also included the creation of an independent and advanced economy, with a harmonious development using the natural resources optimally. Within these key strategies, woodlands played a crucial role in the process of economic development for their capability of providing continuous supply of natural resource products, potential for export orientated production; and an important role in contributing to rural development.

Since independence the government proclaimed that all forests (including woodlands) are state property with the natural resources belonging to the people and the government acting as trustee. However, due to the war in Mozambique, the development of policies at local levels was not possible with a large number of people seeking refuge in neighbouring countries.

Presently one of the poorest countries in the world, civil war has led to the huge economic decline and deterioration of the forests. Recognising the need to address these issues, the government implemented the Socio-Economic Rehabilitation Programme in 1990 which recognised that woodlands played an important role in terms of its wood as raw material and as well as providing the diversity of forest products necessary for the different uses within communities.

Since post-independence from 1977-1991, forest policy development had gained steady momentum. Since the signing of the peace accord in 1992 the people of Mozambique returned to their lands, and government's involvement in ensuring sustainable management of its natural resources increased. In order to ensure the implementation of the forestry policy, special attention was given to the creation of capacities for gathering baseline information and strengthening of institutional structures, which collectively aimed to promote:

- formulation and implementation of forestry policy;
- coordination and regulation of production, processing and trade of woodland products;
- undertaking economic and technical studies;

- managing natural woodlands, plantations, wildlife and beekeeping;
- giving technical assistance to the communities; and
- regulation of supply and demand of woodland products.

Unfortunately, none of Mozambique's forestry objectives has had the opportunity of being fully realised. This can be attributed mainly to the short time-scale in which the policy changes have occurred and insufficient monitoring and evaluation of these objectives thus far.

Summary

An assessment of southern African woodland usage in relation to indicators proposed by Nhira *et al.* (1998) which have been formulated from international experiences in the management of natural forests and woodlands is undertaken in Table 1. It is important to note that developing nations around the world have recognised the importance of subscribing to outlined forestry principles as proposed by Agenda 21. However, one of the important points which requires attention and is a lesson for southern Africa is the intimately related issues of land policy and tenure issues. Within southern African, there is lack of clear demarcated boundaries and secure tenure arrangements except for Botswana. This leads to ineffective and inefficient management of the woodlands as these areas have insecure tenure arrangements and the future sustainability of the resource is uncertain. With comprehensive land redistribution, if settlement is not accompanied by support services and effective incentives for conservation, there is likely to be widespread stripping of woodlands as has happened in many current resettlement areas in southern Africa. Another important lesson is the need to implement effective monitoring and evaluation systems. This is urgently required in South Africa, Zimbabwe and Mozambique. Furthermore, in none of the countries examined where management priorities identified and acted upon.

Table 1: Assessment of southern African woodland usage in relation to indicators proposed by Nhira *et al.* (1998)

Indicators from International Experiences	South Africa	Mozambique	Botswana	Zimbabwe
Identifiable agency	X	X	X	X
Ownership patterns of the resource	X	X	X	X
Clear demarcated boundaries	-	-	X	-
Effective monitoring systems in place	-	-	X	-
Extent of resource	X	X	X	X
Recognition of value and use	X	X	X	X
Management priorities	-	-	-	-

Key Concerns/ Gaps and Conflicts in Policies Affecting Woodlands

A review of the current policies and its implications for sustainability of woodlands enables one to draw a number of key concerns about policy and the policy processes in southern Africa. Specifically, the following key constraints emanating from the discussion above need to be addressed.

Conceptual Understanding of the Resource

There is implicit lack in the understanding and importance of woodlands in southern Africa. Many of southern Africa's environmentally related policies do not address woodlands directly (except for forestry) and the economic, environmental and social value is often poorly recognised. This has severe implications for the achievement of sustainable management of the resource which is rapidly declining as result of pressures and changes which are not widely understood. There is an urgent need for improved understanding of

the resource, which if appropriately managed will contribute significantly to sustainable economic development. Also, associated is the lack of access to information with regards to the objectives, mechanisms and intended outcomes of policy decisions to those who are supposed to implement them as well as the wider grouping of those who are affected by them. The format of policy documents which are often poorly communicated can lead to many misunderstandings, confusion and mistrust and negatively impact on the proposed aims and objectives for policy processes.

Lack of Institutional Capacity

One of the main obstacles to implementing environmental policy in southern Africa is likely to be the lack of institutional capacities. There are many institutional structures which are involved in natural resource management and these vary from national, provincial and local government to private companies and NGOs. At national level government departments have lacked the necessary skills, expertise and training required to provide strong leadership. For example, in South Africa the NFAP indicates that DWAF has strong technical but weak social capacities in state forests and almost no involvement in land outside state forests in the management of natural woodlands. At provincial level, capacities have varied as different provinces have given management issues different priorities and emphases that are reflected in how the forests have been categorised as a ministerial responsibility. At the local government level, management of forests and woodland has remained limited with a view to increase future involvement on both state and land outside state forests. The role of NGOs has been stronger on private or communally owned forests with little to no involvement on state forests. Implementation of sustainable management of woodlands is likely to be hampered by inadequate capacities at national, provincial and local government levels with little financial commitment to its development. Therefore, there is a need for capacity building to be incorporated into the policy process itself to establish an institutional framework for co-operative governance in the sustainable management of woodlands.

Responsibilities for Management

Woodland management is closely related to both ownership and user-rights of the resource. Management of woodlands and forests is practiced by those to whom they belong or by those who have access to benefits from them. Generally, woodland ownership in southern Africa can be classified as communal property, private property and government property. However, in practice woodlands in a given area generally come under a mosaic of ownership patterns, which inevitably confounds the responsibilities for overall management and results in conflicting ideas on resource usage. Successful and sustainable management of woodlands is of a major concern in southern Africa given the critical importance of the resource in the maintenance of rural livelihoods. Therefore, management should incorporate a multi-stakeholder approach which begins to engage all sectors in the development process.

Coordination Issues

Governments make repeated commitments toward ensuring co-ordinated approaches in environment development processes. However, the policy structure has led towards an arbitrary sectoral division in responsibility across a wide range of government departments and other agencies. This division in responsibility across the different sectors of government has revealed conflicts and overlaps in natural resource administration in southern Africa. There needs be a holistic review of all policies and a clear picture of what is to be managed, by whom, and at what level in order to promote more efficient co-ordination both within and between government and other stakeholders in the future.

Assessment, Monitoring and Research

Forestry research in South Africa has so far mainly focused on forestry production and utilisation. However, there is a change towards broader perspectives and this will require research efforts that address a wide range of forest functions including ecology, catchment management and socio-economic aspects. It is important that this research can be used for the development of guidelines for future forest management. The assessment

and monitoring of forest activities is also constrained by a lack of relevant indicators, especially within the field of non-timber forest products.

Policy Making Processes

There is a need to share information and promote stakeholder involvement in policy review processes in southern Africa. Although the need to incorporate local knowledge systems in policy development is often recognised, this is rarely practiced through mechanisms which actually allow local representation. National government will need to improve on network building and development of inter-linkages across agencies including international agencies, NGOs, the private sector and community-based institutions. Such networks are intended to improve information flow, avoid duplication, make efficient use of resources, enhance effectiveness and avoid contradictory approaches. Sharing of woodland resources between inhabitants in different land tenure categories, particularly in those areas sharing a border with communal lands will need to be closely looked at in southern Africa. This will provide a viable way to address resource shortages, share management responsibilities and build trust between different landholders.

Conclusion

This article illustrates that there are a range of policies, both nationally and internationally, that impact on the sustainability of natural woodlands in southern Africa. The critique of existing policies indicates serious gaps. Some of these include the lack of definitional clarity about the woodlands, implementation challenges, inability to identify existing as well as potential users of the woodlands, inability to develop policy frameworks that will ensure the monitoring and evaluation of the impacts of the policy more generally, the lack of focus on local capacity building, inability to outline a research agenda that will feed into the monitoring systems, and the inability to integrate conservation imperatives relating to woodland use within the policy frameworks.

Policy and legislation on woodlands is at present both restrictive and contradictory. Apart from the overlaps and interpretative differences, policy

and legislation remain equivocal about the rights of communities to control the utilisation of woodland products and services. The reliance on restrictive legislation has meant that governance arrangements, particularly in communal areas are unable to deal with matters of sustainable resource use (Bob & Banoo 2002). Local authorities, which are charged with many responsibilities are inadequately financed and tend to rely on the services of central governments sectoral agencies which normally have varying agendas and this further exacerbates overlap and contradictions at the local level. The key aspect of concern is that of implementation. Many of the policies articulate laudable intentions. However, generally there is difficulty in translating these policies into practice.

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Invasive Alien Plant Species in South Africa: Impacts and Management Options

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Introduction and Justification

Invasive Alien Plant (IAP) species (commonly referred to as weeds) have emerged as a persistent problem in South Africa. They have dramatic impacts on the natural environment and concomitant implications for human welfare, livelihoods, and quality of life. Biological invasion is a natural process; however, human intervention has accelerated the rate of spread and naturalisation of many species across a multitude of foreign landscapes (Ewel *et al.* 1999:620), which has significantly increased during the last two centuries. Several studies have recognised humans and/or human activities as the driving force behind the introduction, and spread of alien species across ecosystems, with a direct correlation between the intensity of human activities and the intensity of IAP species invasion (Frenot *et al.* 2001:34). Humans are consequently both purposely and inadvertently vectors for the spread of IAP species across South Africa, and across the planet.

This article examines the problem of IAP species in South Africa and the related impacts on biological diversity, ecosystems, and human populations. It critically evaluates how human activities and choices have exacerbated the proliferation of IAP species in specific contexts. Finally, approaches to effectively address the problem of IAP species are forwarded. These include environmental education programmes, environmental legislation/policy interventions, and the use of remote sensing and GIS technologies, which present a coherent set of tools for the identification, characterisation, mapping, and modelling of species' spread and prediction of areas of potential future invasion. The use of these technologies show

promise in assisting land resource managers and natural scientists in better planning and decision-making.

Most academic publications that deal with invasive alien plant species adopt a highly scientific and technical approach, focusing primarily on the biological and eradication aspects. Undeniably, the problem of invasive species is a multifaceted and global issue, affecting both natural and socio-economic environments, and often steeped in cultural and traditional value systems. The impetus for this publication (in a non-scientific journal) is accordingly to provide clear insight into IAP species and alien invasion, and to make individuals, who may be largely unaware of the issue and concomitant risks, to take cognisance of the presented risk and threats and adopt a positive attitude to, and be more involved in, the management (identification, eradication, control, and prevention) of IAP species in South Africa. Invasion by non-indigenous plant species is a real and present threat, a global issue both directly and indirectly affecting current and future human existence. This article contributes to a more comprehensive understanding of invasive alien plants by examining some of the social and management dimensions.

The impacts, risks, and subsequent management approaches articulated in this article have been formulated from an extensive review of the available literature on the subject, with the most relevant issues and approaches being presented. The author highlights the most significant threats presented by invasive aliens on the natural and human environments, and further draws attention to human intervention and technology in the overall management of the risk.

IAP Species in Context: Examination of Impacts and Related Implications

'Alien species are non-native or exotic organisms that occur outside their natural adapted ranges and dispersal potential' (Raghubanshi *et al.* 2005:539). The World Conservation Union (IUCN) defines alien invasive species as organisms that become established in native ecosystems or habitats, proliferate, alter, and threaten native biodiversity (IUCN 2000:5).

Invasion by alien species is a global phenomenon, with threatening negative impacts to the indigenous biological diversity and ecosystems (Vitousek 1990:8) as well as related negative impacts on human health and

well-being (Bridges 1994:392). Invasion by plant species describe the proliferation and persistence of a species to the point that it has significant negative effects in the new (invaded) range (Mack 1996:107). Research is thus a key instrument in understanding and managing alien species and invasiveness (Pino *et al.* 2005:339), motivated not only by the need to mitigate the negative impacts of invasive species, but also to gain an understanding of the process of invasion underpinning fundamentals in ecological theory (Shea & Chesson 2002:170).

'Disturbance is a natural and oftentimes integral occurrence in most ecosystems' (Pritekel *et al.* 2005:1). Invasibility by an invasive alien plant species represents a unique form of disturbance (Pritekel *et al.* 2005:2). Invasibility may be attributed to factors such as the invaded area's climate, the environment's disturbance regime, and the competitiveness of the native species; the actual invasion being influenced by the number of invading species, their biology, and the propensity of the invaded environment to be invaded (Lonsdale 1999:1523).

The spread of invasive alien plant species presents a real threat to global biodiversity and ecosystem functioning (Mooney & Cleland, 2001:5446) and is probably second only to that of outright habitat destruction (Ragubanshi *et al.* 2005:539). The threat is likely to escalate given continued human-induced disturbances (Ewel *et al.* 199:622), with humans not taking cognisance of, and finding mitigatory measures to, their negative consequences.

Many hypotheses have tried to explain the variability in invasiveness between different plant communities, however there is currently no general theory to explain community invasibility (Lonsdale 1999:1534). Davis et al. (2000:528) theorise that invasibility is a result of fluctuations in resource availability, while Thompson et al. (2001:1057) recognise that invasibility is a product of an increase in availability of resources, either through increase or reduction of resources. Studies by Thiébaut (2005) on *Elodea species*, suggest that invasion corresponds primarily to increased resource availability.

Invasiveness of a species involves complex interactions with the invaded environment (Kolar & Lodge 2001:199). Several characteristics of invading species, for example, allelopathy, fire tolerance, competitive ability, vegetative reproduction, and fitness homeostasis and phenotypic

plasticity (Sharma *et al.* 2005: 159-161), have been identified as predictors of invasibility. Invasive species often modify their environments thereby making it more hospitable (Cuddington & Hastings 2004:335), and thus may be classified as 'invasive engineers' (Jones *et al.* 1997:1947).

IAP Species: Impact on the Natural Resource Base

'Commercial forestry based on alien trees is a well established feature of the South African landscape and economy' (Le Maitre *et al.* 2002:144), with species of pines and eucalypts, covering approximately 1.5 million ha. Benefits of these alien plantations include economic development, employment, and foreign exchange through export of forestry products (Le Maitre et al. 2002:144). Unfortunately, these plantations have been associated with considerable negative impacts, most notably, significant reductions in streamflow, and substantial impacts on biodiversity and functioning of ecosystems (Le Maitre *et al.* 2002:144). Of all the alien forest plantations, black wattle (*Acacia mearnsii*), silver wattle (*A. dealbata*), blackwood (*A. melanoxylon*), bluegum (*Eucalyptus globulus*), and cluster pine (*Pinus pinaster*) have the greatest impact on water resources (van Wilgen *et al.* 1997 cited in Enright 2000:238).

Le Maitre et al. (2000:402) report a strong correlation between commercial forest stands and alien invasive plant species invasion in South Africa. Seventy eight percent of the 2.9 million ha invaded by *Pinus* species are attributed to the forestry sector; *Eucalyptus* accounts for 2.4 million ha of invasion, of which 37% attributes to forestry; and *A. mearnsii* has invaded an area greater than 2.4 million ha, of which 10% accounts for forestry.

Alien invasive plants present a serious problem in fynbos in the Western Cape (Le Maitre et al. 1996:161), with species of *Acacia*, *Pinus*, and *Hakea* having altered the biophysical nature of these invaded systems. Le Maitre et al. (1996) highlight that fynbos invaded by pines and wattles are frequently subject to fires. Altered fire regimes are highly problematic, as fires affect the rate of spread of some species, by triggering the release and subsequent germination of seeds (Enright 2000:238).

KwaZulu-Natal is notably the fifth most invaded province by total invaded area. The Western Cape is number one with 3 727 392 ha total area invaded and Gauteng is the least total invaded area (22 254 ha total area invaded) (Le Maitre *et al.* 2000:401). In KwaZulu-Natal, alien plants (most

notable *A. mearnsii* and *A. dealbata*) have invaded an area of 922 012 ha, equivalent to 9.75% of the province, with the coastal zone and midlands recognised as major problem areas (Le Maitre *et al.* 2000:402). *Solanum mauritianum* is the most condensed invader while the acacias are most widespread. *Chromolaena odorata* has invaded a total area of 326 139 ha (43 178 ha condensed) and is very widespread throughout the province, predominantly in the coastal belt, notably Zululand, but is fast spreading inland along the river valleys (Goodall & Erasmus 1996:153).

Latest reports suggest that about 10 million ha, or 8.28% of South Africa has already been invaded (Le Maitre *et al.* 2000:400) by more than 180 invading plant species accruing to a loss of approximately 6.7% of mean annual surface runoff (Le Maitre *et al.* 2002:145). MacDonald *et al.* (2003:61) further suggest that 750 000 ha of invaded land should be cleared annually if the battle against invasive plants is to be won within 20 years. This 20-year effort would, however, come at a projected cost of R5.5 billion (Le Maitre *et al.* 2002:145). Studies based on the National Working for Water Programme (WfW) initiatives reveal that the mean cost of initial clearing and follow-up of a 75–100% IAP density class is approximately R1 000 per ha, excluding the cost of herbicides (Marais *et al.* 2004:99). This equates to hundreds of millions of Rands being allocated annually for IAP management and clearing programmes. Expenditure for WfW operations alone has increased from R25 million during 1995/96 to over R400 million during 2003/04 (Marais *et al.* 2004:98).

Given their eminent threat to biodiversity and ecosystem functioning, invasive alien plant species are of great concern and of focal interest to natural scientists and natural resources managers alike. Alien invasions do not follow a set pattern, is not proportionate in its global expansion (Sanz-Elorza *et al.* 2006:115), nor is the distribution of alien plants equal in any given area (Thiébaut 2005:3386). The continued propagation and establishment of alien invasive plants across new ranges is causing homogenisation of flora (Atkinson & Cameron 1993:447), effecting changes in disturbance regimes (D'Antonio & Vitousek 1992:63), effecting changes in biogeochemical cycling (Vitousek 1994:1870), transforming soil surfaces by altering germination sites and surface micro-climates (Pritekel *et al.* 2005:2), causing severe erosion and degradation of soils (MacDonald & Richardson 1986 cited in Enright 2000:238), and is considered to be a

significant driving force behind global change and species extinction (Richardson & van Wilgen 2004:45).

IAP Species: Impact on Human Welfare and Quality of Life

An interesting definition of a weed is provided by Bridges (1994:392): 'A weed is a plant growing where man (a person) wishes other plants, or no plants, to grow and which has some economic, ecological, or aesthetic implication for man (a person) and/or his (or her) activities'. The key element in this definition is the implications IAP species present for humans. The impact of IAP species on humans is two-fold. Humans are impacted upon by IAP species because they are often ignorant of the severity of the threat that these organisms pose, all too often blinded by trade and economic incentives for importing these species (Baskin 1996:732). However, IAP species may also represent economic, aesthetic, cultural, and medicinal value.

Globalisation has opened avenues for international trade and transport, creating corridors for emigration of species into non-native environments (Ewel *et al.* 1999:620). An associated problem within the shipping industry is the discharge of ballast water at ports around the world. Baskin (1996:733) makes reference to ships as 'floating biological islands'; ships present an opportune vector for species transport, and subsequent naturalisation and colonisation. Explosion in human population has seen increased movement of people around the world with concomitant increase in the spread of IAP species (Jenkins 1996 cited in Ewel *et al.* 1999:621).

Humans are bound to continue to further introduce non-indigenous species into local plant populations, for example, alien species may form the basis for maintaining productivity in agricultural ecosystems, and for horticulture (Ewel 1999:621), while other alien species, for example, *Casuarina equisetifolia* (beefwood) is utilised by the mining industry for dune stabilisation, though it is a serious invader of coastal dunes and sandy sea-shores (Henderson 2001:101). Humans continue to exploit IAP species; timber from pines, tannins from species of acacias, and aesthetic and ornamental value of *Jacaranda mimosifolia* and *Lantana camara* (Chapman & Le Maitre 2001:2). To the local communities in the rural parts of the Drakensberg region of South Africa, two IAP species, namely, *A. mearnsii*

and *A. dealbata*, represent a natural resource—a primary heat source, building material, medicinal extract, and a source of income from the sale of firewood (de Neergaard 2005:217). The duality of the situation is, however, the burgeoning need to clear 'wild' wattle stands.

As noted earlier, forest plantations of alien species have been around since the late 1800s. By the late 1990s, species of *Pinus* and *Eucalyptus* occupied a region of greater than 1.5 million hectares of the South African landscape (FOA, 1998 cited in Le Maitre *et al.* 2002:144). In addition to posing detrimental effects to biodiversity through decreased water availability, serious consequences arise from greatly reduced surface runoff and streamflow (Enright 2000:239). In a water scarce country like South Africa, reduced streamflow, and water levels in dams and reservoirs, threaten the socio-economic status of these regions; rivers and dams maintain an important source of water for human consumption, irrigation for agriculture, and open water for recreation (Le Maitre *et al.* 1996:162). The forestry sector, however, contributes more than 2% to the GDP, and employs in excess of one hundred thousand people (Le Maitre *et al.* 2002:144).

Related impacts of IAP species on humans and human activities include decreased agricultural productivity with concomitant impacts on both crops and animals. This form of impact relates directly to economic impacts accrued through both loss and cost, and may be in the region of billions of Rands (Bridges 1994:394). There is also documented evidence of adverse effects to both human and animal health and well-being, for example, *Parthenium hysterophorus* is known to cause asthma and dermatitis in humans (Bromilow 2001:131) and ingestion by animals (livestock and wildlife) may have far reaching consequences with respect to reproduction, production, and general wellness (Bridges 1994:393). Bridges (1994:393) further points out that IAP species generally create an aesthetically displeasing environment, which often leads to loss in recreational potential.

Intervention and Management Strategies: Approaches to Effectively Addressing the Problem

Rejmánek (2000:497) highlights three fundamental management objectives for IAP species, namely, prevention/exclusion, early detection/rapid

assessment, and control/containment/eradication, which in theory, might be very simple and straight forward to accomplish. Meeting these objectives, however, given the socio-economic and political climate of South Africa, is more a question of policy and technology (Rejmánek 2000:497). Undoubtedly, humans are responsible for the current state of invasion by IAP species across the planet; socio-economic factors being the primary impetus for most invasions coupled with less than adequate treatment (Hobbs and Humphries 1995:767). The responsibility is nonetheless ours to manage and control the current state of invasion, and prevent future threats from invasive species into new environments. The author thus critically assesses the advent of environmental education programmes, environmental legislation and/or policy initiatives, and the utilisation of remote sensing and geographic information systems (GIS) technology as approaches to efficiently and effectively manage the threat posed by IAP species in South Africa.

An Environmental Education Approach

The 1992 Rio Earth Summit brought marked change and realisation to conservation and environmental management strategies in South Africa. This was fuelled by a changing political climate (one towards a free democratic society), and shifts in thinking about conserving and sustainably utilising our natural heritage. Biodiversity consequently became entrenched in many facets of culture, politics, and economics (Wynberg 2002:233).

Volumes of research have since been carried out into the impacts of IAP species on biodiversity, ecosystem functioning, and human and animal health and well-being (as indicated earlier), and methodologies and techniques for management and control. However, Ewel *et al.* (1999:628) point out that research must be coupled with education. Increased ecological literacy will certainly lead to increased public awareness regarding alien species, their introduction, and prevention, and should create an environment for better-informed decision-making with respect to management and control campaigns. The public need to fundamentally understand the ramifications of IAP species such that these ideals can be filtered through policy and legislation (Ewel 1999:628).

One of the fundamental principles of the Working for Water

programme (discussed in further detail below) is education. Specifically, the programme is aimed at educating landowners and the general public (land users) of the impacts relating to IAP species in South Africa (Working for Water 2001:6). A key element of this education strategy is to ensure that nurseries do not stock and distribute non-indigenous species, without special permits. Other avenues for education include training people as auxiliary fire-fighters, and manufacturing poles accrued from tree felling for informal housing and fencing, and manufacturing building blocks from wood chips and cement; both as part of a small-scale business development scheme.

Organisations such as the South African National Biodiversity Institute (SANBI) and the Wildlife and Environment Society of South Africa (WESSA) have adopted the principles embedded in the legislation to educate the public about the need to preserve the natural environment and in doing so, maintain the health and well-being of humans, and indigenous plants and animals. These organisations play a key role in education and conservation programmes. Awareness campaigns like 'Stop the Spread' highlight the need for public intervention in supporting IAP species management and control programmes. The campaign contextualises the impacts in relation to IAP species and the associated costs to society, the economy, and the environment.

An Environmental Legislative/ Policy Programme Approach

Since the early 1930s research has been initiated into the problems associated with IAP species and the management of biological invasions (Richardson & van Wilgen 2004:45). It is now clearly evident that the introduction of many woody IAP species has led to a multitude of negative impacts (Le Maitre *et al.* 2002:144). This is supported by the position that the South African government has taken in as far as IAP species are concerned. In South Africa, under the NEMBA (National Environmental Management Biodiversity Act, Act 10 of 2004) regulations, the government now requires that all organs of state must prepare IAP species monitoring, control, and eradication protocols for areas under their jurisdiction. Consequently, public and public-private initiatives have been established at both national and regional/provincial levels.

In line with the advocacy of the NEMBA, Chapter 5, IAP programmes in South Africa have adopted a strategy to prevent, contain,

control, and eradicate all listed invasive alien plant species. Each approach adopted by the programme is therefore relevant to a specific stage(s) of invasion. As a consequence, many studies have focused on measuring the extent of invasion in the quest to better understand the biological and/or ecological processes of invasion. The dilemma is, however, that each of these studies either focuses on a particular species and/or a particular study area in detail (Richardson & van Wilgen 2004:48). Clearly there still exists an eminent need for multi-species, regional surveys.

On 1st June 1984, regulations were promulgated in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983 (CARA). CARA provides for the protection of natural vegetation and combating of weeds and invasive species, and as amended (30 March 2001), boasts a comprehensive list of weed and invader species that is divided into three categories, namely,

- **category 1** are the worst invaders; declared weeds, for example, *Acacia longifolia, Hakea gibbosa* and *Harrisia martinii*;
- **category 2** are recognised as problematic species but have some commercial and/or beneficial function, for example, *Acacia dealbata*, *Eucalyptus grandis* and *Pinus halepensis*; and
- **category 3** species, for example, *Morus alba, Ipomoea indica* and *Ailanthus altissima*. These are generally the ornamentals but maintain the potential to invade.

CARA maintains specific directives as per the management and regulation of all three category species.

The promulgation of the National Water Act, Act 36 of 1998, reserved the condition that a portion of South Africa's available water resources be reserved for human requirements, and also be made available to maintaining natural ecosystems. Subscribing to a specific code of conduct, in line with the principles of the Water Act, the forestry sector maintains riparian zones and non-afforested areas as IAP species-free zones, and riparian zones as non-afforestation zones (FIEC, 1995 cited in Le Maitre *et al.* 2002:144). However, given the extensive nature of the forestry sector, IAP species encroachment on plantations and invasive spread from within plantation areas are unquestionable and require management intervention. As

is evidenced by the past, the commercial forestry sector has been the predominant vector for IAP species invasion and spread, attributed to poor management practices and lack of awareness (Enright 2000:238). This current spate of invasion attributed to the South African forestry sector is ironic given their adoption of the principles of the United Nations Conference on the Environment and Development (UNCED) (Rio 1992), regulated by the White Paper on Sustainable Forest Development, and the National Forests Act, Act 30 of 1998 (Bethlehem 2002:1).

The national 'Working for Water' (WfW) programme, initiated in 1995 under the auspices of the Department of Water Affairs and Forestry (DWAF) and vested with the responsibility of management and control of IAP species, has since conducted many projects across the country (Richardson & van Wilgen 2004:45). A significant component of the WfW programme's impetus and success may be attributed to its ability to assist in poverty alleviation, capacity building, and job creation (Working for Water 2001:3), whilst concurrently monitoring, evaluating, and controlling IAP species spread and invasion. In 2000, the programme employed more than 20 000 people, of which 54% were women, and 26% were youth, and managed a budget of R250 million (Working for Water 2001:3). A cost-benefit analysis of the programme at sites across the country revealed that the programme was efficient, despite competition with other government-funded organisations for limited funding (Hosking and du Preez 2004:144). The long-term success of the programme does, however, rely on the premise that adequate funding be ensured for the duration of the programme, and that biological measures form an integral long-term component of the endeavour, so as to prevent reintroduction of IAP species in cleared areas (Zimmermann *et al.* 2004:38). At a provincial scale, government departments and other State agencies such as the KZN Department of Agriculture and Environmental Affairs (DAEA), Umgeni Water, Ezemvelo KZN Wildlife, as well as municipalities have adopted the common goal of addressing the socio-economic and environmental impacts associated with IAP species.

A Technology-led Approach: Remote Sensing and GIS

To effectively manage and control invasive non-indigenous plant species, and protect and preserve the local biodiversity and ecosystem functioning,

managers require accurate and timely spatial information to delineate the location, spatial extent, and intensity of the invasion (Johnson 1999 cited in Lawrence *et al.* 2005:1). This spatial information, acquired through remote sensing techniques, assists managers in monitoring the efficacy of current management and control strategies, monitoring possible future invasions (risk assessment), and assists in identifying target species and areas for clearing (Underwood *et al.* 2003:150).

Remote sensing may be defined as the acquisition of data about an object(s) on the surface of the earth, without the observer being in physical contact with the object(s) itself. The simplest form of remote sensing is the human eye, in which the eye acts as the lens and the human brain the processing centre that creates an image. The first commercial earth-observing satellites became available subsequent to promulgation of the US Land Remote Sensing Act of 1992 (van der Meer *et al.* 2002: 27). Currently available remote sensing systems include air-borne, satellite/space-borne, radar (radio detection and range), and lidar (light detection and ranging); the system employed being dependent on the intended use and data requirements of the investigation.

Remote sensing has been recognised as a technique to measure and map vegetation (Lawrence & Ripple 2000:2742) and hence a tool to map invasive plant species. Given its many advantages, for example, multi-temporal coverage and cost effectiveness (Kokaly *et al.* 2003:437) as well as being able to provide a synoptic view of the earth's surface, it is favoured as the tool of choice in natural resource and land use management, largely replacing traditional field surveys (Kokaly *et al.* 2003:437). Remote sensing provides a practical approach to studying varying terrains, particularly inaccessible environments, provides a multitude of sensor systems at varied spatial resolutions, alleviates spatial heterogeneity because of its broad view, and attributed to the multi-date nature of digital imagery; is ideal for time series/multi-date analysis applications (Joshi *et al.* 2004:1).

The use of digital optical remote sensing for vegetation mapping has since been widely applied (Kokaly *et al.* 2003:438). Digital imagery offers automated image processing and large spatial coverage (Underwood *et al.* 2003:151), moderate spatial resolution for community-level mapping (Dewey *et al.* 1991:479), and high spectral resolution for species-specific classification and mapping (Underwood *et al.* 2003:152). Several studies

have, however, exploited digital remote sensing technologies to identify and map alien invasive plants: Lawrence *et al.* (2005) utilised hyperspectral imagery to classify spotted knapweed (*Centaurea maculosa*) and leafy spurge (*Euphorbia esula*) in southwest Montana rangeland in the United States; Peters *et al.* (1992) identified infestations of broom snakeweed (*Gutierrezia sarothrae*) using advanced very high resolution radiometer (AVHRR) and normalised difference vegetation index (NDVI) data; and airborne visible/infrared imaging spectrometer (AVIRIS) data was used to study vegetation in Yellowstone National Park (Kokaly *et al.* 2003).

Mapping the type and extent of plant invasions, as well as predicting their potential impacts and/or risk to the new range, requires accurate and timely assessment and modelling of their disturbance patterns (Joshi *et al.* 2004:2). With the advent of a Geographical Information System (GIS), the technology has been applied to understanding and mapping out the relationships between the inhabitation, spread, and establishment of alien invasive species in new environments, and their spatial heterogeneity across ecosystems (Pino *et al.* 2005:340).

A GIS is computer-based system operationalising the capture, storage, retrieval, analysis, and display of spatial data. This spatial data is primarily acquired through remote sensing and photogrammetry, thus making remote sensing an integral component of a GIS (Skidmore 2002:4). Some of the key questions addressed by a GIS include location (what is at…?), condition (where is it…?), distribution (what is the distribution/pattern…?), trend (what has changed…?), and routing (which is the best way…?) (Skidmore 2002:5). Given the analytical capabilities of a GIS, it is widely and increasingly utilised as a planning, management, and decision-support tool, particularly within the environmental and conservation sciences (Skidmore 2002:5).

GIS is now utilised extensively in the field of ecological surveying and modelling presenting a coherent set of tools for the input and analysis of spatial data (Skidmore 2002:5) and for the modelling of complex habitats (Skov & Svenning 2003:584). The monitoring and mapping of the biophysical and ecological characteristics of invasive species may thus be successfully accomplished through the utility of integrated remote sensing and GIS technologies (Skidmore 2002:5).

Discussion and Conclusion

Education is an integral part of building a well-informed society, which can make better, more well-informed decisions. Environmental education around human interventions to spread, and the related impacts of IAP species to the animals, plants, and humans alike, need to be escalated and subsequently introduced at all levels of society. Although much work has already been completed at the national and provincial levels by agencies such as WfW, and the KZN branch of the DAEA, much work has yet to done at the grassroots level. Campaigns such as 'Stop the Spread' need to become more prominent and more prevalent. Certainly, funding needs to be sourced more aggressively, given the South African context where limited finances need to be distributed across a plethora of priority needs.

Although South Africa boasts and subscribes to an extensive array of international and local policy and legislation, we often lack the capacity to enforce policy due to socio-economic and/or political constraints. Millions of Rands are spent annually on management and clearing efforts, which could otherwise be more efficiently spent, should due-diligence quotas be enforced upon landowners and public land users, through strategic policy intervention. CARA previously vested landowners with the responsibility of maintaining their properties IAP species-free, but attributed to a lack of financing and public and political will, diminished policy enforcement ensued.

The effective and efficient management of invading species certainly demands an integrated, strategic, well-structured, and coherent approach if we are to one day obviate such a threat. Spatial technologies afford a suite of tools that provide for an integrated approach to biodiversity, environmental appraisals, and land and resource management.

Albeit the extensive use of remote sensing across may parts of the world, its use in the management of alien invasions in South Africa has been largely unexploited. This may be largely attributed to a general lack of knowledge and skills in the field, and predominantly the accessibility, availability, and high associated cost. The future does hold much promise though, with a multitude of new sensors being launched by many countries, and the costs associated to acquisition and processing of data being greatly reduced, and at times, available at no cost.

Since the South African strategy towards IAP species is to prevent,

eradicate, contain, and control listed (SAPIA database) invasive alien plants, part of the overall strategy should address measuring and monitoring the distribution (and rate of spread), and densities of IAP species across the country. Shortcomings of the SAPIA database and the Versfeld *et al.* (1998) study necessitate reappraisals and/or new investigations. Frequent thematic maps are inherently associated with such undertakings, especially for containment and control stages of invasion, which are the core operations that most IAP species programmes are involved with in South Africa. Furthermore, future research priorities should address development of predictive understanding of rates of spread of IAP species (Richardson & van Wilgen 2004:50) given the pertinent need to stop and prevent future spread and infestation.

With the number of new emergent species on the increase, socio-economic and political clouds invariably shifting, shortfalls in funding, and imminent threats posed by IAP species, South Africa needs to adopt and impose clear and stringent directives as to the management and control, eradication, and prevention against entry into the country of these non-native species. Although biological control programmes may supplement current approaches to management and control strategies, there is much knowledge lacking with respect to weed ecology, geographic distributions, naturalisation and spread, phenology, invasiveness, and invasion history of IAP species in South Africa. Current efforts are also often thwarted by the difficulties associated with accessibility, availability and accuracy of data, as well as time and financial constraints. Given the inextricable link between humans and the natural environment, the pursuit of human endeavour will always be associated with habitat alteration, landscape fragmentation, climate change, and subsequently, the need for IAP species management.

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What'll We Do With Wattle? The Dualistic Nature of *Acacia mearnsii* as Both a Resource and an Alien Invasive Species, Swaziland

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Introduction

Within southern Africa, Black wattle (*Acacia mearnsii*), an indigenous tree of south-eastern Australia, hereafter referred to as wattle, is perceived differently depending upon country and stakeholder. The species was first introduced to the southern Africa region through South Africa in the 1860s, and systematic plantation establishment began in the early 1900s (Chaunbi 1997). The main attraction of this fast-growing alien invasive species was its commercial value within the timber and tannin industry and lack of indigenous forest species within southern Africa for commercial and subsistence use. During the 1950s it is estimated that wattle plantations in South Africa covered 360 000 ha, these supplied tannins which lead to the development of an extremely competitive tanbark industry particularly in South Africa (Kull & Rangan 2007). However, wattle has the capacity to spread outside of plantation areas, and has established self-reproducing, invasive populations in natural ecosystems, and thus the call for management and control of the species. The negative impacts of the species relates to reducing indigenous biodiversity (van Wilgen *et al.* 2007), increased water

use, and the conversion of communally managed grazing areas to bushland by encroaching wattle excluding grasses and herbs (de Neergaard *et al.* 2005), and a negative impact upon ecosystem goods and services (Richardson & van Wilgen 2004).

Societies with distinct economies, politics and environmental sensibilities receive and react to introduced plants in different ways, and perceptions of these species vary (Kull & Rangan 2007), depending particularly on wither they are viewed as a beneficial resource (fuelwood, construction timber, medicinal use etc.) or as detrimental to the environment (loss of biodiversity, competition with 'natural' species etc.). In 1995 the South African government introduced the 'Working for Water' programme, through activities to control invasive species, employment opportunities have been created for the rural poor communities. The programme receives US$ 50 million annually and is Africa's largest environmental programme (van Wilgen 2004 cited in de Neergaard *et al.* 2005), in which activities to control invasive species created employment opportunities for rural poor communities.

In South Africa, the government classifies wattle as a category two invader plant, and it may not occur on any land other than a demarcated area or a biological control reserve (CARA Act No 43 of 1983). The estimated cover of *Acacia* species infestations in South Africa is 719 950 hectares (Versfeld *et al.* 1998), with the greatest threat within the endemic rich Cape Floristic Kingdom (fynbos), savannah and grassland biomes of South Africa (Richardson & van Wilgen 2004).

Although the official perception of wild invasive wattle is as an alien invasive plant (AIP), at the local scale there may be alternative viewpoints, thus as is argued within this paper, the issue of scale and utilisation of the species influences one's perception of the species as either a undesirable alien or a necessary resource. Wild invasive wattle populations have been integrated into rural livelihoods, and exploited locally for construction material and fuel (de Neergaard *et al.* 2005; Shackleton *et al.* 2007). For the majority of rural stakeholders, it was reported (Shackleton *et al.* 2007) that the positives derived from direct use of invasive populations outweighed the negative costs. Thus, a conflict of interest may arise; at the national scale the government seeks to eradicate invasive populations to reduce negative environmental effects upon water resources, biodiversity,

and ecosystem services, however, at the local scale communities may seek to maintain populations and their associated positive benefits.

In Swaziland, wattle introduction, plantation establishment, and invasion (the word is preferred to spread as, by its very nature, wattle out-competes indigenous species and 'takes over' the landscape) into the natural landscape is comparable to the process described above for South Africa. It is assumed that the species was introduced to Swaziland during the 1920s, when large-scale commercial planting of wattle was undertaken in the nearby district of Piet Retief, South Africa (Sherry 1971). The spread was greatly increased in the late 1940s, when there was a fuelwood shortage, and the colonial government in Swaziland issued taxpayers with wattle seeds to be planted around homesteads to create woodlots to supply fuel. Small areas of wattle were also established by large-scale exotic forest plantation owners, who extracted tannins from the harvested wattle bark. Thus, initially wattle was introduced under controlled conditions as a homestead or plantation species. The practice of planting and harvesting for fuelwood by homesteads in Swaziland continues today (Allen 2004). Wattle spread from designated areas, such as woodlots and commercial plantations, into the surrounding landscape and established self-reproducing populations is very self-evident and, as in neighbouring South Africa, seen as an environmental crisis. These wild invasive populations tend to be found on hillsides and along river courses, thriving in areas above an altitude of 650 metres, with rainfall between 900 to 1 400 millimetres, and with deep, well-drained loam soils (Sherry 1971). Cover estimates of invasive wattle populations range from 26 440 to 28 839 ha (FPGP 2002).

The Swazi governments' perception of wattle can be traced through reference to relevant legislation. As early as the 1950s the planting of wattle was regulated; the Natural Resources Act 1954 prohibited planting along stream banks (Swaziland Government 1954) and the Control of Tree Planting Act 1972 prohibited the planting of wattle for commercial purposes on agricultural land without permission (Swaziland Government 1972). Harvesting activities were also specified under the Wattle Control Act 1960; wattle was classified into immature plantations, where harvesting was prohibited, and mature plantations, where bark harvesting was permitted (Swaziland Government 1960). The Wattle Bark Control Regulations of 1962 stipulated the quantities of bark and ages of tree from which bark could

be harvested and also required that a permit was obtained for harvesting and processing (Swaziland Government 1962).

Within Swaziland, an integrated and comprehensive forest policy and legislative framework has been an obvious omission and only as recently as 2002 has the National Forests Policy (NFP) come into being (Swaziland Government 2002). The preamble states that 'wattle harvesting … has become problematic' (Swaziland Government 2002:iii) and within the NFP there are four aims relating to wattle; to improve commercial wattle management through sustainable practices and improved organisation of the growers, to control the spread of wattle by proper management and remove wattle from ecosystems where they are a threat, to enhance wattle forests on communal land through improved management practices and distribution of systems, and to define the user rights of wattle trees that have spread over communally used Swazi National Land. However, the NFP is incomplete as it fails to incorporate relevant old Acts. Thus, the presently proposed National Forest Action Programme will include wattle growing, wattle management, relevant Acts, and so rectify this oversight. Like its South African counterpart, the Swazi government seeks to limit the future spread of wattle where it is a threat to natural ecosystems. However, where wattle has already spread into communally used Swazi Nation Land (SNL) the government aims to define user rights and enhance the management.

This article, through interaction with the various stakeholders with an interest in wattle in Swaziland, describes this resource, which in itself is not 'natural' to the ecosystem, and debates how this resource is perceived as both a pest and an important commodity, creating a serious environmental dichotomy.

Methods

A series of semi-structured formal and informal interviews were carried out with wattle stakeholders from the Swaziland Government, a consultant, the Wattle Growers Co-operatives, and three private forestry companies. The positions these individuals occupied within the stakeholder groups is outlined below.

Government

- The Commissioner of Co-operatives from the Ministry of Agriculture and Co-operatives.
- Senior Forestry Officer.
- Forestry Officer.
- Assistant Forester in the Hlathikhulu area.

Consultants

- Advisor to the Department of Tourism, Environment and Communication.

Wattle Growers Co-operatives

- Shiselweni Wattle Growers Co-operative (approximately 48 members): 1 Chairman, 7 active members, 2 in-active members, and 1 member who resigned.
- Hhohho Wattle Growers Co-operative (approximately 20 members): Secretary of Executive Committee.

Private forestry companies

- Managing Director of a local Swaziland Forestry Company.
- Public Affairs Manager of a multinational forestry company that has a paper mill in Swaziland
- Development Services Manager: A southern African marketing co-operative for timber growers

Interviews were conducted in SiSwati or English depending upon the medium the interviewee was most comfortable with. The interviews were designed to elicit information on the history of wattle, its management and yields within naturally established 'wattle jungles' and plantations. Issues relating to trading and the commercialisation of wattle products were discussed, as were the positive and negative impacts of wattle on the environment. The role and benefits of, and problems within, the wattle growers co-operatives were discussed, and respondents were asked to list their own issues (i.e. not provided with a predetermined list). Actions that the government and other organisations and individuals could take to

improve the outlook for wattle growers, harvesters, and traders were debated.

Our findings are placed within the conceptual framework for interpreting the impacts of Invasive Alien Species (IAS) on rural livelihoods as outlined by Shackleton, *et al.* (2007).

Results

The Production and Utilisation of Wattle in Swaziland

Interviews with a senior forestry officer and wattle growers revealed the following background information on wattle production; wattle grown from planted saplings can be harvested at approximately 8-10 years old, yields typically range from 100 to 150 tonnes ha^{-1} for timber and 15-20 tonnes ha^{-1} for bark. Method of harvesting is selective felling which takes place on an annual basis. If stems with a diameter greater than 8 cm are selected, such a system can provide 70-80 tonnes ha^{-1} over an eight year period, or 9-10 tonnes ha^{-1} y^{-1}.

The bark and wood is harvested; bark is obtained from felled timber for tannins and adhesives; wood for building construction and fuel, and pulpwood for papermaking. Pulpwood is produced by chipping and the products are used in hard paper and other paper products.

Wattle Stakeholders in Swaziland

The Ministry of Agriculture and Cooperatives (MOAC)

The Ministry recognises the contribution of wattle to improving the economic and social welfare of the people as well as the negative impacts upon the environment. The Forestry Department of this Ministry perceives wattle as a commercial species that can be used for its economic benefits, but at the same time attempts to prevent its spread into undesirable areas. Within this premise, there is a growing concern that forest resources in Swaziland are being heavily exploited and commercialised to meet the needs of society and sustain livelihoods of rural households. The MOAC attempts to accommodate all concerns and interests regarding wattle forests management, either as a cash crop or an invasive weed and are developing

strategies to further agricultural production activities and protect land resources. The programme of wattle forests management, as described by the forestry extension officers, includes the following:

- the use of saplings or hybrid seedlings that produce sterile seeds to avoid spreading of wattle jungles on arable and grazing areas,
- registration of wattle growers and grower cooperatives for coordination and monitoring purposes,
- introduction of wattle planting and management loans to individuals, and
- provision of an extension service for wattle growers.

The Swaziland Environment Authority (SEA)

The SEA is a Government Department within the Ministry of Tourism, Environment and Communication that is responsible for overseeing and monitoring all environmental management activities within the country. SEA regards wattle as a weed in the higher rainfall and altitude regions of Swaziland as it is invasive and interferes with natural species growth. It classifies wattle as 'problematic' as although it is an alien invader and detrimental to biodiversity it is also recognised as a cash crop. At present, there is no programme for wattle management and the Department is developing a database of invasive plants however the focus is on the invasive *Chromoleana* and *Lantana*.

An increasing concern, mentioned by SEA, is the position of land tenure, in particular within the context of ownership and management responsibilities surrounding and within which wild invasive populations of wattle grow. Most of the present wild invasive populations are found on Swazi Nation Land (SNL), which is land held in trust for the Nation by the Swazi King, with locally-based traditional leaders being *de facto* responsible for its administration. The perception from interviews with community members is that these leaders feel there is insufficient SNL for food production and grazing, thus they perceive the establishment of wattle on SNL as encroaching upon these land use types. Thus, wattle is viewed as an alien invasive species that shades out other plants, in particular palatable grass species, which results in poor quality and reduced grazing. The

traditional leaders claim wattle has a high water demand and it dries out streams in riparian areas and it has been alleged that in some cases, wetlands are intentionally destroyed for wattle growing.

Wattle Growers and Harvesters

The term wattle growers and harvesters refers to small-scale wattle growers. In the past these individuals belonged to the wattle co-operatives, however, recently some members have left. Thus, the growers and harvesters may or may not be co-operative members. The wattle growers, who are practising small-scale forestry, do not perceive wattle stands as detrimental to the environment. Although they accept that wattle encroaches onto grazing areas, they state that wattle can help reduce soil erosion by providing cover. The growers believe wattle is an important resource with a wide range of uses at the local level, such as fuel wood, construction timber, fencing poles and livestock feed. The growers suggest that the MOAC should grant them permission to use under-utilised government farms to grow wattle. They envisage this would increase the production of wattle and as the plantations would be in demarcated, agricultural areas this could reduce conflicts over wattle on SNL.

Local Companies

The local companies exporting timber and bark to South Africa consider wattle growing a worthwhile venture although they are aware of its destructive properties to the environment. Local companies believe the country should expand wattle production to take advantage of the existing international markets particularly in South Africa, Japan and China and provide much needed export revenue. As a solution to the invasive nature and associated encroachment of the species they advocate the use of sterile seedlings.

Wattle Co-operatives

The first Co-operatives Proclamation was introduced in Swaziland in 1931, followed by the Proclamation of Co-operatives Societies Act No. 28 of 1964

(NCDP 2000). There are presently 130 registered co-operatives including wattle co-operatives (Ginindza pers. comm.). Of the four administrative regions in Swaziland, three, Shiselweni, Hhohho, and Manzini, have registered wattle grower co-operatives. The basis for co-operatives formation is the belief that if people have a common problem they will co-operate to work against that problem. The organisation and administration of a co-operative is decided by the members of the co-operatives based on agreed terms, which are guided by the basic rules of co-operatives formation specified in the Co-operatives Act of 1964.

By way of example, the Shiselweni Wattle Growers Co-operative (SWGC) terms include; that the executive committee is nominated by the members, members must be Wattle growers, have land and an ability to work with others. Members pay a joining fee (approximately US$8), an annual subscription (US$8) and shares can be purchased (US$60 each). A minimum of three shares qualifies one for full membership and eligibility to vote.

Benefits

The benefits of co-operatives were outlined by executive, active and in-active co-operative members (Table 1). The active members listed numerous benefits, the most important being that the co-operative membership improves applications for bank loans, allows for regular timber deliveries to buyers and that the co-operative has a permit for South African export.

Table 1. List of benefits provided by active, inactive and resigned co-op members

Co-operatives		**SWGC**		**HWCG**
Benefits	Chairman (n=1)	Active members (n=7)	Inactive and resigned members (n=3)	Secretary of Executive Committee (n=1)
Co-op assists in selling		1		
Opportunity to work with others		1		
Co-op has export	1	3	1	1

permit for SA				
Co-op assists in obtaining loan	1	6		
Co-op can secure cheaper transport costs for timber as large quantities transported	1			
Co-op allows regular supplies of timber to be delivered to buyer and therefore bonus payments obtained		4		1
Co-op obtained higher prices per tonne than an individual, because can supply larger quantities	1	1		
Payment for timber is assured through the co-op		1		
Co-op is a direct member of purchasing company				1

Key: SWGC—Shiselweni Wattle Growers Co-operative; HWCG—Hhohho Wattle Growers Co-operative

Limitations

Table 2 provides a tabulated list of the limitations as expressed during the interview process with the co-operatives and its members. Limitations cited by the ordinary members included; executive members allegedly embezzling funds from the co-operative, and due to the cost few are able to purchase full shares and thus become executive members. The majority of members were ordinary members, and as they are unable to vote the perception is that, as a consequence of their limited power, the executive members did not acknowledge their opinions. Mistrust and a poor understanding of business

administration and financial processes was a commonly held concern. Consequentially, members were sceptical of actions of the executive committee and most respondents identified a need to train co-operative members in business management. The co-operatives constitution is perceived as a factor that has contributed to failure within management of the co-operatives, as the constitution stipulates that the office term for the executive committee should be three years. However, this period is viewed as too short for planning and implementation of activities in line with the committees' vision. Lack of land and tenure thereof is also a serious concern, members have insufficient land for growing trees that leads to poor yield of timber and subsequent failure to service loans. They also stressed that Government support in the form of land is required.

Table 2. List of problems within co-operatives provided by active, inactive and resigned co-op members

Co-operatives		**SWGC**		**HWCG**
Problems	Chairman (n=1)	Active members (n=7)	Inactive and resigned members (n=3)	Secretary of Executive Committee (n=1)
Members supply small quantities of timber, these amounts are insufficient for the purchasing companies	1			
Executive Committee embezzling funds		3	2	
Ordinary members (those with less than 3 shares) cannot vote, they have no 'voice'		1		
Co-op requires immediate loan repayment once it has sold timber to		1		

companies			
Members lack commitment	2	1	
Members sell timber direct to companies, not always to the co-op	1	1	
The 3 year term for the committee is too short	2		
Lack of trust amongst members	3		1
Members have no land upon which to establish plantations	1		
Loans are not repaid	2		
Executive members hostile to new members		1	
The co-op accepts harvested wild timber but has not managed these areas. Over-harvesting has occurred and now a lack of supply	1		
Co-operative transport of timber is unreliable	1		
Co-op does not address Title Deed land issues	1		
Co-op members also members of Forestry Companies, leads to conflict of interests		1	

Key: SWGC—Shiselweni Wattle Growers Co-operative; HWCG—Hhohho Wattle Growers Co-operative

Accessibility to land for wattle growing was a major issue; with individuals opting for a variety of strategies to overcome this limitation. For example,

for two members who did not have access to land for planting wattle; one harvested wattle from private plantations on surrounding farms, and supplied the farmer with the timber and kept the bark for himself. Whilst the other member approached the owners of a wattle plantation on Title Deed land and paid them for access to their wattle.

For the two members with access to Swazi National Land, one had established a 2 ha wattle plantation, whilst the other was in a group of families that had been allocated SNL for grazing by their traditional leader. A portion of this land had a wattle stand, so the member had come to an agreement with the families to fence off the area, allow harvesting, and to share derived income. However, a concern is that the traditional leader is now asking for a commission which will cut the profits dramatically and make the venture un-economical.

In the past, the wattle co-operatives had been allocated tonnages from a South African forestry company for wattle timber, for example Hlathikhulu region in the Shiselweni co-operative had an agreement to supply 500 tonnes of wattle timber per month. However, the Shiselweni Wattle Growers Co-operative can be considered non-active as at all its meetings in 2005-2006, only the three executive members attended. Furthermore, the Hhohho Wattle Growers Co-operative has not sent timber since 2003, and only the Manzini Wattle Growers Co-operative is currently supplying. Although, two of the three co-operatives are no longer supplying the company directly, the volume of wood the company buys from Swaziland has remained relatively constant, indicating that wattle is traded via a different route. Some co-operative members who have the resources, now trade directly with forestry companies, others who cannot supply sufficient tonnages, or lack the means to pay for transport and tax, trade their timber with middlemen or private companies, who then pass along the supply. This process, of by-passing co-operatives, has been made possible by the change in legislation, which now allows individuals to trade directly with timber companies as opposed to working through a co-operative which used to hold the trading licenses. From observation and interviews it was evident that the co-operatives are in the process of closing down and membership has dramatically declined in the last 5 years.

Private Companies

Co-operatives are quick to point out that they have created a niche that private companies have been able to exploit. For example, one private company that has monopolised the wattle market realised, by chance, that they could encourage suppliers to deal with them rather than the co-operatives for a number of reasons. Thus, during a holiday period when the co-operative was closed, suppliers who normally utilised the co-operative, sold their wattle direct to the private company. The company offered cash-on-delivery whilst the co-operative could only offer payment after delivery of the wattle to South Africa, which could entail a wait of a month or longer. The suppliers, including some co-operative members, were eager for instant cash payments and therefore many continued to supply the private company once the co-operative was re-opened after the holiday period. The private company therefore increased the amounts of wattle it was processing and was able to increase its quota. Thus, benefiting from the classic economies of scale and are able to send more timber to the market and thus elicit higher prices per tonne and benefit from bonuses offered by the timber companies for meeting quotas on time. This has lead to a feeling of animosity and resentment from certain sectors of the industry; however others have seen it as an advantage and good business management.

Private companies are aware that wattle growing on SNL is insecure and that many individuals will not risk waiting for the wattle to reach the desired age and size. Therefore people will harvest timber earlier which provides less of an income but a quicker return period. The company also have their own plantations, thus when bought wattle supplies are insufficient to meet monthly quotas, the company fells its own wattle to ensure that quotas are met. The ability to meet monthly quotas ensures that the private companies receive a supply financial bonus. Due to the economies of scale and the ability to meet quotas, the private companies are able to achieve a higher price for its wattle than a small-scale individual with intermittent supplies. By way of example, a single dominant company currently has approximately 400 suppliers in Shiselweni and 300 in Mbabane who supply timber, bark and charcoal, and trades approximately 6 000 tonnes of wattle timber per month to timber companies in South Africa. Recently, as stated above, the regulations regarding selling timber to South Africa have changed; in the past only the co-operatives and private companies were

allowed permits, however now individuals can acquire permits and trade directly with timber companies. Thus, there are now some individuals who are members of these South African timber companies and supply them directly. Currently, these individuals are few and the supply minimal, however it is a potential avenue of economic opportunity which could place further pressure on the remaining resource, leading to either smaller timber being harvested to satisfy the market which leads to increase pressure on the land or with increased demand further planting or encouragement (change in land use practices) of wattle.

Commercial Value

The potential contribution of invasive wattle populations to commercial trade can be estimated from comparing published sources of information relating to the area of wattle cover and the volume of wattle products traded. A mail questionnaire of timber growers and processors in 1995/6 indicated that man-made wattle forests covered 1 706 ha (Anonymous 2005). Estimates of utilisation of these wattle forests suggest that 36% was used for pulpwood, 8% for fuel wood, 7% for sawlogs, the remainder was unspecified (Sibandze *et al.* 2000).

In South Africa Theron *et al.* (2004) suggested that the by-products of wattle that are removed under AIP programmes could be utilised to off-set programme costs. They assessed the biomass of wattle on the Cape coastal plains and reported that the total woody biomass was approximately 10 Mt or 12 million m^3, an amount equivalent to the annual roundwood intake of pulp, paper and board mills in South Africa (Theron *et al.* 2004). Working for Water initiated the Value Added Industries programme, one of its aims was to maximise positive economic benefits by creating extra jobs in the harvesting and processing of alien plant material. Currently under this programme there are four companies in South Africa which utilise wattle to produce garden and household items for sale (WFW 2008). Thus, within South Africa the potential trade value of products derived from wattle infestations is gradually being recognised.

This could have implications for resource economics calculations for alien invasive plants as the majority of these studies have concentrated upon negative impacts such as water, species, biodiversity losses and more

recently changes to ecosystem goods and services (Turpie 2004). The studies of de Neergaard *et al.* (2005) and Shackleton *et al.* (2007) illustrate the value of wattle infestations to local livelihoods, and suggest that the positive values of wattle and other AIPs should be incorporated into future resource economic calculations.

Discussion and Conclusions

As with any resource, the market for wattle timber has fluctuated. Initially, in the early 1990s producers struggled to sell wattle timber and timber companies restricted the amounts they would purchase from suppliers. As prices improved the timber companies engaged in a marketing campaign and increased processing capacity so that they could market 100% of the timber their suppliers produced. In 2001-2003 wattle timber supplies from Swaziland to South Africa peaked at approximately 40 000 to 60 000 tonnes annually. However, with the increasing demand and good prices the Swazi producers over-harvested the older wattle stands and currently most wattle infestations can only supply 3-4 year old material, thus a situation exists where there is an undersupply of wattle in relation to its processing capacities (Dlamini pers. comm. 2005). Due to the continuing demand for timber, there is overexploitation of plantations / infestations as producers often harvest young and small diameter trees to meet quoted tonnages figures from buyers. Hence we see the development of a new market in which entrepreneurs are buying from rural areas and selling on, acting as middle men, as the market exists and rural individuals are often unable to bear the costs of harvesting and transport in isolation and with the collapse of the co-operatives this is the only avenue available to them, appreciating the economies of scale.

The benefit that individuals derived in the past from trading products from wild invasive populations of wattle and the positive impact upon their livelihoods is illustrated by the case described in Box 1.

Box 1. Wild invasive wattle populations as a commercial resource

Mrs Mhlanga has never planted a wattle tree yet wattle has transformed the lives of her children. For the past thirty to forty years, together with her late husband she harvested wattle products from the wild invasive wattle

populations surrounding her homestead. Initially, they harvested bark and sold it to companies in South Africa. The cash income generated allowed Mrs Mhlanga to send her children to school. Each co-operative member had a quota of tree bark, she used the permits of those who did not harvest bark and was able to trade larger quantities. The family has long recognised the value of wattle and they had hoped to purchase land for wattle plantations. However, due to the land shortage and discouragement from her traditional leader, who perceives wattle as a threat to grazing lands, they have not been able to set up their own plantations. Her children are interested to continue trading wattle, but currently the co-operative offers no support structure and they do not have the necessary equipment to begin harvesting and trading.

Source: Mhlanga, personal communication (2005).

The value of wattle products has changed in relation to the ability to utilise these products. Initially, in the late 1800s and early 1900s wattle was valued principally for its bark that produced tannins for the leather industry. Later, technological innovations in the pulping and paper-making industries lead to an increased demand for wattle which had a high density pulpwood. The common pulping species, *Eucalyptus grandis* has an approximate density of 440 kg/m^3 and a total pulp yield of 51%, whilst wattle has a density of 630 kg/m^3 and a total pulp yield of 58%, its higher density improves pulp mill digester productivity and allows higher stowage levels to be achieved on ships, thus it is a preferred pulping species (Norris 2005). In the early 1990s demand from South Africa for Swazi wattle pulpwood was limited by the processing capacities for the woodpulp. As capacities increased, so the demand for wattle woodpulp grew. Individual wattle growers and wattle harvesters and traders responded to this increased demand by increasing harvesting rates and by harvesting smaller diameters of wattle. Wattle harvesting peaked in 2001-2003, however the wattle resources were harvested faster than the rate of regrowth, thus the potential harvestable resource of wattle has declined.

Timber company representatives believe that the current demand rates for wattle are stable (demand is stable as production is maximised and producers cannot produce more) (Rijkenberg pers com. 2005). The government, timber companies, wattle growers and harvesters realise that the invasive wattle populations provide a valuable resource and that recently

they have been over-harvested. It is imperative that these areas are better managed so that they can continue to provide wattle into the foreseeable future. The Swazi government and buyers both recognise this and together have started an initiative aimed at alleviating some of these problems. They envisage that the invasive wattle populations should be converted to managed plantations, which can be achieved by harvesting the current areas and then planting improved commercial wattle seed in the areas with associated management. Foresters have been trained in this methodology, and manuals and seeds have been distributed. Activities started in mid-2004 and 20 ha have so far been planted. The overall response from the farmers has been a positive one.

The trading of wattle has undergone several changes in recent years. Initially co-operatives were established to facilitate small-scale producers and harvesters so that they could benefit from the economies of scale. In addition, co-operative members benefited as the co-operative held an export permit that allowed them to sell wattle to South Africa. However, there have been various limitations in the co-operatives functioning with issues such as lack of accountability, limited power of ordinary members, corruption that has led to mistrust amongst members. Furthermore, the payment method took several weeks for products channelled through it, and although prices were reasonable some co-operative members preferred to sell their products outside the co-operative and receive instant payments. The benefits of trading wattle in the co-operatives would theoretically have been more equitable and the individual benefited relatively more in the co-operative than selling direct to a private company.

Some local companies have been able to take advantage of the poor functioning of the co-operatives and have offered cash-on-delivery, but allegedly at lower prices than the co-operatives. The companies have access to greater capital and resources than small-scale producers and it has utilised these to increase its share of the wattle market and to increase its supplies to timber companies in South Africa. By supplying large quantities of wattle the companies are able to meet monthly quotas and benefit from incentive bonus payments.

The inability of Swaziland to process its own wattle products means that it has to look beyond its' boundaries to South Africa with its markets and processing capabilities. Individuals or organisations within Swaziland

who wish to sell raw wattle products to the South African-based buyers must therefore be able to access the means by which they can deliver the products in the requested quantities, timely and adhering to legal aspects such as border tax payments. These requirements tend to prevent individuals trading who can only supply small quantities on an irregular basis and who have limited capital to cover transport and tax costs. Thus, the main suppliers to South Africa are private companies who have access to capital and organisations, such as co-operatives that bring together individuals to benefit from economies of scale.

The Swazi government, timber companies in South Africa and growers, harvesters and traders alike all acknowledge that the invasive wattle populations in Swaziland have been over-harvested and that the co-operatives are generally no longer functioning effectively. Recently, some initiatives have been put in place to overcome some of the problems faced by the small-scale wattle growers and harvesters. These initiatives include diversifying access to secure land for wattle plantations ('Traditional leaders should be made to sign agreements with wattle growers if they locate land to avoid confusion and cheating of growers'—Dlamini, pers com, 2005), simplifying the export procedure so that individuals may trade directly in South Africa, and devising strategies so that the current wattle jungles can be converted to managed plantations.

A note of caution must be sounded here. It is assumed that the growers are actual farmers and we believe this is often a misnomer. A new 'market' is developing where business minded people are buying from rural areas and then selling on, acting as middle men, as the market exists and rural individuals are often unable to bear the costs of harvesting and transport in isolation and with the collapse of the co-operatives this is the only avenue available to them, appreciating the economies of scale. Furthermore, rural dwellers often do not have land tenure and are often at the whim of traditional leaders and more powerful local leaders who are able to appropriate the resource if its market value becomes high and it is perceived as a good cash crop. Therefore to attend to a wattle stand and allow it to reach a greater size is not always desirable, which in terms of resource sustainability and land management creates many difficulties. This points strongly to the need for a social construct of the resource as opposed to perceiving the resource merely as a biophysical variable to manage.

There is a need to attempt to incorporate these complexities to the benefit of rural communities, the greater the perceived benefit the greater the opportunity to develop a management plan that communities will accept and adhere to. This goes to the notion of community based natural resource management and a collaborative management approach as advocated by Fabricius *et al.* (2004) in which a range of approaches are possible depending on the increasing expectations of stakeholders and proactive involvement of communities. For example, the development of a stronger, more trusting, relationship between harvesters and companies in which companies will only accept a certain quality of timber, thus ensuring non-utilisation of small sized timber and thereby improving sustainability of the resource. Better management of existing wattle plantations as in comparison to large plantations the same area of small sized woodlots will have a larger perimeter to area ratio with the natural vegetation, and thus favour the further spread of AIPs such as wattle (Le Maitre *et al.* 2004). In South Africa it has been suggested that the promotion of the utilisation of AIPs products, such as the development of an informal economic sector based wattle, may actually help limit the extent of invasions (Le Maitre *et al.* 2004).

One of the major issues is that of access rights to infestations on SNL. There is a call, through the NRF, to utilise SNL for wattle production and to work proactively towards developing an integrative and participatory management strategy, similar to Forestry Participatory Management as utilised within the mangrove forests of South Africa (Traynor & Hill 2008). Two alternative approaches that need investigation is: to improve the organisation of growers and possibly to revise the ideals of the co-operatives; and to study the potential for setting up value-added industries for wattle in Swaziland, thus add value to wood products.

Shackleton *et al.* (2007:113) suggest that the use of invasive species by rural communities as part of a livelihood strategy is 'little understood and rarely factored into Invasive Alien Species control programmes'. Thus, we have a dichotomy of perceptions in which certain stakeholders see wattle as an alien which impacts on the environment and biodiversity and is to be controlled, although not removed due to its economic status and others that consider the wattle a vital resource and playing an important role within rural livelihoods. This resource role needs to be better understood if an acceptable management strategy is to be developed, as is evident from this

paper Swaziland is attempting to 'be all things to all people' and please all—trying to incorporate black wattle as both a resource and an invasive alien species which needs to be eradicated—this will not be successful! In South Africa, according to de Wet et al, (2001) the impact cost of wattle is 2.5 times greater than the positive aspect borne from rural usage, which does swing the balance towards eradication projects. However, and again echoing the words of Shackleton *et al.* (2007), we believe it is premature to make a similar stand with regards to Swaziland where wattle is not only important to rural livelihoods, but also supports a small scale industry with a number of middle-men acting as facilitators between industry and rural communities and individuals. The perception is well encapsulated by the comment 'wattle is only a weed when people are not using it—irrespective of extent—as long as management is ok, its not a weed' (Lukhele, pers com. 2005).

Shackleton *et al.* (2007) from their study on both black wattle and pricky pear in South Africa conclude that the 'effects of invasive alien species on rural livelihoods are complex' (page 121). Own field observations in Swaziland with regards Black wattle and *Chromolaena odorata* (Triffid weed) concur as although both species are recognised and often treated as invasive aliens they both do serve rural communities as a dependable resource. We are faced with the difficult scenario of either acting as ecological purists and removing the species as aliens or taking cognizance of their role as a rural resource and attempting to manage and control as opposed to eradicate.

This begs the question of who will facilitate this process and the role that can be played by local, traditional leaders who have such a strong proactive authoritative position within many rural communities. As has been described by Twine *et al.* (2003) and Kirkland *et al.* (2007) there are many difficulties regarding institutional support and the roles and responsibilities of traditional authority, which creates confusion within rural communities resulting in apathy and no vision to move forward. One needs to include in the equation here the role and responsibilities of co-operatives, as is evident from the case study the co-operatives have had, initially, a significant and positive influence on rural livelihoods, however, either through lack of support (both from participants and government), poor governance or competition from other more financial secure ventures their influence has diminished. Therefore, we need to overcome the ambiguities of authority as

well as look towards a more laudable and long term impact and attempt to reduce the burden of poverty upon the rural poor, thus placing less pressure upon our resources.

This article demonstrates just how difficult this dualistic role can be and calls for environmental management policy to consider the usefulness of the invasive alien species or deal with the question as posed to myself whilst undertaking field work for this paper 'Why is government stealing our resource and leaving us with no income?'—in response to the eradication of wattle jungles from upland river catchments. We do appreciate the environmental impact that invasive alien species have upon our natural ecosystems and recognise the necessity for control. However is there not place for management that is inclusive of the needs of rural communities? We support working in collaboration through strategies such as participatory forest management forums. We can create a process that includes the opportunity for rural communities to be part of the management process and, through skill development, be involved in utilising this resource in a manner conducive to the environmental and social needs of the region.

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Participatory Mobile Geographic Information Systems (GIS) for the Regularisation of Customary Land Administration into Statutory Law: A Case of South Africa

Denis Rugege and
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Introduction

There is a new and urgent policy re-direction in Africa that seeks to support, modernise and regularise customary land administration into modern law in conformance with constitutionality and general human rights in contrast to earlier campaigns calling for replacement with statutory law adopted from colonial administration (Cotula *et al.* 2004:5-6; Republic of South Africa 2004:20). A large majority of African populations still live on unregistered communal lands administered under customary land law (Wily 2003:32; United Nations Economic Commission for Africa 2003:2). Southern African countries have developed national land policies mainly aimed at land restitution and land redistribution reform. Recent land reform policies and legislation are putting emphasis on land tenure reform that recognises customary land tenure and administration and gives equal protection to land rights whether under statutory or customary law (Wily 2003:34-38; Cotula *et al.* 2004:5-7).

Some of these countries have enacted legislation to give effect to the adopted policies. South Africa is in the final stages of preparation for the implementation of the Communal Land Rights Act of 2004 (CLaRA). One of

the instruments in implementing CLaRA will be the formalisation, through the Land Rights Enquiry (LRE), of 'community rules' for land administration (Republic of South Africa 2004:20). The advocacy for the decentralisation of land administration by formalisation of the informal communal land administration systems have up to the enactment of CLaRA been well argued, to mention a few, in Fourie (1996), Fourie and Gysen (1995) and Leisz (1996). The main point of argument is that access to land information such as liquidated estates, deceased estates, maps, land use zoning, registration and marriages is not equitable as it is only available through central offices.

However, land information in the centralised formal system is based on products of land surveys such as survey diagrams and general plans. Communal lands in South Africa and elsewhere in the developing world are largely unsurveyed. It is generally accepted that the cost of surveying communal land is prohibitive and its effectiveness debatable as a basis for a functional decentralised land administration system for the capital-poor rural residents (Wily 2003; Gartell and Hodson 1997). The conventional boundary survey method is built on high accuracy of point and distance measurement and therefore enjoys a largely dispute free client base. It is also an established profession with regulated standards by legislation. Hawerk (1997) suggested that since the surveyed coordinates represent legal boundaries that may be integrated into a cadastre, it is therefore possible to create new legal boundaries cheaply from existing plans by calculating without surveying in the field. Various other alternatives to conventional surveying as a basis for formalising communal land administration have been proposed (Fourie 1994:12-13; Fourie and Gysen 1995; Jackson 1996).

This article provides evidence-based justification for employing Participatory Mobile GIS in efforts aimed at modernising and regularising customary land administration to achieve equitable security of land tenure for all, building on various alternatives. The article presents and discusses the significance of results obtained from an area measurement exercise of a moderate size farm in South Africa and from similar studies elsewhere in the developing world using Participatory Mobile GIS methods in comparison with conventional mapping methods. An assessment of time efficiency, affordability and appropriateness of the technology is discussed in consideration of the socio-economic and legislative circumstances under

consideration in the modernisation of customary land administration. The findings of this study show that Participatory Mobile GIS is time and cost efficient and appropriate and can meet legislated standards of quality. In the case of South Africa, both spatial considerations of communal land and the participation of the community will be critical to the success of the implementation of the CLaRA as an instrument for regularising customary land administration into statutory law.

Participatory Mobile GIS Alternatives to Conventional Surveying

Three alternatives to conventional surveying are proposed by Fourie (1994), Fourie and Gysen (1995) and Jackson (1996). These include the 'general boundary' method, the 'mid-point' method and the 'block, super-block' method. The 'general boundary' method is whereby local authorities subdivide land based on boundaries agreed upon by neighbours. Lower precision surveys can then be carried out without reference to beacons. This method is not viable where boundary contestations are prevalent.

The 'mid-point' method is an option whereby a single point in the centre of a property marked by a stake is registered and this could be maintained in the Surveyor General's formalised system. A combination of the general boundary method and the mid-point method using a handheld Global Positioning System (GPS) may also be considered. In this method, the proponents propose that a mid-point coordinate would be obtained using the house as the physical evidence and relating boundary description to it. The problem with the mid-point approach is that dwellings are not always located in the middle of their respective boundaries. Dwellings may be located adjacent to each other, motivated by the need for neighbourliness. Some dwellings may be placed as close as possible to roads and other infrastructure. Low accuracy GPS might not be appropriate for such residential conditions. However, higher accuracy (sub-meter) handheld GPS have recently become available and their costs are becoming more affordable for capital-poor land-managing organisations and agencies.

The 'Block and Super Blocks' method involves the accurate survey of a communal area within which lower precision and therefore cheaper subdivisions may be carried out. The outer blocks would be registered as

diagrams at the Surveyor General and included within the national cadastre. According to Fourie (1994), this model would include the cultural norms and values of a variety of chosen community systems within the block. The cheaper subdivision method within the block could be adopted from the general boundary, the mid-point or the combination of both methods.

A preliminary interpretation of the Communal Land Rights Act of 2004 (Republic of South Africa 2004:12), suggests that the 'Block and Super Blocks' concept may be applicable in its implementation. The Act stipulates that Land Rights Enquirers will assist the communities in regularising their land administration rules and in determining the Juristic Entity as the designated beneficiary to whom the land will be held in title and as custodian of their individual land rights. Ownership of the communal 'block' of land will therefore be transferred to the Juristic Entity. The Act requires that community rules be translatable into secure rights that may be used as a basis for the Minister of Land Affairs to subdivide the 'block' into individual land rights. However, CLaRA also makes provision for individuals to convert their land rights to individual title through an application process.

Some of the outstanding key challenges facing the modernisation of customary land administration into statutory law and subsequent operationalisation include the need to develop innovative land registration methods. Wily (2003) inferred a common objective among most land reform programmes in Africa of adapting land registration systems that are simpler and cheaper and therefore able to capture as many land rights as possible into a modern management system within a reasonable length of time. In this regard, verification and adjudication processes that precede land right registrations may be undertaken by cheaper but easier to relate to trained residents as opposed to professional or government agents.

A non-conventional survey using high-accuracy handheld GPS devices may be carried out not only because they are cheaper than professional formal surveys, but also because they allow participation of witnesses and stakeholders. Modern handheld GPS devices have output screens that allow users to see progress of a mapping exercise, in case of land rights registration, to see the demarcation as it proceeds. The combination of GPS, GIS and participation of non-experts, now termed 'Participatory Mobile GIS' has become a method that is accepted as

transparent in such exercises as land rights adjudication, recording and electronic transfer into an existing digital land register, information system or database.

The Participatory Mobile GIS method is aimed at achieving the following general improvements in effectiveness and efficiency of land tenure security by allowing for the following (Cotula 2007; Deichmann and Wood 2001; Fourie 2002; Lor and Onkalo 2004; Lyons and Chandra 2001):

- Community participation which guarantees transparency and therefore community confidence and quality control of adjudication and demarcation processes;
- Community participation which enables the regularisation of the *de facto* social land tenure system (that includes complexities of community rules for shared, mutually beneficial use rights) into a *de jure* land registration system;
- Community participation that provides an opportunity for constitutional reforms such as gender equity in land rights into the regularised community rules social land tenure system;
- More sustainable dispute resolution;
- Community participation as a source of employment; and
- GPS configured lower accuracy of capturing boundary data following adjudication and demarcation means lower cost which allows a match between cost of land registration and tenure upgrade in security to match the value of the land, hence long-term affordability and sustainability of registration system.

Research by Wily (2003) shows that with the exception of South Africa, many national land reform policies prefer local level adjudicators and do not require a formal cadastral survey in order to register customary land rights. However, although South Africa requires a cadastral survey as stipulated in the Land Survey Act of 1997 to capture communal land rights (Republic of South Africa 1997a), the Act provides for such surveys to be conducted using GPS devices provided they meet stipulated accuracy standards.

This article, as indicated earlier, provides a review of previous research regarding realistic accuracy levels that can be expected from the available GPS technology for unconventional land rights surveys, the

achievable time and cost efficiency, appropriateness of methods being put forward for the targeted socio-economic settings as well as simplicity of deployment of the proposed methods. Very few Cost-Benefit Analysis studies have been done on using GPS as an alternative to conventional cadastral surveying and mapping (see Barnes and Eckl 1996; Barnes *et al.* 1998; Louw 2005; Lyons and Chandra 2001; Schnurr 2004). Of these, Barnes and Eckl (1996) was the most comprehensive. They designed and carried out studies to test the performance of GPS technology under controlled conditions at the University of Florida, USA in comparison with field tests undertaken in Albania and Belize. The experience of their tests was further used as a basis to develop standards, specifications and procedures for a new GPS-based approach to cadastral surveying and mapping.

Realistic Accuracy of GPS Surveys

Barnes and Eckl (1996) examined the long-standing question under international discussion regarding the accuracy requirements for a cadastral surveying and mapping methodology that is low cost, more efficient, simple and appropriate. They refocused on the purpose of coordinate information that results from a cadastral survey. The following were sited as main purposes of coordinate information:

- To relocate the physical monument that demarcates the corner position;
- To replace a missing corner monument in the event that it has disappeared; and
- To describe the land parcel (diagram in case of South Africa) for transaction purposes.

The accuracy required to support these functions will in turn depend on several factors including parcel size, land value, land suitability for specified uses and relationship between neighbours. Basing on experiences from Belize and Albania, Barnes and Eckl (1996) suggest that an accuracy of less than 1 metre is appropriate, when considering low land value and low commercial agricultural use suitability of small to medium sized land parcels typical of rural areas. In order to meet the sub-metre accuracy level, certain

specifications with regard to equipment, measurement tolerances, field survey and computations must be followed.

The South African Council for Professional and Technical Surveyors (PLATO) publishes a tariff of fees for its registered membership (Republic of South Africa 2003:134-143). A summary of land surveying activities that may be charged fees for the creation of Land Rights in Townships through lodgement of a General Plan can be found in PLATO tariff of fees publication which is updated as necessary. This summary seems closest in analogy to the envisaged Communal General Plan as described in CLaRA.

The cost categories of the conventional land survey method are largely similar to those of the GPS-based method. The main difference would then be in the equipment used and which in turn is dictated by the accuracy level demand. The conventional method also does not need capitalisation, as Land Surveyors should already be well equipped and adequately trained. The PLATO guidelines also include a cost category 'Additional work' which mainly entails the surveying and mapping of servitudes, curvilinear boundaries and outer boundaries that constitute a General Plan. In the GPS-based method, this categorisation in not necessary as this set of activities are integrated in field procedures and have no additional cost implications.

The cost category 'Abnormal circumstances' that may increase or reduce costs also does not have special consideration in the GPS-based method. This cost category is based on the time and effort costs associated with the manoeuvrability of the Electronic Distance Measurement (EDM) device in conventional surveys. As GPS-based method is built on cost-effectiveness, the methodology designed includes hand-held units. Therefore, this cost category does not apply. However, dense tree canopy and deep v-shaped valleys may affect GPS signal reception. It is for this reason that some Land Surveyors have adopted the use of the two methods interchangeably.

Two cost efficient methods are suggested for surveying endeavours that would enable the preparation of a Communal General Plan using the GPS-based method at an accuracy level of less than 1 metre (Lyons & Chandra 2001; Schnurr 2004):

- Final map at 1:5,000 scale produced using a 1:12,000 scale digital aerial photograph (or 1:10,000 orthophoto available in South Africa) for preliminary participatory demarcation and for the subsequent adjudication, boundary confirmation and mapping using a 'Double Differential Carrier Phase' GPS. The 0.25 m spatial resolution of the aerial photograph indicates that objects as small as 25 cm in real size are discernable by the human eye on the aerial photograph. This means that narrow linear features such as open footpaths, streams, fences as well as other small sized features like individual rural dwellings may be interpreted during participatory mapping.
- Final map at 1:10,000 scale produced using a 1:24,000 scale digital aerial photograph for preliminary participatory demarcation and for the subsequent adjudication, boundary confirmation and mapping using a 'Carrier Smoothed Differential Code' GPS. The 0.5 m spatial resolution of the base photograph means that objects as small as 50 cm are discernible and can be interpreted by a participatory mapping team. However, the 1:24,000 scale photographs are not readily available in digital format in South Africa. Acquisition of aerial photographs for rural surveying is relatively expensive.

The third method that can produce a final map at an accuracy level of less than 1 m is the use of the IKONOS^{TM} satellite imagery as base data. The image has a spatial resolution of 1 m, which is still good enough for participatory interpretation and mapping. However, the imagery is relatively expensive (at around US$3,000 a scene using 2006 prices) for the envisaged purpose. It should, however, be noted that the acquisition of the satellite imagery costs as much as aerial photo acquisition but with among other advantages, having much larger area coverage in a single image.

Time and Cost Efficiency

Three studies have reported time and cost efficiency of the conventional land survey method against the GPS-based method. Although the three studies did not employ the same GPS equipment, results obtained reported consistency in productivity and efficiency. The comparison in terms of productivity rates in Albania (Barnes and Eckl 1996) found the GPS-based method was twice

as productive in the field and 7-8 times more productive in the office. Lyons and Chandra (2001) reported the Conventional method to be 2.5 times more costly than the GPS-based method in Asian countries while Louw (2005) found the Conventional method to be 3 times more costly in Namibia than the GPS method.

Appropriateness of Participatory Mobile GIS Surveys

Modern education and training programmes in surveying are striving to strike a balance between the measurement science component and the broader aspects associated with land administration and land information management (Barnes *et al.* 1998). The University of KwaZulu-Natal has responded to this demand, offering a Masters in Land Management within the Surveying programme and a Master of Environment and Development in Land Information Management. Both programmes are dominated by participants with professional survey degrees and survey Bachelor of Technology degrees.

Also, in South African land survey professionals are embracing GPS technology for standalone application or as integrals of Total Station EDM systems. The former are also actively engaged in the Land Reform programme both at professional association and at individual levels. This positive situation will facilitate the smooth technological migration or integration of GPS-based methods.

Like most technologies, as time goes by, GPS equipment is becoming cheaper. However, newer models offer higher accuracy and more functionalities and so prices stay in the same range. A handheld unit capable of sub-metre accuracy currently costs about R30,000 based on 2007 prices.

Simplicity of Field Operation

Barnes and Eckl (1996) described their data collection procedure during the field-testing of the GPS method in Albania and Belize as very encouraging. Their results showed that the method could be employed effectively with ease. The simplicity of the method is also indicated with it being 8 times faster than the conventional method, as mentioned earlier.

Study Methodology

One of the objectives of this research was to develop and test a Participatory Mobile GIS methodology for identifying and mapping communal land administration boundaries. The method involves active participation by the locals, the natural owners of the land to be mapped. Maps produced through the established methodology should meet the desired high precision standards of survey. The Ukulinga case study was embarked on in an effort to develop a better understanding of the principles and operation of high precision handheld GPS and to establish their accuracy levels attained in surveys as well as applying the participatory mapping approach.

The Ukulinga University Research farm (farm no. 14068) is located south of Pietermaritzburg city, KwaZulu-Natal Province, South Africa. The farm is approximately centred at latitude -29.67ºand longitude 30.41º and has an irregular pentagonal shape tilted along the north-west to south-east axis. High barbed and razor wire fencing, most of which is electrified, marks the farm boundary to the north, east and west, while the southern boundary is marked by a stream that runs west-east contributing to the Mkondeni stream which itself is a tributary of the Msunduzi river.

A copy of the 1953 Ukulinga farm survey diagram was obtained from the Surveyor General's office in Pietermaritzburg and used as a reference in the GPS-based participatory mapping exercise and accuracy assessment. The Ukulinga farm manager, acting in his capacity as the proxy owner of the property, participated in the mapping process thereby providing local expert knowledge and pointing out the farm boundaries. The GPS coordinate points of boundary markers were then corrected by differential GPS post-processing. The stream boundary was visited to cross-validate it with the survey diagram and cadastral map.

The 1953 survey diagram, a digital panchromatic ortho-rectified aerial photograph (Spatial resolution 0.75 m), a digital 1:50,000 topographic map of the area (topo-sheet g2930cb) as well as a vector map of the cadastral boundaries were used as references in locating the farm and in identifying farm boundaries. The survey, as undertaken by this study, recorded new farm boundary markers as the original farm boundary beacons could not be found. An assessment of relative accuracy was carried out by comparing the farm area as calculated using the Participatory GPS-based Mapping method with the same area as in the 1953 survey diagram and in the cadastral map.

The mainly 'rail' steel corner post boundary marker points were captured by GPS from 30th October to 1st November 2006. The survey diagram obtained from the Surveyor General showing original positions of survey beacons was used as a guide in capturing boundary marker points by GPS, which were then used in reconstructing the boundary and in calculating the area of the farm for accuracy comparison. However, none of the original beacons were recognised as described in the survey diagram prepared in 1953. The Ukulinga farm extent has been substantially expanded since the 1953 land survey and understandably, the operational farm fencing including security considerations seem to have taken priority over the preservation of the original farm boundary beacons.

Boundary markers points in the form of fence corner steel posts as pointed out by the farm manager were identified along the original boundary and used to reconstruct the new farm boundary. It was therefore not possible to make accuracy comparisons of the survey diagram beacons coordinates with GPS measured ones. As mentioned in the survey methodology earlier, comparison was only possible once the GPS captured boundary marker coordinates had been differentially corrected and used in reconstructing the farm boundary through on-screen digitising using the ortho-rectified aerial photograph as a backdrop reference image in a GIS.

Moreover, while surveying the Ukulinga farm boundary, a trigonometric beacon was found just outside the property, but along the fence marking the northern boundary. The trigonometric beacon is labelled BI – EY 230 with altitude 832.8 metres above sea level, latitude 29°39′46.2496″S and longitude 30°23′56.7300″E. The opportunity was taken of a GPS recording of the trigonometric beacon coordinates as well as altitude and to compare them with those precisely measured by the Surveyor General.

Accuracy of Differential GPS Point Measurement

Comparison of coordinates and height of the trigonometric beacon as measured by the Surveyor General with those captured by the GPS showed a difference of 3.2 m in elevation representing a vertical error of 0.38% and a displacement representing a horizontal error of 0.002 m. The calculated relative accuracy is based on the assumption that the position and height of

trigonometric beacon as determined by the Surveyor General's office are of a high accuracy and the GPS measurement error as being a magnitude of deviation from these values. The 0.2 mm horizontal error obtained by the GPS measurement was therefore well within the tolerance levels set by the Survey Regulations (Republic of South Africa 1997b).

Accuracy of Measured Area Using Participatory Mobile GPS

As mentioned previously, no survey beacons as described in the original survey diagram could be recognised and new boundary markers had to be captured using GPS choosing corner posts of boundary fencing as proxy survey beacons. Accuracy assessment could, therefore, only be carried out by comparing areas of the reconstructed farm boundary and the farm area as recorded in the survey diagram and as attributed in the cadastral map. The comparison of the areas revealed a difference of 0.2409 ha representing a 0.12% overestimate error between the GPS derived area and the area recorded in the survey diagram. A difference of 0.1794 ha represented a 0.09% overestimate error within the cadastral area. These accuracy levels are corroborated by the Irrigation Training and Research Centre (Irrigation Training and Research Centre 1998) as being within the expected accuracy levels for the method used.

Conclusion

This study has shown that Participatory Mobile GIS allows cheaper and simpler spatial description of land rights irrespective of whether locally-based land adjudicators or professional cadastral surveyors are deployed, or whether the land right is to be entered in a centralised system or a decentralised system. Moreover, most African countries are indicating a preference for locally-based adjudicators of good standing in their community, as this is seen to promote transparency. The Mobile GIS technology made up of hand held devices allows participation of available stakeholders on the land itself and therefore allows quality assurance by stakeholders as witnesses in the adjudication and recording processes.

A number of methodological as well as tools and skills issues should be noted prior to consideration of deployment of the method tested in this

study. Rectified, ortho-rectified (ortho-photos) as well as unrectified aerial photographs at various scales, in colour or panchromatic have been used beneficially as tools for participatory mapping for various purposes. Ortho-photos tend to be produced in panchromatic and at medium scales (1:10,000) and with added data such as contour lines. The density of information, the lack of colour and the scale together make interpretation rather difficult for a non-professional user. On the other hand, larger scale (1:2,000 – 1:5,000) colour aerial photographs that have been merely geo-referenced (not necessarily ortho-rectified) tend to be interpreted with ease by users from various backgrounds including individuals with low literacy or technical skills.

Large-scale colour aerial photographs are not readily available. Often special orders have to be made for the area of interest to be flown at great expense with the context of rural communities as the purchasing clients. Once obtained, digital formats need GIS expertise for achieving the purpose already discussed. Education and training in land information management of key rural community members is therefore imperative. In addition, specialised GIS software and a computer with extended memory and storage features as well as a reasonable quality printer are required.

It should also be noted that even the high accuracy GPS will lose the satellite signals in a deep v-shaped valley. This emphasises the appropriateness of using GPS in combination with aerial photographs or high resolution satellite imagery. Technology has now allowed maps produced by rural communities in participatory mapping processes to be geo-referenced and to be integrated with other spatial data, thereby enhancing the quality and quantity of information derived. Participatory mapping exercises are increasingly done against a rectified background aerial photograph or satellite image that will have usually been printed from a digital origin. The tool shows great potential in the sustainability of a land rights recording system as its visual properties allow it to be used not only by technical people but also directly by the affected individuals and groups. A combination of the GPS and GIS tools enhance the quality of participatory mapping processes for a wide range of possibilities in land reform and sustainable development, including the implementation of the ongoing Land Restitution as well as Land Redistribution and Agricultural Development (LRAD) programmes and in modernising customary land administration into statutory status through the implementation of CLaRA.

Successful implementation of CLaRA will be largely dependent on a successful Land Rights Enquiry (LRE) that will be anchored on among others, establishing the existing community rules and their subsequent formalisation, as well as obtaining adjudicated land audits which together will form a framework for a Communal General Plan. Both spatial considerations of communal land and the participation of the community will be critical to the success of the LREs and to the overall success of regularising customary land administration into statutory law.

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Assessing the Spatial Patterns of Crop Damage by Wildlife using GIS

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Introduction

Damage caused by wildlife to human economic activities is a serious problem to wildlife conservation efforts. In Africa, most of the people whose farming activities are often impacted by the presence and abundance of 'problem' wild animal species are the resource poor local subsistence farming communities, and in some cases, commercial farms adjacent to wildlife habitats. Reports of crop damage caused by wildlife on crop farms are associated with interactions between humans and wildlife, mainly through the alteration of the wilderness landscape resulting from expansion of human activities which encroaches on wildlife habitats or the establishment of conservation areas in close proximity to human livelihood activities such as crop farming. This alteration of the wilderness landscape has a direct or indirect influence on wildlife foraging preference and patterns of foraging (Hoare & Mackie 1993). Wild animal damage to farming activities, including crop raiding requires an understanding of the spatial dynamics of the damage, how this damage impacts on individual farm activity, and the implications on wildlife management. This understanding can be in form of socio-economic concerns of crop damage caused by 'problem' wildlife species, temporal patterns and spatial patterns of crop damage. An understanding of the spatial aspects of wildlife-crop damage assessment is very crucial for wildlife conservation planning, and human-wildlife conflict management in and around the protected areas (Fielding & Bell 1997).

Documented studies on wildlife crop raiding provide relatively high assessment of the socio-economic concerns, the temporal patterns of wildlife visitation in crop farms and the consequences, such as crop damage (Nevo & Garcia 1996:1-2; Ferraz *et al.* 2003). However, the actual amount or area of crop damage and the spatial variations in crop raiding incidences are infrequently studied. Although GIS spatial capabilities undoubtedly offer valuable potential for wildlife management, the application of GIS in wildlife crop raiding assessment is also rare (Smith & Kasiki 1999). This deficiency is inherently evidenced in the academic literature as geographers who studied environmental hazards in the past emphasise modelling the geophysical environment of wildlife habitats (Barnes *et al.* 1995).

In the recent few decades, advances in computer information technology and developments in the spatial sciences, Geographical Information Systems (GIS) have provided enormous opportunity for spatially explicit modelling of the environment. The capability to assess attribute data linked with geographic information is now a predominantly easy task to perform (Sitati *et al.* 2003:1).

In few recent academic publications, there has been a significant increase in interest in the incorporation of spatial analysis in human-wildlife conflict assessment to predict the spatial patterns and the extent of damage caused by wildlife in crop farms using spatial analytical capabilities afforded by GIS and Remote Sensing (RS) (Dolbeer *et al.* 1996; Sitati *et al.* 2003; Ferraz *et al.* 2003; Tatsuya *et al.* 2007). This increase can be attributed to the increasing social and economic importance of the human-wildlife conflicts which is a prominent feature of wildlife management.

The spatial analytical capabilities, data manipulation and data storage characteristics of GIS provides an effective and efficient means to manage the kind of information required to understand spatial patterns of wildlife damage (Davis 2001:157-187). The involvement of communities through participatory GIS enhances a better understanding of the nature of conflicts as well as improving mapping accuracies.

This study provides a brief history of the human-wildlife conflicts as a result of crop raiding and highlights the importance of GIS in assessing spatial patterns of crop damage. An illustration of the application of GIS in combination with participatory mapping on eland damage in commercial agricultural farms adjacent to Kamberg Nature Reserve (KNR) in KwaZulu-

Natal Province of South Africa is provided. Implications of the study for management purposes are discussed.

Crop Damage by Wildlife in Retrospect

For several centuries agriculturalists in Africa shared the landscape with wild animals (Naughton-Treves 1998:156-159). Traditionally, farmers were balancing crop loss to wildlife with bush-meat gains by trapping animals in and around their fields. Other strategies included planting widely dispersed fields, guarding, and rotational planting (Naughton-Treves 1996). Nonetheless, crop damage by wildlife, particularly larger mammals, such as elephants prevented cultivation of some arable lands (Vansina 1990:71-99).

The linked strategies of farming and other traditional controls were decoupled across the African continent when colonial authorities prohibited certain local control measures such as hunting and use of poisonous substance to deter animals, and declared most wild animals as protected species (Graham 1973 cited in Naughton-Treves 1996). A colonial game management department in most African states protected wildlife in national parks and natures reserves.

For many decades the combined impact of colonial wildlife resources exploitation, the ivory trade, deforestation, and civil war removed or displaced large animals from their natural dwellings. Surviving wildlife is therefore isolated in patches of protected areas (Howard 1991). Few farmers today have contact with large wild animals unless they farm near the human-made islands of so-called protected areas.

Human-wildlife conflicts around protected areas continue to be a growing challenge in contemporary conservation, especially when attempts are made to balance global environmental goals with local residents' livelihood activities. As a result, integrating wildlife conservation with other land-use options is difficult, particularly where densely settled agricultural land are adjacent to a protected area. Large or potential damage-causing 'problem' animals impact on agriculture in several parks and reserves in Africa (Dolbeer *et al.* 1996). This loss has an immense social significance which may best be understood in terms of vulnerability, which is broadly defined as the potential for loss (Matzke & Nabane 1996; Liverman 1990).

Despite the growing attention to human-wildlife conflicts around

protected areas, uncertainty persists about the actual magnitude of the problem especially in terms of understanding the spatial patterns of the damage (Dudley *et al.* 1992:118). Most published research on crop damage by wildlife around protected areas is based on interviews with farmers with deficiency in the spatial quantification of crop damage by the suspected wildlife species (Hill 1993). Social research studies thus offer valuable insight, particularly into the human perceptions of crop loss but lacks the spatial context.

In some cases, attempted spatial investigations have revealed a disparity between reported and observed damages, with farmers most often overestimating the amount of crops lost to wildlife (Hill 1997). Other studies introduce error when researchers try to extrapolate verbally observations from a single site to an entire park or reserve because the areas of crop damage within the crop fields are either inaccurately mapped or are poorly predicted without any clear environmental considerations in the affected fields.

As a result of paucity of accurate information, some technical experts from conservation departments claim that local farmers exaggerate crop damage in hopes of compensation (Bell 1984), and claim that mega-fauna, such as elands, elephants or rhinoceroses, are unjustly blamed for crop raiding (Hawkes 1991).

Although surrounding crop farms may confine wildlife to meagre patches of protected natural habitat, local farmers are unlikely to bear crop loss without complaint. At sites where the risk of damage is perceived to be significant, farmers may be hostile to wildlife. The complaints of neighbouring farmers have led park managers to invest large sums of money to prevent wild animal crop raiding and livestock predation (Hoare & Mackie 1993).

Whereas the bitter complaints of farmers capture the attention of protected-area managers, only rarely is the actual impact spatially assessed, or the prevailing environmental factors tested in order to predict such damages. The absence of this information hinders effective management and accurate comparisons between farms which results in deficiency of appropriate policy formulation.

Hoare and Mackie (1993) assessed ‘problem’ animal control and management of wildlife populations in the communal lands of Zimbabwe,

and found out that generally crop damage incidences occur on farms that are in close proximity to wildlife habitats or located mainly in wildlife migration corridors more than on crop farms located further from wildlife habitats. This suggests that there is a spatial variation between the location of crop fields and the susceptibility of farms to crop raiding incidences. An understanding of the geographical patterns of human-wildlife interaction is crucial for conservation planning, which forms an integral part of formulation of conservation policies and decision-making. In this regard, an assessment of human-wildlife interaction, such as information on crop raiding caused by wild animal species, requires acquisition and analyses of both spatial and attributes data. The role of GIS and RS methodologies as an approach to assess the spatial aspects of crop damage provides valuable tools to study the spatial variations of human-wildlife interactions.

Measuring the Extent of Wildlife Damage on Crop Fields

People often perceive that wildlife can damage up to 100% of agricultural production (Perez & Pacheco 2005), especially where there are no adequate buffer zones and/or absolute barriers. It is vital to gain a thorough understanding of the spatial patterns of animal damage in order to develop and direct mitigation strategies. Most studies evaluating wildlife damage in crop fields are based on surveys that gather information from the affected people and/or point estimates in the damaged crop fields (Perez & Pacheco 2005).

It is inevitable to estimate the extent of crop raiding incidences without incorporating the spatial aspects. Spatially explicit assessment of crop raiding incidences is pivotal to the quantification of crop losses to wildlife and the related management implications. Sitati *et al.* (2003) studied wildlife impact on adjacent crop farms (predicting spatial aspects of human-elephant conflict) and indicated that although temporal patterns of crop raiding by wildlife is relatively predictable, mapping the spatial variations exhibits specific trends, indicating where such damages will take place, and at predicted severity. Furthermore, affected people whose farms and/or properties are raided by wildlife may provide imprecise and biased information because of lack of direct experience in measuring the damage, or their personal feelings towards wildlife. Damage caused by wildlife to crops

in many developing countries in sub-Saharan Africa is not only poorly assessed, but the spatial configuration of crop damage is not well understood. Conflicts usually take place close to protected areas and they also occur between dusk and dawn, and for crop raiding in particular, it is usually seasonal (Sitati *et al.* 2003). Systematic spatial and temporal studies of the human-wildlife conflict have scarcely been studied.

Recent technologies such as Geographical Information Systems (GIS), and Global Positioning Systems (GPS) and Remote Sensing (RS) are being used in combination for the input, storage, manipulation, analysis, and display of geographic information and its associated attribute data (Coulson 1992). These spatial techniques provide an effective and efficient means of generating habitat spatial information as well as more accurate measures of damage caused by wildlife (Anderson 1996).

GIS is increasingly being used in combination with habitat models as a source of environmental variable predictor and as a method of displaying model results. With advances in computer technology and an increasing interest to understand spatial relationships within wildlife habitat ecology, GIS technology has become increasingly useful in wildlife management and research. Recently, further advances in the acquisition of digital remotely sensed image data such as hyperspectral remote sensing provides a valuable source of data for the modelling of wildlife-crop raiding incidences (Austin *et al.* 1996).

Using GIS and RS, it is possible to accurately locate and map planted fields and crop damage sites. The use of these technologies offers advantages in conservation research and implementation of damage control strategies. Identifying and categorising patterns of damage, assessing the severity and refining the application of control tactics can all benefit from GIS/GPS, and RS technology (Goodchild *et al.* 1993; Adams & McShane 1992. The involvement of communities, through participatory GIS helps a great deal in tapping the socio-economic knowledge of conflicts and this can then be represented it in a spatially explicit context.

In Piracicaba, Brazil, GIS have been used to describe and quantify the actual damage caused by *Capybaras* in a corn field. The aim of that study was to get basic information on how much damage, and where the damage occurred. The GIS allowed for mapping of individual patches where crop damage occurred to be plotted into an aerial topography map. Crop

damage percentages were interpolated by the linear krigging method to obtain a map of spatial distribution and the predicted pattern of crop damage for the study area (Ferraz *et al.* 2003).

In the Masai Mara National Park of Kenya, spatial aspects of human-elephant conflicts were spatially predicted using GIS. A grid-based GIS was built with a 25 km^2 resolution utilising cost-effective data sources, combined with simple statistical tools (Sitati *et al.* 2003). The model could successfully predict the spatial aspects of crop raiding in local communities adjacent to the Masai Mara National Reserve (Sitati *et al.* 2003). Tatsuya *et al.* (2007) modelled the conflict between agricultural production and white-fronted geese using a behaviour-based model. The spatially explicit model could track the day-to-day spatial distribution of geese and their physiological dynamics.

In other studies, birds have exhibited considerable spatial and temporal patterns in their crop raiding (Tourenq *et al.* 2001). This has enabled appropriate management and mitigation measures to be strategically applied.

Mapping Crop Damage in the Kamberg Nature Reserve

We illustrate the utility of participatory GIS to map areas damaged by elands (*Taurotragus Oryx*) in farms adjacent (Allendael, Reekie Lynn & Riverside farms) to the Kamberg Nature Reserve (KNR) of KwaZulu-Natal (Figure 1).

It has been noted that the movement of elands into farms and crop raiding incidence report continues although eland fencing has been erected to prevent the 'problem' animals from crossing the KNR boundary. Crop damage caused by elands in farms adjacent to the KNR impacts on the economic activities of the farmers, and elands themselves are endangered to poaching when found outside the boundaries of the KNR.

This study is based on an Eland Crop Raiding (ECR) data collected in the field, and the use of aerial photography. The data was analysed in two main approaches, with the first set of analyses comprising data pre-processing tasks involving data preparation and digitising of polygons describing the relevant cultivated fields adjacent to the KNR. This was done in order to collect the necessary information on which specific crop fields were affected by ECR incidences.

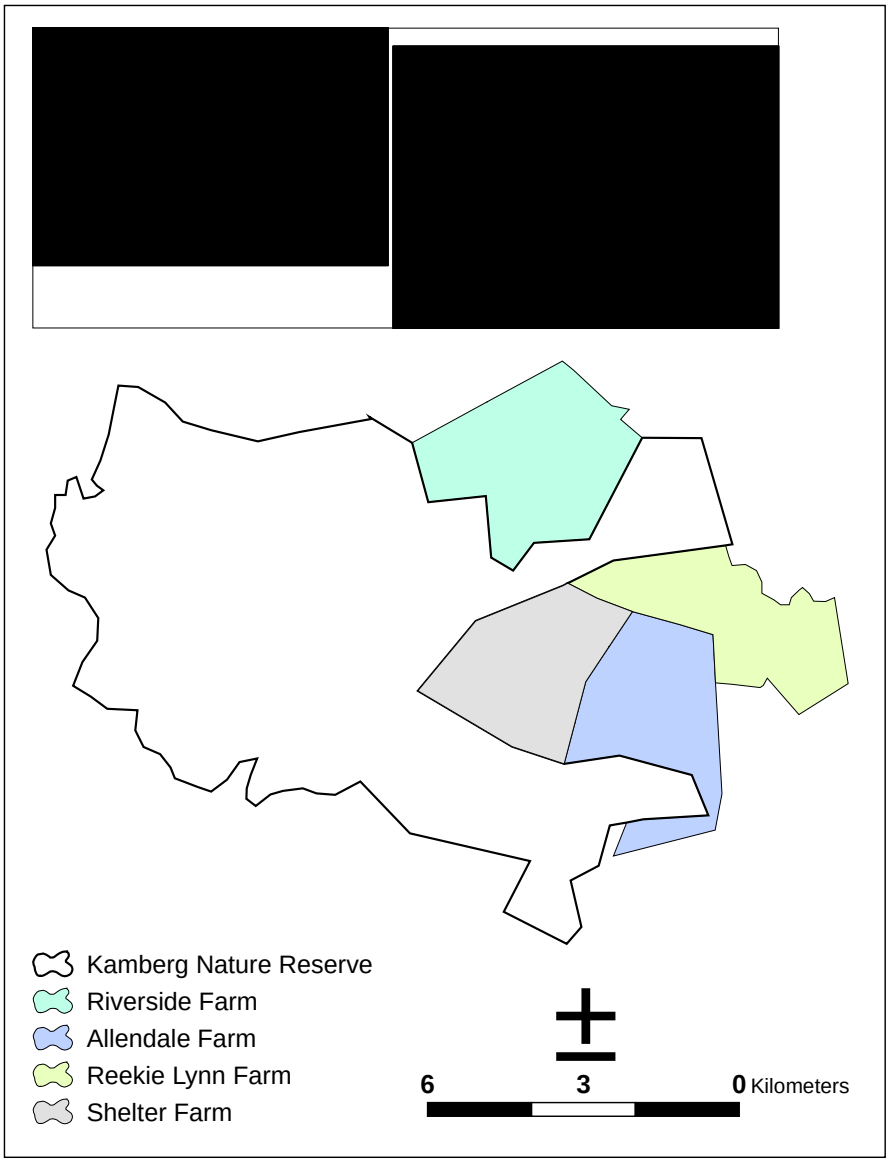

Figure 1: Location of the study area in KwaZulu-Natal Province

The second analysis investigated the distance or proximity, and the patterns of the mapped crop damaged field polygons from different environmental features located within or outside a farm. In this section, the actual area of ECR incidence in the study area was calculated. All the analyses procedure used data that were either collected in the field or derived from the aerial photographs, and other relevant GIS coverages.

Field data collection was conducted using Garmin GPS equipment. Eland visitation in crop fields was surveyed by administering crop raid report forms to farmers, complemented with GPS recordings of the raided fields. Field visits were conducted twice a week in April through to August 2006 and polygons of damaged areas mapped with a GPS. Distinctive foraging characteristics of elands in maize crops, tracks and tooth marks descriptions were used to verify eland presence and absence in the affected fields (Perez & Pacheco 2005:2-4).

To establish a reliable and independent crop-raiding incident reporting system, information on where and when crop-raiding occurred was gathered from the farm managers, and five employees for each of the three farms were consulted for triangulation with data from the owners (Hoare & Mackie 1993). This was done to circumvent the problem of over exaggeration of crop-raiding incidents (Sitati *et al.* 2003).

The use of crop fields by elands was characterised by large amount of vestiges such as footprints and dung, and also by direct observation of the animals in crop fields. Damages observed included broken fences as well as partly eaten and completely eaten maize stands. We used farmers' expert knowledge greatly in identifying areas visited by elands through footprints and bite types.

Distinctive foraging characteristics of elands in maize crops, tracks and tooth marks descriptions were used to verify eland presence and absence in the affected fields (Perez & Pacheco 2005). Damage sites were calculated as the percentage of the total cultivated area raided for each crop field and crop type. The temporal aspects of eland visitation in farms as noted earlier was surveyed from farm managers and farm employees (N=6 in total). The frequency (rate) of visitation was calculated as the number of observed visits divided by the total number of fields sampled for crop damage incidents.

Maize and pasture damage caused by elands in the sample fields was evaluated by recording X, Y coordinates of the affected fields by applying a

form of household questionnaire sampling method. The affected areas were located in Universal Transverse Mercator (UTM) coordinates system using a Garmin GPS point navigation unit. The (X, Y) coordinates of the affected areas were imported into ArcGIS v9.1 software package for manipulation prior to analysis. Separate shapefiles were created for both damaged maize and pasture fields raided by the elands. A total of 125 coordinate points were collected for analysis. Damaged maize and pasture fields were estimated by manipulating the point data into coverage polylines and this was then converted into polygons.

The Kamberg Nature Reserve boundaries and the surrounding crop farms boundary were derived from 1:50,000 scale topographic (cadastral) maps. Features such as road systems, water sources, forest cover, human settlements, transport and cultivated crop fields were derived by digitising aerial photographs of the study area. Aerial photographs obtained from the Surveyor General's Department were imported into ERDAS Imagine 8.7 for georectification and mosaicking. A scanned (georeferenced in ArcGIS v9.1) topographic map of the study was used to acquire the ground control points (GCPs) for the rectification of the aerial photographs. The georeferenced, scanned topographic map (in image format) provided quick and adequate GCPs that were easily identifiable on the aerial photographs. Georeferecing of the scanned topographic map of the study areas was easily done in ArcGIS v9.1 software because the map contained grid reference values. This values were then calculated in Microsoft excel, and saved as DBF4 (dBASE), imported into ArcGIS as X, Y data for control point.

Using the data preparation procedures and image geometric correction tools, a first order polynomial transformation was performed separately on the two aerial photographs using features that could be identified on both images and the scanned topographic map image. After rectification of the aerial photographs, the two aerial photographs were mosaicked using ERDAS Imagine software. Cutlines were created through this process and, the boundary of the cutline was then smoothed and feathered to join the two images together. Next, polygons of the cultivated fields and other features including water sources, road networks, forest cover, and human settlements within the study area were generated. Automated supervised and unsupervised image processing has been frequently used to create thematic maps from remotely sensed imagery.

However, since the main aim of this study was to determine the distribution of ECR incidences in the study area, and assess the environmental factors influencing crop raiding in the study area, it implied that the affected crop fields and the environmental features must be identified. The most convenient method to identify these was to implement onscreen digitising of all the features of interest with the aid of an aerial photograph.

Using ArcView v3.3 software, new polygon themes were created for each feature of interest by tracing the outline of the image. A theme attribute table for all features including calculating field column containing field ID/name, crop type, and field area was then done.

The resulting digitised crop fields and other features were used to build coverage polygons of the affected cultivated maize and pasture fields. The cultivated field polygons were overlayed with polygons of damaged crops using the spatial analysis tool in ArcGIS. Digital field (cadastral and 1:50,000 topographic) maps, and the GPS ground/field control points were used in order to overcome the problem of poor field boundary distinction of the aerial photograph that may have occurred due to the spatial resolution, small field size, and hilly landscape of the study area.

Following the generation of vector data layers and their associated attributes, distance class intervals for raided fields to the selected feature factors (that is, forest cover, water sources, road network, and distance of raided fields from the KNR boundary) were then calculated. The field GPS data layer was overlayed with the polygon layer (also with the aerial photo) so that the affected fields could be selected for further analyses. The layers were manipulated to describe the distribution of polygons representing the elands' raided fields. Elsewhere, Sitati *et al.* (2003) conducted a similar analysis on crop raiding caused by elephants in subsistence farms adjacent to the Masai Mara National Reserve to assess the spatial aspects and map distribution of human-elephant conflict in the area.

Analysis of crop damaged fields and associations with assumed environmental variables (damaged field size, distance from the forest cover, road network, water sources and KNR boundary) at the field level were performed by calculating the Spearman's rank correlation (r_s). This method allowed the determination of whether there was any significance in the association between the proximity of raided fields to the variables as in the GIS plots. The analysis was completed using SPSS version 13.0 for

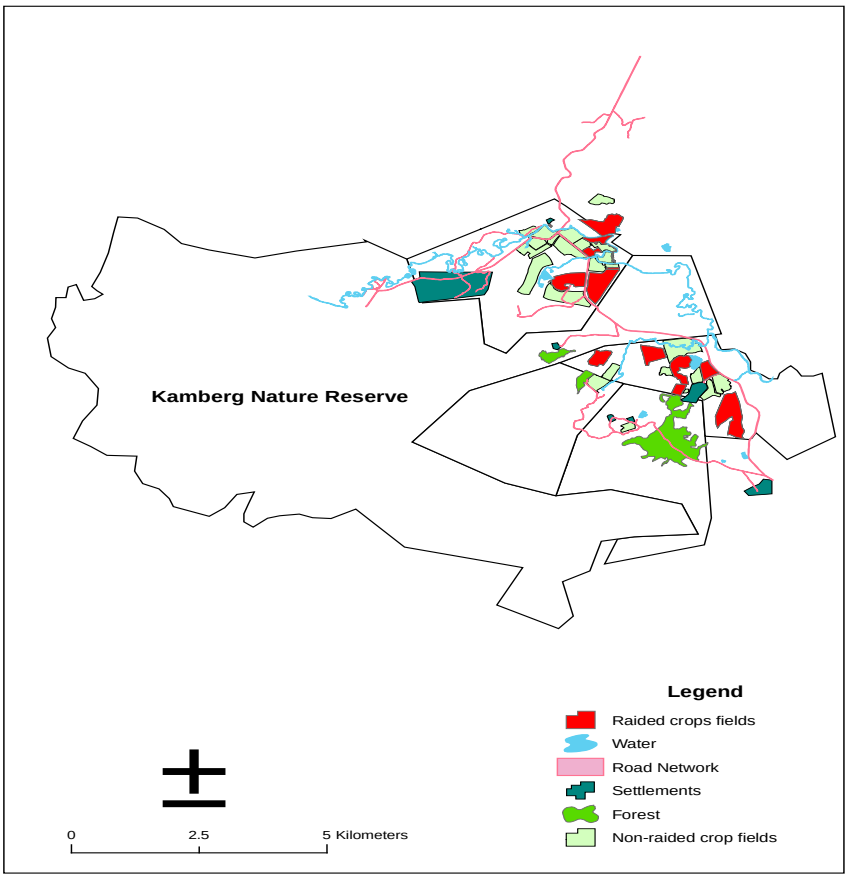

Figure 2: Location of damaged fields as mapped by GPS and local people's participation

windows. Figure 2 illustrated the location of the damaged fields as mapped by GPS and local people's participation.

Results and Discussion

Results from field observations and interviews with farmers showed that elands trespassed in maize *(Zea mays)* and ryegrass fields for foraging. Crop raiding occurred usually during early morning before 07:00 hours and late

evening, after 18:00 hours. The size of the eland crop raiding herd varied between farms, but ranged from 8 to 36 animals as recorded by the farm staff. The results of calculation of the actual area of planted maize fields in Riverside farm indicated that 7.8% area of maize fields was damaged by elands. The results show the strength of GIS in characterising the quantity and spatial distribution of damage caused by elands.

To determine the severity of damage in each of the three farms mapped, we ranked the fields in terms of the intensity of crop damage. Fields were chosen for this kind of analysis because the field size (m^2), and distance from a feature factor (m) such as the KNR represent discrete units of relevance to both elands' activity patterns and farmers' guarding interests. The variation of crop raiding incidences was therefore calculated for each farm (Naughton-Treves 1998:5).

We also tested the spatial autocorrelation of damage by calculating *Global Moran's I* value (Koenig 1999; Sitati *et al.* 2003). Results of spatial autocorrelation showed that there was a significant clustering feeding behaviour of animals. The result is critical for farmers' guarding interests. The unpacking of the spatial configuration pattern in the crop damage is important for the implementation of suitable intervention measures by farmers.

Results of the relationship between the characteristics of damaged fields and environmental variables showed that there was a strong correlation between the location, size and distance of damaged crop fields and the KNR boundary. The crop damage index between farms index varied significantly with distance to the KNR boundary as well as to water sources. In other words a negative relationship was observed between crop damage and distance from the rivers as well as distance from the KNR boundary.

The results of the correlation coefficient indicated that proximity of planted fields to permanent water sources is a significant factor influencing crop raiding in the farms. This relationship can be attributed to the distribution of the crop fields which are concentrated on river banks because most of the fields are for rotational cropping where maize crop is planted during the rainy season and rye grass, mostly on irrigated pasture, is planted during winter (Schotcher 2006). The correlation between damaged field polygons and proximity to forest cover and road network were also negative. In addition a combination of proximity of crop raiding to water source and

forest cover was significantly correlated, which shows that there was strong dependency of crop raiding events in relation with both variables. The relationship between crop raiding for forest cover and road network can be explained based on the ease of access to and escape from the farms to the KNR when 'problem' elands wander in the crop fields for maize and pastures. In addition the forest potentially provides cover for these animals to make use of during crop raiding incidents.

In summary, this study has shown the potential of participatory GIS in unpacking the spatial distribution and configuration of damaged crop fields by elands in KwaZulu-Natal Province. The relative importance of several environmental variables in explaining the distribution and configuration of damage is critical in facilitating adaptive management strategies.

Conclusion: Implications for Management

In Africa, as indicated earlier, most of the people whose farming activities are often impacted by the presence and abundance of 'problem' wild animal species are the resource poor local subsistence farming communities, and in some cases, commercial farms adjacent to wildlife habitats. From a geographical perspective, it is inevitable to examine the spatial pattern of wildlife crop raiding incidences in farms located near wildlife habitats or within wild animal species foraging range. Increasingly, reports of crop damage caused by wildlife on crop farms are associated with interactions between humans and wildlife. This can mainly be attributed to the alteration of the wilderness landscape as a result of the expansion of human activities close to wildlife habitats. Additionally, the establishment of conservation areas in close proximity to human livelihood activities has also resulted in human-wildlife conflicts. The alteration of the wilderness landscape is believed to have direct or indirect influence on wildlife foraging preference and patterns of foraging. An understanding of the geographical patterns of human-wildlife interaction is therefore an important aspect of nature conservation, planning and decision-making.

Analysis of the information collected from the farm owners, management of the KNR and other spatial data on eland foraging activities in the study area revealed that elands on private lands including agricultural

fields is increasingly causing human-eland conflicts. The human-eland conflicts present significant management concerns for the wildlife conservation in the southern Drakensberg ecosystem (Scotcher 2006). The results of analysis of both social concerns and the spatial dynamics of eland impacts in crop fields shows the human-eland conflicts warrant considerable strategic management in Kamberg area.

An understanding of the spatial distribution patterns and magnitude of the crop raiding incidences in Kamberg provides valuable information that is useful for strategic eland management and decision-making in terms of human-eland conflicts. Very important too is that quantifying the intensity and extent of crop raiding by elands in agricultural farms adjacent to KNR using the participatory GIS exemplified in this study is an efficient way to model the spatial aspects of crop damage incidents which will in turn help in the mitigation of human-eland conflicts in the southern Drakensberg region.

In conclusion, this study has shown that previous research has mainly concentrated on understanding only the socio-economic dynamics of human-wildlife interaction with very limited understanding of the spatial distribution of this conflict. Such an approach has caused considerable difficulties in drawing contextual conflict resolution measures, hence the need to map the extent and severity of this conflict. Participatory GIS, a tool that incorporates local expertise and knowledge with technical expertise, provides an efficient and effective way to map the extent and severity of damage caused by wild animals on agricultural land.

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Open Spaces, Nature and Perceptions of Safety in South Africa: A Case Study of Reservoir Hills, Durban

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Introduction

Crime has emerged as one of the most prominent challenges facing South Africa. Crime and safety have been at the centre stage of several debates and discussions. The Institute for Security Studies (ISS) (2001:1) states that addressing perceptions of crime, particularly anxiety and fear of crime, is as important as reducing crime levels. Additionally, ISS (2001:1) asserts that fear of crime affects quality of life and has negative economic and political consequences. These aspects are particularly acute in countries in transition such as South Africa, as indicated by the collection of articles edited by Dixon and van der Spuy (2004) that indicate the effects of crime in society, the inadequacies of South Africa's justice systems and resource constraints to effectively tackle this national problem.

This article investigates how, within the context of heightened safety and security concerns, residential communities perceive open public spaces by adopting a case study approach. Open spaces in urban areas are critically important in terms of ensuring the continued presence of nature and related natural resources in built environments. However, this article reveals that residents tend to perceive these areas as crime hotspots as well as refuge areas for potential criminals. These perceptions are reflective of increased resistance to open spaces in residential areas. The analysis is undertaken as

part of a broader attempt to examine environmental perceptions of crime and violence, especially in relation to spatial dimensions.

Safety and Security Issues

In the South African context, despite the acknowledgement of crime and violence as a central concern (especially by the Crime Information Analysis Centre 1998), there has been a dearth in studies that focus specifically on people's perceptions about the environments in which they live, especially in relation to violence and crime. Additionally, there remains a weak empirical and conceptual basis to understand the nature and extent of violence and crime against people as well as the context and locality specific experiences. Nelson et al. (2001:249) indicate that research on the micro-spatial geography and temporal characteristics of violence and crime has been neglected in favour of identifying broader patterns and trends. There have been numerous calls to provide more substantive information and rigorous research about the nature, scope and dimensions of the problem at the local level (Nelson et al. 2001:249).

The issue of safety and security in residential areas in South Africa, especially as it is linked to violence and safety, is often highly political and is at the core of much discontent among South African residents. Moser (2004:4) indicates that the uncertainty generated by violence is expressed in fear and insecurity. The Table below illustrates the integrated and holistic crime prevention framework encapsulated in the White Paper on Safety and Security 1999-2004, In Service of Safety. The Table clearly indicates that the intention is to focus on policing and the criminal justice system more broadly as well as socio-economic and environmental factors including design issues, education and addressing social-economic problems. Furthermore, the Table indicates that to effectively address crime and violence in South Africa, it is necessary for several stakeholders to work together. The stakeholders include various government departments, the community (citizens and residents) and civil society organisations.

Table 1: Crime prevention framework for the White Paper

Crime prevention through effective criminal justice	Social crime prevention

Reduces the opportunity for crime by making it more difficult to commit crimes, more risky or less rewarding. Effective law enforcement creates a strong deterrent to crime.	Reduces the socio-economic and environmental factors that influence people to commit crimes and become persistent offenders.
HOW IS IT ACHIEVED? Justice system acts as a deterrent Law enforcement Rehabilitation and reintegration Active visible policing Successful investigations Victim empowerment	HOW IS IT ACHIEVED? Designing out crime (physical design of space) Education Promoting social cohesion Supporting youth and families and groups at risk Breaking cycles of violence Promoting individual responsibility Socio-economic interventions to undercut causes of crime
WHO IS RESPONSIBLE: All levels of Government All Government departments, particularly those engaged in the National Crime Prevention Strategy South African Police Service	WHO IS RESPONSIBLE: All levels of Government Government departments such as Housing, Education, Welfare, Health Municipalities National Crime Prevention Strategy Organisations of civil society Citizens and residents of South Africa.

Source: Department of Safety and Security (1998:22)

Place/ Location and Safety

A specific geographical location includes physical resources as well as social relations which are embedded in a range of power relations. Social relations influence how a specific location is used and perceived. This implies that people assign meanings and values to places. Place, according to Massey (1994:2), is given meaning by people's interactions, perceptions and assumptions about it. Furthermore, livelihood options, mobility and strategies are restricted or enabled by environmental conditions in specific

contexts. The focus on the spatial and locality specific dimensions of violence becomes central to planning and service delivery initiatives.

The urban environment includes public and private places, people that live and work in an area, the services and facilities available and the way the area is governed and managed. Changes to the urban environment can take the form of social and community developments as well as physical changes. Koonts (2000:4) argues that gender identity versus sexual orientation, pedestrian volume, environmental neglect, and street continuity and integrity influence perceptions of unsafe areas. Community safety is based on four broad principles (Stavrou 1993:3-9):

- Local communities will be safer if crime is prevented or reduced;
- Some environmental factors in public places can make crimes easier to commit and get away with;
- Changing the factors that promote crime and violence can help to deter and reduce the incidence of crime; and
- Strategies to create safer communities work best if they also include community development programmes which address specifically social and economic challenges.

People adopt several coping strategies when responding to real and perceived threats of violence such as the avoidance of places and individuals they perceive as threatening and fighting back. It is important to note that many of the strategies that are used to cope with violence and the fear of violence constrain people's movements and limit their social, political and economic participation and opportunities.

Fear of Crime and Public Spaces

Lawlink (nd:4) states that fear is a complicated emotion that is felt for many different reasons and in many different ways. Furthermore, it is not only an automatic response to danger but it is often the result of complicated interactions between us, our physical and social environment and our cultural background. Bob et al. (2006:2) state that an important aspect of understanding fear of crime is that it is not the same as actual risk of becoming a victim of crime, however, fear is no less real. As Grabosky

(1995:1) underscores, 'Fear of crime has become an important issue of public concern: a problem which detracts from the quality of life, and which adversely affects social and economic well-being'.

Several studies in both developed and developing contexts indicate that fear of crime can impact on people's lives as much as actual crime (Ackah 2000; Adams & Serpe 2000; Grabosky 1995; Moore & Shephard 2006). Fear itself can be extremely incapacitating and restrictive which can limit people's mobility, involvement in activities and access to opportunities. Additionally, social mobility and interaction are impacted as distrust increases. Fear of crime can be a powerful motivator for economic behaviour, for example, choice of residential location and school (Gibbons 2004 cited in Moore & Shephard 2006:293). Moore and Shephard (2006:283) argue:

> It (fear of crime) also goes beyond the tangible economic and physical losses imposed by criminals. It extends to an alteration of daily living habits as well as to the negative psychological effects of living in a constant state of anxiety. It has a deleterious effect on the general social order.

Addressing perceptions are critically important. Mistry (2004:19) indicates that despite the decline in crime rates indicated by the victim surveys and the official crime statistics, South African felt less safe in 2003 than they did in 1998. Mistry (2004:24) states that this counter intuitive trend may be explained by a number of factors such as increasing public awareness of other people's victimisation and the high level of violence that typifies some criminality. However, Mistry (2004:24) argues that more research is required in order to understand the complex dynamic between the increasing fear of crime and decreasing crime rates. ISS (2001:2) argue that factors like actual victimization; general impressions of the city environment; the media; interaction with colleagues, friends and family; perceptions about government's ability to provide safety; and the extent to which people feel helpless against crime, influence public perception.

Spatial and Environmental Patterns of Violence

Tabrizi and Madanipour (2006:932) state that environmental criminologists have correlated crime patterns with the environmental and physical layout of places where crimes occur. Incidents of crime tend to concentrate in specific locations at particular time periods. It is also important to note that fear of crime has spatial and temporal dimensions as well. People tend to fear specific locations and times, especially during the night. Dangerous places are linked to perceptions of blocked prospects which reduce visibility and create opportunities for potential criminals to hide. Nelson et al. (2001:253) indicate that potential threat of violence and crime shapes people's perceptions of risk and subsequent behaviour. These perceptions are strongly attached to specific localities.

Smiley and Roux (2005:1) illustrate that while individual people experience stress due to personal events (deaths, marriages, job changes), communities of people also experience daily stress due to features in their neighbourhoods (such as traffic, crime, and abandonment of properties near their homes). They assert that these environmental stressors have the potential to impact entire communities, and yet are difficult to define and measure.

The need to feel safe in our local environment and a right to be comfortable as individuals within society are deemed to be important to physical and psychological well-being. The professions of landscape architecture, urban design, planning and architecture consider the physical environment in an attempt to provide safe spaces for inhabitants of cities, towns, and houses. Koonts (2000:1) asserts that much of the historical reorganisation of spaces within cities was a response to the perceived threat of crime and diminished levels of personal safety. Brantingham and Brantingham (1993 cited in Koonts 2000:1) state that fortified city walls, fences, zoning of land uses and urban renewal or slum clearance were all actions implemented to improve the safety of urban inhabitants, though these measures benefited some residents more than others.

According to Koonts (2000:1), seminal books that examined the relationships between crime and the physical environment were: *The Death and Life of Great American Cities* by Jane Jacobs (1961), *Crime Prevention Through Environmental Design* by C. Ray Jeffery (1971), and *Defensible Space: Crime Prevention Through Urban Planning* by Oscar Newman (1972). The focus of the books was on making a case for designing

neighbourhoods that empower the residents, giving them the ability to control their environment thereby improving the security of their homes and communities. Local social control was centralised to involve monitoring public space. They also popularised the concept of environmental and behavioural interactions and the impact of this relationship on criminal activities. The field of environmental criminology emerged which looked at the relationship between crime and the physical environment. Numerous studies revealed that the physical features of neighbourhoods as well as perceptions of the physical environment influenced crime rates and the fear of crime in society (Cozens 2004; Koonts 2000; Taylor & Harrell 1996). Crime was viewed to be inextricably linked to the physical environment in which it occurred.

In recent years, growing awareness about how the physical environment affects human behaviour has been integrated into a knowledge-base known as Crime Prevention Through Environmental Design (CPTED) (Schneider 2001:1). CPTED is defined by Crowe (2000:1) as:

> The proper design and effective use of the built environment can lead to a reduction in the fear of crime and the incidence of crime, and to an improvement in the quality of life.

Tabrizi and Madanipour (2006:934) indicate that crime prevention through design and management of the environment emphasises that criminal opportunity can be reduced through architectural and planning techniques that make criminal activity more difficult to take place and can reduce the incidence of fear of crime. The core elements of CPTED include the following (Schneider 2001:1-2):

- Natural surveillance: keeping an eye on the whole environment without taking extraordinary measures to do so. Typical obstacles to natural surveillance include solid walls and lack of windows that provide visibility to areas that have experienced a high incidence of problem behaviours.

- Natural access control: determining who can or cannot enter a specific area or facility. Obstacles to access control include unsupervised areas and unlocked entrances to buildings.

- Territoriality: establishing recognised authority and control over the environment, along with cultivating a sense of belonging. Poor border definition can impede territoriality such as open spaces within the city.

The design of space is viewed as being central to giving a message that someone owns, uses and cares for it (Cozens 2004:3). Territoriality (or ownership), control of access, surveillance and the productive use of space, are important to crime prevention and community safety. It is unlikely that a criminal act will be committed in a place that is being viewed as safe and secure. Cozens (2002:1) indicate that a key component of CPTED is the continuous maintenance and management of urban space that is actively being used and discouraging the under-use of such space. The social construction of space into perceived safe and unsafe places is important to understand. Perceptions of safe and unsafe spaces are shaped by information (even if inaccurate) they receive from the media, their family, their peers and other social contacts. Notions of safe and unsafe places are also informed by personal experiences.

The literature identifies several factors in the environment that influence the perception of unsafe or vulnerable public places (Lawlink nd; Loader & Walker 2007; Nelson et al. 2001). The main factors were inadequate policing/security, isolated and poorly lit areas, locations with places to hide in, dilapidated or uncared for areas, and places where there is excessive amounts of alcohol consumption, drug-taking, prostitution and gangsterism. Many of the above are characteristic of open spaces and parks in residential areas as local residents decreasingly make use of these spaces for recreational purposed. Lawlink (nd:9) indicates that when these factors are not removed, improved or addressed, people continue to feel unsafe regardless of how safe an actual crime profile reveals the area to be.

Several studies indicate that there is evidence that green spaces can lower crime and illegal activity when well planned, maintained and monitored (American Planning Association [APA] 2003; Kuo and Sullivan

2001). The latter (maintenance and monitoring) in terms of planning and management of open spaces should be emphasised since open spaces which are unkempt can have the opposite effect. In the United States, for example, these studies illustrate that green spaces have been shown to create neighbourhoods with fewer violence and property crimes and where neighbours tend to support and protect one another. APA (2003:1) in advocating for green spaces, specifically parks in cities highlights the following:

- Time spent in nature immediately adjacent to home helps people to relieve mental fatigue, reducing aggression.
- Green residential spaces are gathering spaces where neighbours form social ties that produce stronger, safer neighbourhoods.
- Barren spaces are more frightening to people and are more crime prone than parks landscaped with greenery and open vistas.
- In order to make the best use of greenery and open space, it must be positively incorporated into a community's design.

APA (2003:2) also notes that these social spaces lead to the conspicuous presence of people outdoors that contribute further to safety and increasing surveillance, which discourages criminals.

Attempts to prevent crime, however, can have unintended consequences. For example, Ayres and Thomas (1998:139) conducted a social environmental audit of urban renewal schemes based on an investigation of environmental hazard risk perceptions of people in their homes, workplaces and other places of urban activity, in the vicinity of five major renewal sites in Sandwell, West Midlands, U.K. The report indicated that urban renewal in the United Kingdom had brought about an increase in certain perceived environmental risks and not necessarily a more desirable perceived environmental state than the alternative of dereliction. Town and O'Toole (2005:2) state:

> Architects and urban planners who call themselves New Urbanists say their proposals, including developments that mix residential and commercial uses, have homes with tiny private yards and large common areas, and feature pedestrian paths, will solve all sorts of

> social problems, including crime. Yet the housing and neighbourhood designs they want to substitute for the modern suburb almost invariably increase crime.

Several studies indicate that physical environment features can influence the chances of a crime occurring (Taylor & Harrell 1996:1). Offenders may decide whether or not to commit a crime in a location after they determine the following (Taylor & Harrell 1996:1-2):

- How easy will it be to enter the area?
- How visible, attractive, or vulnerable do targets appear?
- What are the chances of being seen?
- If seen, will the people in the area do something about it?
- Is there a quick, direct route for leaving the location after the crime is committed?

These questions indicate that potential offenders critically assess the environment as a potential crime site. Even opportunity crimes entail a rapid assessment of the environment.

Understanding spatial patterns and perceptions of crime are central to developing effective prevention strategies and planning safe neighbourhoods. As Craglia (2000:712) states:

> An increasingly important aspect of this local-level use of crime mapping is the extent to which it may enable greater involvement of local communities in crime prevention, particularly if the communities themselves develop the expertise to map their own neighbourhoods.

Communities (at all levels) are deemed to be constantly adapting to environmental problems or threats. Young (2006:353) highlights the importance of the physical environment:

> This emphasis on the physical, social and biological environment as a source of threats for the community diverges from the current view among environmentalists that communities are threats to nature.

> Actually, both interpretations are valid: an unmanaged (environmental) problem often returns as a threat to the community.

Taylor *et al.* (1994:1) show that residents living in close proximity to non-residential land use (including open spaces such as parks and vacant plots) are more concerned for their personal safety and less likely to intervene if they see something suspicious; they experience higher victimisation rates and call the police more often. In neighbourhoods where physical deterioration is more widespread (including the lack of maintained designated residential parks), residents have been more fearful when the future of that neighbourhood has appeared uncertain (Taylor *et al.* 1994:3).

Primary Research

Case Study and Methodology

The focus of the study in terms of primary data collection is a residential suburb (Reservoir Hills) in Durban, South Africa. Reservoir Hills is a historically Indian, middle income area. However, in recent years there has been a mushrooming of several informal settlements in the area. It is believed that the case study sufficiently reflects a cross-section of experiences contrasting socio-economic and spatial contexts and experiences. Both quantitative (questionnaire surveys) and qualitative (focus group discussions and ranking exercises) methods were employed. In terms of the questionnaire survey, 100 households were interviewed utilising the purposive sampling approach. Households located in close proximity to open spaces and parks were targeted. For the focus group discussion, 10 residents who participated in the household interviews participated.

Results

The table below illustrates respondents' perceptions of violence and danger.

Table 2: Perceptions pertaining to where violent acts are most likely to occur: multiple responses

Location/ place	Percent (n=100)
In the home	33
Close to the home	16

Public spaces	51
School	6
The workplace	1
Unknown/ unfamiliar environment (new area)	36
Parks/ grounds	13
Open spaces	8
Traffic lights	3
Nightclubs	10
Bars/ shebeens	3
Poorly lit areas	6
Shopping centres	18
Everywhere	3

Interviewees identified a range of areas/ places where they felt that violent acts are most likely to occur in their area (Table 2). The main locations identified were:

- public spaces (51%)
- in the home (33%)
- unknown/ unfamiliar environments (36%)
- close to the home (16%)

In Reservoir Hills, shopping centres (18%), parks/ grounds (13%), nightclubs (10%) and open spaces (8%) were also deemed to be unsafe by some of the respondents. It is also important to note that during focus group discussions the main public spaces and unknown/ unfamiliar environments that were deemed to be unsafe were parks and vacant plots.

The responses are similar to studies cited in the literature review that show that the majority of respondents perceive that violence is most likely to occur in public spaces as well as unknown and unfamiliar environments (Cozens 2004; Moser 2004; Smiley & Roux 2005; Tabrizi & Madanipour 2006). However, it is important to note that the home was also perceived by a significant proportion of the respondents as a place where violence was most likely to occur.

Table 3: Perceptions pertaining to places that are viewed as being unsafe: multiple responses

Places	Percent (n=100)
Central town/ city	30
African townships	21
Public places	18
Nightclubs	11
Beachfront	10
Informal settlements	36
Home	1
Shopping areas	18
Tuckshops	2
Quiet roads	2
Dark roads and alleys	11
Deserted areas	3
The grounds/ parks	34
Parking lots	8
Outside school	10
In school	5
Public toilets	3
Motor vehicles	4
Unfamiliar environment	2
Taxi ranks/ bus stops	2
Robots/ traffic lights	1
Bars/ shebeens	2
Parks (hide, consume alcohol)	13
Bushes (hide)	15
Workplace	1

The findings in the Table above are similar to those in Table 2 relating to where respondents felt that violent acts are most likely to occur. In general, Table 3 shows that the main areas considered unsafe by the respondents were:

- Informal settlements (36%)
- The grounds/ parks (34%)
- Central town/ city (30%)
- African townships (21%)
- Public spaces (18%)
- Shopping areas (18%)
- Bushes (hide) (15%)
- Parks (hide, consume alcohol) (13%)

The reasons forwarded for particular areas being unsafe include:

- Public spaces: areas are frequented by strangers and criminals tend to target these areas.
- Central town/city: many people visit the area that is deemed to be a high crime zone. Because the area is busy, perpetrators of violence prey on victims in these areas.
- Informal settlements: crime was deemed to be high in these areas. The perception that poverty and crime are linked is discernible. Some of the reasons forwarded included desperation as a result of dire poverty and the fact that informal settlements tend to be overcrowded. Some respondents also felt that people who live in informal settlements are generally uneducated.
- African Townships: the respondents who identified these areas associated them with high levels of crime. Perceptions of these areas (as well as informal settlements) in South Africa remain criminalised (especially by those living in middle and upper income areas or areas historically designated for non-African groups). This reinforces notions of the 'other' and unfamiliar areas as being deemed to be unsafe. Shopping areas and tuckshops: the respondents felt that shopping areas, especially in residential locations, are frequented by boys who like hanging around the shops and look for trouble.
- The grounds/parks and bushes: these areas were seen as locations where unsavoury elements in the community, particularly youngsters who take alcohol and drugs, congregate. They thus felt that

> increasingly these places are associated with drugs and alcohol as well as other types of unruly behaviour. Respondents also felt that criminals tend to hide in these areas.

The results also reveal that the majority of the respondents perceived African males as perpetrators of criminal acts. Blau and Blau (1982 cited in Stolzenberg *et al.* 2006) in their seminal research establishing the relative deprivation thesis argued that economic inequality (embedded in racial hierarchy) engenders resentment, hostility, frustration, and was perceived to be a precipitating factor in the impetus of criminal behaviour. Furthermore, Nofziger and Williams (2005) state that one of the most consistent findings in several research efforts is that race is a stronger predictor of attitudes towards violence and crime than most other demographic characteristics such as sex, age or socio-economic status. This was found to be the case in this study.

In general, public spaces were viewed as being unsafe. Many of the respondents stated that they knew these areas were unsafe because they had a reputation for being so. This confirms the findings in the literature review that peoples' perceptions of safe and unsafe areas are informed by information that they gather from various sources rather than real personal experiences of violence. It is important to note that most respondents identified areas in their residential areas as being unsafe. This alludes to the high levels of fear of crime prevalent in the community.

It is important to note that unlike the studies of APA (2003), Kuo and Sullivan (2001) and Taylor *et al.* (1994) who indicate that green spaces can lower crime and illegal activities, this research reveals that several respondents saw green spaces and parks as places that are unsafe and where unsavoury elements congregate. During the focus group discussions this attitude was further reinforced with participants indicating that very few residents use parks because of fear of being harassed, assaulted or robbed. They stated that these were unsafe places for their children to go to. In Reservoir Hills the rape and murder of a 10-year old girl in 2000 in a community park is still remembered by many of the participants. This incident can also be considered as a 'signal crime' that Innes (2004:17) identifies as an incident that functions as a warning signal to people about the distribution of risk throughout social space. More specifically, Innes

(2004:15) states:

> The fundamental tenet of the signal crime concept is that people interpret and define particular criminal incidents as indicators about the range of dangers that exist in contemporary social life and that might potentially assail them.

Unsafe places identified by the respondents are also reflective of poor infrastructure, unsavoury elements (especially unruly youth, drunkenness, etc.), isolated and poorly lit areas, locations with places to hide in, overcrowding and dilapidated or uncared for areas. During the fieldwork, the authors observed that all parks in Reservoir Hills were unkempt. This further fuels perceptions that these locations are unsafe.

Table 4: Perceptions pertaining to places that are regarded as being safe: multiple responses

Places	Percent (n=100)
Shopping mall	22
School (security guard)	38
Religious places	13
Friend's home	25
Home	80
Gymnasium	1
Workplace	8
None	3

Compared to unsafe places identified in Table 3, respondents identified significantly fewer places that they deem to be safe (Table 4). This illustrates the pervasiveness of fear and insecurity that respondents feel. The vast majority of respondents (80%) felt that they regarded their homes as being safe. This can be largely attributed to the higher levels of security mechanisms that respondents have in the homes (such as alarms, burglar guards, fences, dogs, etc.). This was also the case in relation to friends' home (25%). Other main areas cited by the respondents as being safe were the school (38%) where security guards were present, shopping mall (22%),

religious places (13%) and the workplace (8%). One respondent stated the gymnasium and 3% indicated none. Schools, shopping malls and the workplace were regarded as being safe because of the presence of security and that many people are around. One respondent stated that she considered the school safe because it was an area where entrance into the premises was deemed to be controlled. Religious places were deemed to be safe because of the presence of people and because, as one respondent stated, 'even most criminals respect God'. The statement indicates that respondents felt that religious places were sacred and therefore safe. This is in keeping with Trawick and Howsen's (2006:344) findings that religion serves as a deterrent to crime.

In general, the areas that respondents regard as being safe were generally private, familiar areas. These areas are also generally enclosed. A sense of security was a primary factor in determining whether a place was safe or unsafe. In this regard, the presence of visible security such as alarms, vicious dogs, fencing, police and security guards made the respondents feel particularly safe. As indicated earlier, the main reasons forwarded for the home being regarded as safe were that family members could be trusted and will offer protection, if necessary, as well as the presence of security measures such as alarms, fences and dogs. The respondents stated that they felt safe in these areas because people they knew and trusted were always around. Open spaces on the other hand were public and often frequented by strangers.

Table 5: Perceptions regarding what would make respondents feel safer in areas that they have identified as being unsafe: multiple responses

	Percent (n=100)
More police/ security presence	88
Building homes in vacant plots and parks	34
Only certain people allowed in area/ restricted access	17
Improving the infrastructure in the area	11
Cleaning up area	7
Proper fencing of area	3
Proper lighting in the area	7

The majority of the respondents (88%) felt that police/security presence will make them feel safer in areas that they deemed to be unsafe (Table 5). A significant proportion of the respondents (34%) indicated homes should be built in vacant plots and parks. This indicates support for getting rid of open spaces. What is particularly disconcerting is support for getting rid of parks in the area. These are the few public recreational natural spaces in existence in the community. The environmental implications are serious and it is clear that many residents see these places as threats to their safety and security. In addition to the parks being unkempt, it was also observed during field visits that very few people actually used the park. Seventeen percent of the respondents stated that only certain people should be allowed in the area/ restricted access. During the focus group discussions this was supported by several participants who supported gated communities or boom gates that restricted access to the roads where they lived. Additionally, 11% indicated that improving the infrastructure in the area would make them feel safer. Related to improvements in infrastructure, some respondents stated that the areas should have proper lighting (7%) and be properly fenced (3%). Some respondents (7%) felt that the area should be cleaned up.

It is important to note that the above responses suggest that in terms of ensuring a safe environment that promotes feelings of security the most important aspects identified by the respondents related to controlling who had access, having visible police/ security presence and changing how space is used. Also, ensuring that the infrastructure (in terms of lighting and fencing) was up to standard was deemed important by the respondents. Thus, most respondents supported a proactive stance when dealing with making unsafe areas safe. This is in keeping with the CPTED approach presented earlier.

Table 6: Nature/ type of violence and/ or crime respondent had personally experienced

	Percent (n=100)
Not applicable	68
Theft of vehicle/ car hijacking	7
Robbery/ mugging/ theft	9
Vandalism	1
Burglary in the home	9

Harassment	2
Homicide/ murder	1
Physical abuse/ assault	3

The main types of violence that respondents personally experienced were (Table 6):

- Robbery/ mugging/ theft (9%)
- Burglary at home (9%)
- Theft and hijacking (7%)

Other types of violence experienced by some of the respondents were physical abuse/ assault (3%), harassment (2%), vandalism (1%) and homicide/ murder (1%). It is important to note that most of the respondents (68%) did not personally experience any form of violence.

Table 7: Where incident personally experienced took place?

	Percent (n=100)
Not applicable	68
Inside the home	12
Outside the home on respondent's premises	3
In close proximity of respondent's home	6
Public spaces in the community	7
At work	1
Social places (night clubs, restaurant, etc.)	1
Unknown area (new environment)	2

The main places where violence was experienced by the respondents are illustrated in Table 7:

- Inside the home (12%)
- Public spaces in the community (7%)
- In close proximity of the respondent's home (6%)
- Outside the home on respondents' premises (3%)

Other places identified by a few of the respondents were unknown areas/ new environments (2%), social places (1%) and at work (1%).

These findings reinforce other studies (Cozens 2004; Moser 2004; Tabrizi and Madanipour 2006) that show that although most people perceive unknown and unfamiliar places as being dangerous, most incidents of crime and violence take place at or near homes (places frequented and known by the victim). This research, therefore, supports the findings in the literature review that in reality most violations occur at home, close to the home or in familiar places. Additionally, the perpetrators are usually known rather than strangers. In this article specifically, unlike earlier perceptions mentioned by the respondents that violence is most likely to occur in public spaces as well as unfamiliar and unknown places, the responses here reveal that most respondents' experiences of violence took place in areas they were familiar with. Thus, the fear of the unfamiliar and the unknown as well as places in which one is most likely to be surrounded by strangers (public spaces) persists despite very different personal experiences. However, it is important to reiterate that addressing perceptions is critically important when dealing with the fear of crime which influences people's behaviours.

Table 8: Ranking matrix illustrating unsafe places identified by respondents in Reservoir Hills

	IS	**S**	**P**	**BS**	**SC**	**VIP**	**D**	**CB**	**CBD**	**R**
IS	**X**	IS	IS	IS	IS	IS	IS	IS	IS	IS
S	**X**	**X**	P	BS	SC	VIP	S	CB	CBD	R
P	**X**	**X**	**X**	P	P	VIP	P	P	P	P
BS	**X**	**X**	**X**	**X**	BS	VIP	BS	BS	BS	BS
SC	**X**	**X**	**X**	**X**	**X**	VIP	D	CB	CBD	R
VIP	**X**	**X**	**X**	**X**	**X**	**X**	VIP	VIP	VIP	VIP
D	**X**	**X**	**X**	**X**	**X**	**X**	**X**	D	CBD	R
CB	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	CBD	R
CBD	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	CBD
R	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

	Scoring	**Ranking**
Informal settlements (IS)	9	1
Schools (S)	1	9
Parks (P)	7	3
Bus stops/taxi ranks (BS)	6	4
Shopping centres (SC)	1	9
Vacant/ incomplete properties (VIP)	8	2
Driveways (D)	2	7
Central beachfront (CB)	2	7
Central Business District (CBD)	5	5
Roads (R)	4	6

The ranking of the unsafe areas identified by the participants during the focus group discussion in Reservoir Hills show that informal settlements was ranked number 1 (Table 8). Vacant/ incomplete properties were ranked number 2 and parks were ranked number 3. This was followed by bus stops/ taxi ranks (4), Central Business District (5) and roads (6). Both driveways and central beachfront were ranked 7 while schools and shopping centres were ranked 9. During the discussions it became evident that the fear of car hijackings was an important consideration among participants (roads and driveways were deemed to be unsafe primarily for this reason). This discussion also entailed a lengthy recollection of the rape and murder of a 10 year old girl in 2000 in a community park. Resident questionnaire survey respondents also discussed this as an important incident. Thus, this is certainly a major signal crime in the community.

Unlike the survey responses, none of participants during the ranking exercises identified their homes as one of the ten main unsafe areas. This indicates that compared to other unsafe areas (specifically in relation to public spaces), the home is viewed as a safe haven. The areas that were deemed to be unsafe were viewed as places that criminals target and unsavoury inhabitants are found in these areas. The participants stated that the areas (especially vacant land, parks and specific roads) were notorious in the area for drug dealing and drunken behaviour. Participants also provided specific incidents of crime that occurred in these areas. This illustrates that perceptions of unsafe places are informed by knowledge of criminal activities that are likely to take place there. However, it is important to note

that many of the participants did not experience or see these events first hand but heard about them, generally from local newspapers and friends and family. This research indicates similar findings to the Institute for Security Studies (2001) study which found that the fear of crime in the city is linked to higher crime levels as well as general governance issues such as congestion, overcrowding, uncontrolled street-hawking and litter.

It is also important to highlight that a significant proportion of the areas that were perceived as being unsafe were in the local neighbourhoods. With the exception of the city centre and beachfront, the rest were places found near the participants' homes and places they frequent. Again, the sense of insecurity and vulnerability that emerged during the interviews is reinforced by the ranking exercises and focus group discussions more generally.

The fear of parks, grounds, bushes and vacant plots was evident during the interviews and ranking exercises. As indicated earlier, the researchers observed that the parks/ grounds were generally unkempt and unattractive. One respondent stated:

> I have lived in the area for the past forty years next to the park. There were never any problems. In the past five years there has been one murder (of a teenage girl) and three rapes in the park. It is not safe anymore. The youth congregate in the park where they consume alcohol and take drugs. It has become a hang-out for kids who truant school. I just can't understand why the police cannot do anything since I see them everyday and they are in plain view.

Most participants felt strongly that parks and grounds should not exist and homes should be built. Open spaces (especially parks and conservancies) are viewed as being critically important to protect the natural environment in urban areas. They are also important for recreational purposes. However, the inability to ensure that these places are safe has resulted in antagonism among residents to these places.

From these results (ranking exercises and surveys) the landscape (especially communities where people live) can be seen as influencing levels of fear and safety. It is also important to note that the locality specific analysis shows that in relatively small communities both safe and unsafe

areas are discernible. This perception, as indicated in earlier discussions, is strongly influenced by who frequents and what types of activities characterise a particular location. The findings show that areas considered to be safe were areas where there was a level of controlled access. The respondents deemed open areas or public spaces as being unsafe.

During the discussions it was clear that, when possible, respondents tended to avoid areas they considered to be unsafe, including parks and open spaces generally. Many respondents indicated that while they recall playing in the parks during their childhood they do not permit their children to go to the parks in the area. The avoidance zones were constructed around particular types of activities and around particular groups of people. The respondents highlighted public spaces as being dangerous and areas Africans frequented were usually described as being unsafe. Additionally, it is clear that the presence of males (especially in groups at the shopping centres as well as in recreational areas such as the parks and on streets) was also associated with danger. The avoidance of certain places illustrates poignantly the way in which the fear of crime and violence restricts the movement of residents.

Conclusion

Understanding locally-based dynamics and strategies that are employed to deal with violence and crime provide a firm basis upon which to develop context specific and appropriate interventions and support structures to address issues pertaining to violence and crime in ways that consider local strategies, priorities and needs. Furthermore, responding effectively to experiences and fear of violence, crime and insecurity is an important aspect of improving the quality of life of households and communities in South Africa.

Place (especially peoples' understanding of and attitudes towards specific locations) and subjectivity (personal experiences and perceptions) play central roles in people's understanding of, and attitudes towards, crime and violence in society (Massey 1994; Moser 2004; Tabrizi & Madanipour 2006). The above also influence spatial patterns of crime. The responses from primary research and findings from the literature indicate that the fear

of violence and crime in residential areas is largely located in public and open spaces, including parks and vacant plots.

During the focus group discussions and interviews it was clear that parks in the neighbourhood and open spaces generally were a source of fear in relation to potential criminal and violent activities. This was the case whether the open spaces were well maintained or not. The results are different from the findings of APA (2003), Kuo and Sullivan (2001) and Taylor *et al.* (1994) who indicate that green spaces can lower crime and illegal activities. This research reveals that several respondents saw green spaces and parks as places that are unsafe and where unsavoury elements congregate. In South Africa, it is therefore necessary to rethink open space planning, particularly the maintenance of these spaces and addressing resident perceptions of these places. As the APA (2003:3) states, where parks already exist, their maintenance is critical:

> A well-maintained park or open space sends a message that someone cares about it. In turn, the message that someone cares about the park helps create a perception of safety. The greater the perception of safety, the more likely the park will be used. In addition, maintenance programmes that include participation by the users help to establish a sense of ownership and promote stewardship of the space.

This article indicates that several factors have been associated with fear of crime and natural, open spaces. These can contribute to feeling unsafe in public places. These factors include:

- Past experience of physical violence, especially signal crimes: if a particular group of people experience high levels of crime, then they are more likely to feel vulnerable to violence, and are likely to experience higher levels of fear.

- Perceptions of violence and crime: individuals and communities who hold strong perceptions about the prevalence of violence in open areas are likely to have higher levels of fear even if they have not personally experienced any violence.

- Lack of understanding about specific types of violence and where they occur: often because victims are found in bushes, people associate the crime with where the victim was found. Often, the violent act itself may not have occurred where the victim was found.

- Opportunities for crime: places of high risk make people feel extremely unsafe.

- Unkempt and unpoliced areas: the way a place looks contributes to how people perceive a place even if there are actual incidents of criminal acts. Additionally, poor policing of these areas creates higher levels of fear and vulnerability.

It is imperative that the issues highlighted above are addressed to change residents' perceptions of open spaces.

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Contesting Ecotourism Development in the iSimangaliso Wetland Park[1] in KwaZulu-Natal

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Introduction

In the post democratic South Africa, ecotourism has become the government's flag-ship programme to attract foreign currency and promote local economic development especially amongst communities historically marginalised within the precincts of tourist sites. This bold initiative was encapsulated in a White Paper on Tourism (Department of Environmental Affairs and Tourism 1996). Isolated by apartheid and blessed with natural assets in the form of biodiversity, ranking it the third highest in the world (Cowan *et al.* 2003), South Africa has become a destination of choice for foreign tourists. Given the high influx of foreign visitors to the country resulting from decades of international isolation, the tourism sector provides a lucrative opportunity to promote development given the enormous inequalities inherited from the past. Tourism is perceived to be an important catalyst to stimulate local economic development, especially in communities that have been previously disadvantaged (Sebola1998:59-58).

South Africa enjoys vast natural resources which historically benefited the white ruling class. In the post democratic era, the state is attempting to ensure that those communities that have been disadvantaged by vicious social policies; excluded from their rightful ownership of land and

[1] Formerly known as the Greater St Lucia Wetlands Park.

the benefits accruing from this, are restored (Department of Land Affairs 1994). Although much progress has been made at a policy level to effect social, political and economic restoration through nature, the praxis of this is challenged by a set of complex dynamics and social forces. Effectively managing different expectations among stakeholders with different interests is critical to ensuring that social, economic, political and environmental concerns are addressed.

The aim of the paper is to provide insight into the different social, political and economic dynamics unfolding in the formerly known Greater St. Lucia Wetland Park (GSLWP) which is now called the iSimangaliso Wetland Park (iSWP) and the impact of contestations relating to the struggle for natural resources and natural resource spaces amongst different stakeholders on a site that enjoys World Heritage status. Firstly, the politics of parks is discussed. Thereafter, a brief historical context of the iSWP is provided and the factors that influenced its evolution leading to the present contestations in the area. This is followed by an analysis of restitution dynamics in the region, how this complicates tourism development and the impact of this on the local people. The final section highlights some of the emerging concerns that relate to the sustainability of the iSWP and beneficiary communities, as well as the likely impacts these will have on the World Heritage Site.

This article draws from a number of data sources given the peculiar dynamics in the region. Parts of this article are sourced from field research findings undertaken in the region in 2004. Given the political dynamics of the region, not all stakeholders participated fully in the study. The fieldwork was characterised by mistrust, gate keeping by powerful stakeholders and an attempt to block participatory research processes. Nonetheless, the article is informed by a social survey involving 100 respondents selected by utilising purposive sampling techniques in two communities' viz. Khula and Dukuduku Forest communities. Respondents from the Khula community were largely from households whose land has been restored whereas those from the Dukuduku Forest community were respondents who were locked in dispute with the Department of Land Affairs in relation to their land claim. In the case of the latter, a snowball sampling technique was used based on the willingness of respondents to participate in the study. This was due to the prevalence of an element of mistrust and gate keeping amongst the forest

community based on concerns that the findings of the study will be used to weaken their pending land claim case with the Department of Land Affairs. A focus group discussion was also undertaken with members of the Khula Village community. During the primary data collection phase the Dukuduku Forest community resisted participating in the research process. However, some members availed themselves to participate in an interview. Those choosing not to participate in the study strongly opposed being relocated from the forest and were frustrated with the length of time it was taking for their land restitution application to being finalised. In-depth interviews were undertaken with one Non-Governmental Organisation (NGOs) known as the Wildlife and Environmental Society of South Africa (WESSA) and the Ezemvelo KZN Wildlife, an environmental and ecotourism parastatal.

A profile of the social, political and economic dynamics of the region was conducted using available literature sources on the region, although very little has been documented by way of academic research. To overcome some of the field constraints and the lack of written material on the region, a total of 150 national and local newspaper articles (published during 1994 to 2007) were sampled from the South African Media website. These were clustered in themes and an in-depth content analysis undertaken with the aim of ensuring consistency in reporting. Where a particular issue on the region was reported in more than three newspapers consistently, then one was chosen which provided the most coverage and insight into the study locality.

The Politics of Parks

The politics of parks focuses on the role of public spaces in providing for the needs of the poor, the homeless and victims of social exclusion. Parks as public spaces whether in an urban or a rural setting has historically been noted to serve as a space for those living on the margins of society to benefit from the sanctuary provided for by nature (Hall 1994). In a rural setting, those excluded from the formal economy have access to natural resources to sustain a livelihood (Ashley *et al.* 2000). However, over the years, as parks as public spaces have increasingly become regulated and privatised, it has resulted in them becoming commodified recreation spaces and a spectacle for the affluent, much to the exclusion of the less fortunate who depend on natural resources to make a living (Mitchell 1995).

Spaces such as parks have become political spaces as it is in these spaces that the marginalised find an opportunity in which they can be seen and represented and a site in which activism can arise and expand. It is in these spaces that they can seek representation in ways that can secure their self interest and preservation. Historically, the politics of parks has been a symbol for law enforcers versus the homeless or dispossessed, the have-nots versus the haves, progress versus turmoil and development versus non-development. Parks remain sources of different forms of social, political and economic contestations (Mitchell 1995:125).

The politics of parks and indigenous people has drawn on many contestations especially in areas considered as havens of unspoilt nature in different parts of the world (Cater 1994). These struggles have mostly focussed on poor indigenous communities who have been displaced to protect nature from degrading human actions in an attempt to secure a livelihood from the offerings made by nature's resource base. In addition, increasing levels of industrialisation and urbanisation has caused the relationship between human beings and the natural environment to be strained resulting in irreversible damage to the environment (Stilwell 2002). This is aptly captured by Bush (1997:503) who asserts:

> In many respects the neo-Malthusian orthodoxy persists whether in academic, national policy making, or international financial institution circles. The poor are blamed for land degradation and too many people chasing too few resources are often identified as the cause of environmental crisis.

Explanations such as these do not help to come to grips with the deeper impact of processes underlying human interaction and the environment and vice versa. Specifically there has been a general failure to analyse how human actions are governed by and, likewise, influences the wider economic, political, social, and cultural structures and relationships in society and the effects this has on the natural environment. For instance, tourism, like other human activities such as mining, forestry, the construction of dams, housing and industrial estates, is an industry that has competing interests involving a wide range of stakeholders (local, national and transnational), all competing for the control of resources from a common

source. This results in a complex set of relationships, processes and dynamics impacting negatively on the natural environment (Fallon 2001).

Political economists of all persuasions are increasingly expressing concern on the persistent commoditisation of all aspects of life that is fast-tracking the process of globalisation (Jafari 2000). In all forms, nature has been highly commoditised as economic activities generally occur in a biophysical context, using land and other natural resources. The world over, the private sector has wasted little time in developing ecotourism eco-lodges close to important natural areas resulting in parks increasingly functioning as commercial businesses (Kenya & Munai 1992). Hence the ideology of consumerism is rooted in the privatisation of nature and the appropriation of rent from land use.

There is also the argument that indigenous people are intrinsically and spiritually linked to the land and have historically lived in synchronisation with the natural environment prior to their social organisation being disturbed by the intrusion of European colonialists (International Support Centre for Sustainable Tourism 2003). A case in point is that of the Aborigines in Australia who since colonialism have struggled to secure their spiritual link to the land from which they have been forcibly removed and only recently being restituted (Stillwell 2002).

There is increasing evidence that protected areas in most parts of the world have become extremely vulnerable owing to human action thereby resulting in irreversible damage to the natural environment (Cater 1994; Tubb 2003). For instance in Australia, protected areas are found to be susceptible to increasing pressures from both within and outside of the country. The two major contributing factors towards these pressures or strains are the allocation of protected areas for the sole purpose of ecotourism and the decreasing funding towards protected parks by government (Wearing & Neil 2000). On the other hand many western countries have set aside areas for conservation that have become ecotourism destinations resulting in the natural heritage of the destination area taking precedence over human settlement (Hall 1994). In most, if not all cases, humans have been coerced to move from their place of settlement. Nonetheless, some governments are slowly recognising the inextricably interwoven relationship between the cultural aspects and the natural heritage of a National Park.

Since designated natural areas, almost always, cause local inhabitants to be forcibly removed from their land, there still remains a moral obligation for the local people to have a stake in the ecotourism sector (Wallace & Pierce 1996). This is more compelling in light of the fact that since the mid 19th century, the creation of large forest areas meant that millions of rural inhabitants had to be displaced (Poffenberger 1994). The bargaining power of those displaced is greatly enhanced when they enjoy tenure rights over land and natural resources. Those that have been forcibly removed are excluded from participating in the ecotourism sector and this becomes a source of volatile contestation (Ashley *et al.* 2000). Such is the case of the Sabang community which forms the gateway to St Paul's National Park in the Phillipines. In 1998, in Rowok and Lombok, Indonesia, indigenous people who refused to sell their land, for fear of losing their livelihood and for fear of having their beautiful natural and wilderness areas being tamed and destroyed by big investors, were attacked by police and the military and had their homes burnt to the ground (Fallon 2001).

In Kenya, Weaver (1998) notes that the original network of protected areas came into existence through the expropriation of traditional tribal lands. Wildlife tours or safaris were considered the domain of local and foreign white elites. Okello *et al.* (2003) affirm that in the case of the Maasai people of Kenya, the traditional lands were taken away from them to make way for the National Park. They were neither compensated nor consulted on this issue. The creation of the Amboseli National Park in Kenya in the 1950s reduced access by the Maasai people to water and land pastures (Woodhouse 1997). With independence, the situation had somewhat improved. However, with large tracts of land being set aside for wildlife ecotourism, the interests of the ecotourism industry has come into conflict with cultivators and those that seek to work the land for a living. The above suggests that in many parts of the world the natural environment is of vital importance to the local inhabitants for economic as well as social reasons. Human society and the economy continue to be dependent on the earth's biodiversity (Hall 1994).

In South Africa the politics of parks is rooted in a brutal system of forced removals with a painful history of land dispossession being relived by communities as they seek restitution in terms of the Restitution of Land Rights Act (1994). Forced removals meant that Africans were squeezed into

small parcels of lands thereby leading to overcrowding and limited access to agricultural lands. The problems of livelihood strategies were compounded through the denial of hunting and fishing licences to these communities. These parks were mainly for the pleasure of the white elite who enjoyed nature's pleasure at the expense of enormous hardship to local communities who were confined to the margins of society. Ramutsindela (2002) in his study of the Makuleke community in the Northern Province, who were forcibly removed from the Kruger National Park for several decades, and which is known to be the first large-scale community-based rural land claims in South Africa post-apartheid, illustrates not only the hardships endured by the displaced communities, but also the pains of securing their land in a new political dispensation. The study highlights the complexity of land claims in South African parks. With a wide variety of stakeholders pursuing vested and conflicting interests, difficult choices have to be considered between land reform goals for victims of forced removals and economic benefits from tourism and conservation. The politics of parks in South Africa is far from being resolved and complicated by very slow land reform process, conflicting interests among different government departments, contradictory policy guidelines and overall effects of neo-liberalism (Ramutsindela 2002:16). Given the extent of political contestations on parks in different parts of the world, the World Conservation Union (IUCN 2003:63) at its 2003 5th World Parks Congress acknowledged:

> Many protected areas of the world encroach and are found within and overlap with lands, territories and resources of indigenous and traditional peoples. In many cases the establishment of these protected areas has affected the rights, interests and livelihoods of indigenous peoples and traditional peoples and subsequently resulted in persistent conflict.

It is therefore necessary to address these issues in a way that empowers local communities and enhances their access to natural resources and sustainable livelihoods.

A Brief Overview of the Historical Factors Shaping the iSimangaliso Wetland Park

iSWP was declared a World Heritage Site in 1999 due to its unique ecosystems and its spectacular natural beauty (Aylward & Lutz 2003). Covering a distance of approximately 220 km and comprising 325 000 hectares, the Park extends from the border of Mozambique south to Cape St. Lucia. Hidden in this marshland are imprints of early human settlements dating back to the iron ages. Historically, the indigenous people of this prestigious coastal land attached enormous importance to the sea as it was a provider for their sustenance through a diversity of marine and vegetation life. The lakes provided a wide variety of marine life which was a rich source of protein and the grassy plains was used to herd cattle which were an important form of family asset and food source. The fertile land on the banks of the lake was used for subsistence farming and the vegetation provided material for the construction of dwellings and a source of energy (Skelcher 2003:762).

Early history records that the British penetration of the area plundered many of the wild life in pursuit of adventure (Skelcher 2003). The social organisation of the indigenous people was based on a system of traditional leadership and the area was inhabited by six tribes under the tutelage of the *Amakhosi* (tribal authority system). Soon after the Anglo-Zulu War in 1879 the local Zulu kingdom was divided into 13 independent chiefdoms and temporarily relocated to the southern part of Lake St. Lucia. By 1904 the British colonialists expropriated 40% of the land in the region and designated it as Crown land. Following on this devastating experience of colonial displacement, the promulgation of the 1913 Land Act provided a seal of permanence to this area prohibiting the indigenous people from acquiring any land beyond the confines of native reserves (Walker 2005:4).

South African history records the systematic attempts by both the colonialists and the apartheid regime to ensure that blacks were kept out of their way in order to promote their self preservation (Ntsebeza 2000). Much has been written on the different forms of legislations and policies used to keep South African natural resources solely to sustain the political economy to benefit the minority white population (Govender *et al.* 2005). In keeping with this goal of self preservation, a new wave of clearing black spots in Lake St. Lucia area occurred between 1956 and 1974 through forced

removals to entrench territorial apartheid (Skelcher 2003). The rationale was to ensure that black Africans were confined strictly to native reserves under the tutelage of traditional leaders who, through their tribal courts regulated the movement of people, recorded birth and death, approved the allocation of homestead sites and reinforced the custodianship of cultural practices and traditions (McIntosch *et al.*1996:341) This paved the way for increased commercial forestry, agricultural and irrigation projects in the region much to the detriment of the natural environment, capitalised largely by Afrikaner agri-business (Unterhalter 1987:93).

The political uprising from the majority of disenfranchised in the 1970s and 1980s forced a heightened military presence in the area, especially for fear of ANC freedom fighters infiltrating the native reserves from neighbouring Mozambique and Angola. Consequently, the apartheid regime maintained rigid control on its borders and the movement of people from the native reserves in the region to towns and cities. Poverty, unemployment, overpopulation, low levels of social and physical infrastructure resulted in hardships among the local communities living in the native reserves. The region being a high risk area for waterborne and related illnesses (cholera, malaria and tuberculosis) resulted in high mortality rates. Broadly, forced removals left indigenous communities paralysed for over 50 years, unable to reclaim their land and natural resources (Skelcher 2003).

The Complexity of Restitution Dynamics in the iSWP in the Post-Apartheid Era

In the 1990s, a new sense of hope gripped South Africans with the prospect of apartheid being defeated. The ANC, at the negotiating table in the transition to democracy phase, promised to restore people to the land as a consequence of forced removals. In the St. Lucia region, like in many parts of the country, new contestations emerged with local people beginning to organise themselves to reclaim their lost land.

Walker (2005) in her study on the nature and extent of land claims in St. Lucia asserted that the original residents have a sense of identity with the lost land and a sense of place while the younger ones see it differently. This is largely because historically, the community is fragmented and dispersed

and the logistics of contacting them and proving descent have been very complicated. Moreover, a generation of children have been dislocated from their natural heritage and lack an understanding of its importance and their rights. Added to this complication was the negative effect of forced removals which resulted in people having rebuilt their lives elsewhere. Furthermore, Walker (2005) found that they could no longer return to the land of their origin. Hence, this signals that the land restitution process in the iSWP would be complicated and protracted demanding a case-specific approach.

The case of two tribes *Mbuyazi* and *Mpukunyon*i are compelling to note as communities organised to stake a claim to their lost land. The two communities first lodged a claim in 1995 after a series of negotiations with the De Klerk government. They provided a rich oral record of their history, their ancestral lineage and anecdotal evidence of their claims. After a series of investigations in 1997 the Land Claims Commission concluded that they could only validate one claim in the region. After a period of standoff between the two tribes on who should be in the forefront of the claim, they formed themselves into the Bhangazi Land Claims Committee (BLCC) whose claim for restitution was finalised in 1999 (Interview, Ezemvelo KZN Wildlife, 07/2004).

The victory won by the BLCC was short-lived. Although the National Lands Claims Commission ruled that the land surrounding Lake St. Lucia totalling 26 360 hectares be restored to the claimants from the BLCC, this decision posed a dilemma for the custodians of the new democracy to implement. This occurred after it was argued by the Department of Land Affairs (DLA) that the iSWP was designated a World Heritage Site by UNESCO, hence placing constraints on the area being re-inhabited. After further negotiations with the BLCC, the final settlement was in the form of a restitution award amounting to R17 million with each beneficiary family (556 in total) receiving R30 000 each which was placed in a trust account. In addition, 80% of the revenue generated from the iSWP will be awarded to the Bhangazi community with 5 hectares of the land at Lake Bhangazi dedicated for a heritage centre. With such a hefty offer it would seem that the communities 'ancestral claim' was put to rest finally and the principles of retribution honoured. In 2001 this victory was short-lived when the descendents of another clan (*Lokotwayo*) filed a legal objection to the awarding of the settlement to the BLCC on the grounds of being excluded

from the restitution process (Interview, Ezemvelo KZN Wildlife, 07/2004).

There is another community who chose to remain in the forests of the iSWP so as to sustain a livelihood off the natural resources. The residents of Dukuduku Forest have been a controversial community since the mid-1980s. During the late 1970s, public outrage began to build against squatters who were clearing priceless indigenous forests in order to build houses and plant crops. In 1989 a section of land was set aside for them to live on, but only a few of them moved across to resettle. A minimal fee payable to the KZN Nature Conservation Services, during the *Nceme* (thatching grass) harvest season, incensed the forest dwellers who felt that their natural resources were being sold. They protested that they have the sole rights to harvest on land that belonged to them resulting in violent clashes between them and the police. Some forest dwellers armed with AK47 and R1 rifles opened fire on police trying to break up the protest (Phalane 1999a).

A further attempt was made by the community in 2003 to the Regional Lands Claim Court (RLCC) to secure their rights to own land so that they may have access to natural resources to support their livelihood. The community won, resulting in a ruling by the presiding judge in the Land Claims Court instructing the Land Claims Commission to gazette the claim as valid within a 30-day period. After the court judgment in 2003, the RLCC gazetted the claim. However, the gazette notice did not list properties under claim. It only indicated the number of beneficiaries wanting restitution resulting in further bureaucratic delays in finalising their land claim. The Dukuduku matter is a political issue. Whilst many of the voices are concerned about the environment and economy of the area, the dispossession of land and severe limitations of access to natural resources that occurred for indigenous people in the area over years of marginalisation, sits at the heart of this unresolved land dispute. A strong force against these communities attempts to have its restitution claim finalised is the state's lobby to ensure any settlement of their claim does not include the option of residing in the forest (Bishop 2003).

Governments attempts to remove the forest dwellers was mitigated by providing alternative accommodation sites to those wanting to move voluntarily outside the forest so that dissenters of relocation can be dealt as illegal occupants of the forest. In the words of Jabulani Mjwara,

conservation and forestry director for the region that 'a resettlement would break the chain of illegal activities amongst the forest dwellers such as selling land to illegal migrants, smuggling firearms and cultivating dagga' captures the determination of the state to deal with the negative impact that the dissenters of relocation will bear on the land restitution process and development of the iSWP (Phalane 1999b). In 2001 government's ingenuity to break the resistance of the forest dwellers met with success based on its resettlement scheme. Approximately 700 families registered to be allocated land on the new farms in the farming area of Monzi, which abuts the Dukuduku Forest as part of the states resettlement scheme. However, the remaining squatters could not be removed legally because of the 1994 moratorium on forced removals. Nonetheless, the newly resettled community appropriately named their settlement *Zwelisha* (New Land) in order to distance themselves from the people left in the forest that were resisting resettlement. With their newly found formal homes, the need to enter the wage economy, as compared to living of nature's food basket, became compelling for the new settlers for reasons of survival. Many of *Zwelisha's* residents sought employment with the Department of Water Affairs—a government initiative to use local communities to assist in the clearing of alien vegetation in protected areas (*Natal Witness* 9/11/2001 *Dukuduku Squatters to Move*).

Capitalising on the new economic opportunity emerging through the reshaping of the iSWP was another reason as to why victims of forced removals were prepared to agree for resettlement as part of restitution. A case in point is the Khula village which was offered settlement sites as early as 1993. Since this period some 600 families have settled in the village hence the name Khula which means 'we are growing'. The community intends to grow in economic strength from the new financial opportunities provided for by the resettlement scheme. A condition of tenure between the iSWP authorities was that the indigenous forest be maintained and cared for by the community (Coan 2001). The community undertakes local tours and provides cultural experiences to tourists. It boasts that the strength of the tour, as expressed by one of the respondents: 'given by real people in a real situation'. It is not some fake 'Zulu cultural experience'. The vast majority of guests visiting the village are made up of international tourists. Although this community boasts a sense of collective achievement, it emerged during

the focus group discussions that the economic opportunities provided by the ecotourism sector have resulted in leadership elites having secured lucrative business deals.

Whilst some communities in the iSWP celebrate the economic opportunities following restitution, others are still angered by the foot dragging behaviour of the Department of Land Affairs in finalising their claims. One such community cited earlier is the Bhangazi Lands Claims Committee who had established a Trust in 2001 and whose claim was finalised in 1999. In 2005 they have been informed that the land that was allocated to them was subsequently subjected to geotechnical tests which proved to be unsuitable for development. With no title deed the community was unable to kick-start development. Groups of angry Bhangazi villagers, amongst them 560 beneficiaries, threatened to tear up the settlement documents and repossess their ancestral land if the land claims did not deliver on the promised title deeds. They alleged that development was taking place in other areas of the park and that they wished the same for themselves (Chikanga 2005).

Arising from a focus group interview with representatives of the Dukuduku Forest community, their anxiety about the protracted land claims settlement and the encroachment of big businesses onto their locality becomes more apparent. They could not reconcile that big private sector development was progressing at a rapid pace, with development sites being made available at short notice. They cited that the iSWP Authority was in the process of awarding tenders worth R450 million on 14 lucrative development sites where tourist facilities are to be developed by international investors. The community could not reconcile the relative ease with which these sites were awarded to international investors whilst they were still waiting since 1997 to enjoy the economic benefits of restitution. A legitimate question raised by the community was the prospects for them to compete with big business and whether any opportunities will remain for them to develop their lands given the protracted nature of the restitution process.

It is fourteen years since democracy and the iSWP land restitution debacle continues. Since 1999 the entire iSWP was under land claims and to date a further 25% of the claims are yet to be finalised. In total 220 000ha of the GSLWP has been subjected to claims (Gowans 2007). In 2004 the World

Body on International Heritage sites, although welcoming the speed with which land restitution claims were being finalised, expressed strong concerns and fears that luxury hotel development would affect the unique sense of place in this environmentally sensitive area (Jenkins 2004).

In 2007 the GSWLP changed its name to iSWP. The name change of the area was prompted by the confusion caused by the island country of St. Lucia in the Caribbean with its own listed World Heritage Site.

Emerging Concerns on the Sustainability of the iSWP and Beneficiary Communities

In ascertaining whether the restitution process can help sustain beneficiary communities in the iSWP and the prospects it holds for socio-economic advancement for those historically disadvantaged, it is compelling to examine some of the popular voices expressed by victims and observers on developments and events unfolding post restitution in the region. By examining some of the more recent socio-historical processes emerging in the iSWP one is able to raise concerns on the sustainable effects or otherwise of restitution on the lives of communities in the near future.

The rush to secure natural spaces post democracy prompted interest from a wide range of people. Private investors, the state, conservationists and former victims of land dispossession made a dash to get a slice of the wilderness cake. The first to lay claim to the exploitation of the natural wealth of the region was Richard Bay Minerals (RBM) in 1989. RBM for over 27 years had established a lucrative mining business in the area providing permanent jobs to more than 1 750 people and work for 800 contractors (Hill 2005:19-20). It contributed R760m in company tax for the 2007 financial year and in the same period claims to have provided social responsibility programmes to local communities in the field of education amounting to R2.5 million. Social responsibility programmes aimed at fighting poverty in the region and directed towards job creation, agricultural and local capacity development projects through technical training for the youth is part of the companies social investment focus (RBM Sustainable Development Report 2007).

Nonetheless, in keeping with private sector initiative to expand its economic base, RBM considered the prospects for extracting more mineral

wealth from the region in 1989. Considering the fact that this area was environmentally sensitive there was little certainty that even though RBM had restored the dunes to its natural state, that the ecosystem would reproduce itself to its original form. This was confirmed by an independent environmental impact study conducted by the Ramsar Advisory Mission (Report No. 29, 1992:14-15) on the feasibility of dune mining in the region.

Concerns about private sector mining in the area culminated in both national and international campaigns to save St. Lucia. Local communities staged several protest marches in opposition to the mining operation. It is asserted that the mining dispute coincided with the worst political violence engulfing KwaZulu-Natal (Marshall 2005). The Save St. Lucia Campaign launched in 1989 became a vociferous national environmental lobby group and endured almost six years filtering into the new democracy. A series of environmental impact studies were conducted including those initiated by RBM. RBM contended that strip mining would help rehabilitate environs of St. Lucia considering the damage caused by commercial forestry. Given the fact that 70% of the area was invaded by pine plantations and 30% by alien grass and bush, strip mining, it was perceived, would help clear the area and restore it to its natural beauty. A further argument was that the area in which mining operations was identified was not a nature reserve. Despite such geo-scientific arguments being advanced by the private sector, it did very little to persuade environmentalists and the task team tasked with an independent environmental impact study by the Ramsar Advisory Mission (Report No. 29, 1992). Those opposed to mining argued that ecotourism would bring greater economic prosperity to the local community and provide more jobs compared to the 180 by those favouring mining (Nel 2003).

The contestation between business motives and environmentalist interests was mediated by the government. Amidst mounting pressure from environmentalists with 500 000 anti-mining signatories including that of the first democratic president, Nelson Mandela and the local community, the cabinet did not support mining in the area in 1996 (Gowans 2007). The Save St. Lucia lobby eventually celebrated victory and the area was declared the country's first World Heritage Site in 1999. Since government made the announcement in 1996 to stop mining initiatives forever, no visible signs of development took place in the region. In 2003 some 3 000 Kosi Bay community members marched to protest the lack of jobs and development in

the area and the mushrooming of illegal lodges. The protagonists of the no-mining campaign in the community alleged that ecotourism did not deliver on its promises (Nel 2003). This is despite the fact that the government made an R630 million investment in development of critical infrastructure through the Lubombo Spatial Development Initiative region to convert the iSWP into a flagship for economic growth and job creation and responsible forms of tourism investment. To endorse its commitment to the development of the ecotourism sector, a memorandum of agreement with different stakeholders including the national government, the KwaZulu-Natal provincial government, the Industrial Development Corporation, the Development Bank of Southern Africa and Khula Enterprise. Since its inauguration the agreement approved fourteen exclusive tourism sites in the iSWP ranging from beach resorts to boutique hotels and game lodges (Greater St. Lucia Wetlands Park Authority Media Report, 2002). A precondition with private sector investors was that when the concession period ends, the buildings will become the property of the iSWP. This illustrates that local people in the region are unlikely to benefit from investments from the private sector. Further, big businesses are taking up the most lucrative development opportunities to extract wealth in the short-term with the long-term beneficiary being the iSWP authority by way of ownership and management of the hotels and lodges.

At a workshop organised by the Wildlife and Environment Society of South Africa, the Botanical Society of South Africa, the Zululand Environmental Alliance, Earthlife Africa, the Greater St. Lucia Wetland Parks Authority (GSLWPA) and Ezemvelo KZN Wildlife and other conservationists in 2003, various stakeholders expressed misgivings about turning the iSWP into a commodity. More than 90 delegates, ranging from veteran anti-mining campaigners and representatives of the Bhangazi community, came together for two days to assess progress. A major theme that emerged was community frustration at the slow delivery of tourism benefits, weighed against conservationists' concerns about inappropriate development in the park. It was reported that even the locals of St. Lucia expressed their fears of losing business to the iSWP Authority. It was contended that the town already had some 2 300 tourist beds which was adequate accommodation for the area compared to the number of tourists visiting the locality. They did not see any reason why more was being set up

on environmentally sensitive ground (Interview with WESSA 07/2004).

In relation to whether local communities adjacent to the Park benefit from ecotourism, both Wild Life and Environment Society of South Africa (WESSA) and Ezemvelo-KZN Wildlife stated that there were limited benefits. The main benefits for local communities were identified as the selling of crafts which was significant only during peak tourism seasons. A concern with regards to ecotourism development was that the incremental increase in economic development may occur at the expense of the natural environment. Other concerns emerging from two stakeholders who stated that a 'few get richer with very little trickle down effects especially to poor communities' and as 'economic imperatives drive the industry the profit motive will dominate', respectively.

During the focus group discussions, community members of Khula Village indicated that no or limited access to land together with unemployment were key problems facing the community. This suggests that residents, in general, are disengaged from both the subsistence and the money economy.

The focus group participants stated that several households rely on the natural resource base for their survival. They indicated that some 200 illegal farmers eke out a living from the natural resources provided for in the park. These are members from the 500 000 strong local community living on the fringes of the park who are desperate for survival. There was also a prediction that inward migration to the iSWP was likely to grow in the future as land claims were being finalised. These are largely from members of the communities who had left the area as a result of forced removals and are now returning to stake a claim on their lost land. It was envisaged that many of those returning were likely to be joined by other family members in search of employment and other economic opportunities from surrounding towns and villages in the park. This corroborates with the sample survey study of 100 households in the Khula community and Dukuduku Forest homesteads where access was granted. The study notes that 61% of the respondents were originally from the study region and they had left the area to live in neighbouring towns but chose to return to the locality motivated by perceived prospects for better development opportunities.

The above analysis corroborates with the findings of the sample study undertaken in the Khula village. Of the hundred respondents only four

were employed in a tourism related occupation. This finding strongly supports the notion that the development of the region through ecotourism has not appreciably impacted on the local community.

The quantity and types of jobs of the community members surveyed is best summed up by Goudie *et al.* (1999:22):

> For many communities there is the sad reality that the promised benefits of tourism seldom amount to more than mundane, low-paid, and seasonal jobs instead of real empowerment.

Conclusion

The article highlights that the wilderness race to secure natural spaces in the iSWP area has been historically shaped and styled by colonialism and subsequently by the apartheid regime. Forced removals, underdevelopment of displaced communities and systematic social engineering of the identities of indigenous communities was a challenge that the post-apartheid government had to deal with it. As much as it has come to grips with the complexities of the past in some measure through a land restitution process, it is torn between the basic needs of its citizens on the one hand and on the other, it risks the credibility to preserve the region in keeping with World Heritage Site standards. The region is caught between two opposing forces, poverty amongst its local citizenry and privilege accorded to the private developers to capitalise on the regions natural assets. Maintaining a balance between the diverse social and economic interests in the region is placing an enormous strain on the natural environment and there are already strong indicators that the government's ecotourism plans are failing. This was evidenced by the limited amount of economic opportunities created for the locals in the tourist sector.

It becomes evident from the article that conservation attempts are increasingly becoming precarious as big businesses, local communities and the state are competing to extract wealth from a common nature basket. This aggressive encroachment is hardly likely to abate unless more radical approaches are considered. Limiting the extent of development growth, managing the influx of tourists and migrants, and promoting local economic development outside of the immediate precincts of the park are critical

challenges facing the area. At present the restitution process has in a way provided power to the people through ownership of land and other restitution rewards, but the findings suggest that they are at the same time becoming economically powerless, as big investors move into the region resulting in them becoming powerful economic stakeholders at the expense of the local community and the natural environment.

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Sustainable Ecotourism in the uKhahlamba Drakensberg Park: A Stakeholder Analysis

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Introduction

The stakeholder framework allows for the perceptions of various stakeholders within the tourism system to be considered. For any form of sustainable development and successful conservation efforts to be implemented it is necessary that all stakeholders are involved. South Africa's history of racial discrimination has resulted in a skewed development of the economy in so far as the exclusion of the Black majority from the mainstream developmental agenda. Post-1994, many sectors, including the tourism sector have been earmarked as potential sectors for economic as well as social development. Integral for any form of development is the assessment of the status quo. Hence, within the ecotourism industry, a current assessment is necessary if development is to be premised on the many experiences and perceptions of the stakeholders that have a vested interest in the ecotourism industry. This article uses the stakeholder approach to understanding the social, economic as well as environmental impacts of ecotourism with regard to biodiversity and sustainable development at the uKhahlamba Drakensberg Park World Heritage Site. It firstly provides a brief overview of ecotourism in South Africa and presents the conceptual framework used in the study, that is, a stakeholder approach to ecotourism. Background information to the uKhahlamba Drakensberg Park and the methodological approach adopted are then provided. The data

analysis of primary data collected is undertaken. Finally, concluding remarks are forwarded.

The sustainability concept evolved from the environmental movement of the 1970s. Cater (1994) argues that ecotourism, which is the fastest growing sector within the tourism industry, is equated with nature or ecologically based tourism and the concept is most used as well as abused by the travel and tourism trade. Hardy and Beetan (2001) indicate that the concept of sustainable development gave rise to sustainable tourism. Tubb (2003) illustrates that ecotourism development was seen as the solution to natural environmental conservation whilst at the same time ensuring economic development, especially for developing countries. Wallace and Pierce (1996:846) define ecotourism as:

> Travel to relatively undisturbed natural areas for study, enjoyment or volunteer assistance. It is travel that concerns itself with the flora, fauna, geology, and ecosystems of an area, as well as the people (caretakers) who live nearby, their needs, their culture, and their relationship to the land. It views natural areas both as 'home to all of us' in a global sense ('eco' meaning home) but 'home to nearby residents' specifically. It is envisaged as a tool for both conservation and sustainable development, especially in areas where people are asked to forgo the consumptive use of resources for others.

According to Stem *et al.* (2003), the Ecotourism Society defines ecotourism as responsible travel to natural areas that conserves the environment and sustains the well-being of the local people. Weaver (1999) is of the opinion that the three core conditions or criteria for ecotourism are that it is nature-based, culturally-based and entails the educational or study aspects of the resources as opposed to the consumption of the resources for either direct or indirect utilisation. Also, ecotourism should be synonymous with the concept of sustainable development in that the carrying capacities of the site and support for the local communities should be adhered to. Tubb (2003) states that sustainable tourism emphasises the quality of visitor experiences, the continuity of tourism, natural resources and cultures and the balance of needs of tourists, operators, host communities and the environment.

A Stakeholder Approach to Ecotourism

According to Watkinson (2002), stakeholder involvement is punted to be an important factor in sustainable ecotourism. However, the path to involving all stakeholders is not an easy one. In the case study of the Wet Topics World Heritage Site Area (WTWHA), Australia, the conservation sector and the Aboriginal people's representation on the marketing of the heritage site was rejected on the grounds that they were perceived to not contribute constructively. Watkinson (2002) further states that with stakeholder involvement in the marketing of WTWHA, conservation management can be balanced with the goals of the ecotourism industry and the local community. Davies (2002) illustrates that Conservation Volunteers Australia (CVA) is an organisation that undertakes more than one thousand volunteer programmes every year. CVA has developed stakeholder partnerships with government, protected area managers, conservation agencies, communities, tourism agencies, researchers and private landholders so as to achieve realistic conservation outcomes.

Western (1992) states that the exclusion of the rural communities as an important stakeholder in Kenya's National Parks from ecotourism benefits resulted in deep seated resentment from the local people. The ensuing results were an increase in poaching and attacks on tourists. Namwalo (1992) and Western (1994) state Kenya has some of the world's richest wildlife and marine habitats. Long term planning in ecotourism, therefore, requires both local as well as international support. Gakahu (1992) argues that the involvement of local communities in ecotourism projects serves to avoid developments and decisions that may be in conflict. Such a stakeholder approach ensures better planning so the benefits may be maximised and costs may be minimised. Lusiola (1992) maintains that involving local communities in all aspects of ecotourism development ensures that the industry is developed along sustainable lines. Okech (2004) asserts that the inclusion of local communities in the ecotourism industry is integral for sustainable development. Caalders *et al.* (1999) state that the involvement of all stakeholders of ecotourism serves to stimulate the efficiency of decision-making processes, improve the quality of the process and also serves to legitimise the process.

The Union for Conservation of Nature and Natural Resources (IUCN 1999) illustrates that stakeholders derive many benefits from

protected areas. In the public sector, for example, there are electricity providers that depend on protected areas upstream, water companies who have similar needs and health ministries who may need reservoirs of medicinal plants. The commercial sector may engage in profit-generating ventures in protected areas. Non-governmental organisations have a commitment to conservation. Research institutions may be interested in carrying out research in protected areas and local communities depend on natural resources from these areas. Zesmi and Ozesmi (2003) state that local stakeholders' direct participation is fundamental to protecting biodiversity as they may actively oppose or support conservation actions. Henriques and Sardorsky (1999) list four types of stakeholders that are necessary for environmental protection. They are:

- Regulatory stakeholders (governments, trade associations and informal networks
- Organisational stakeholders (customers, suppliers, employees and shareholders)
- Community stakeholders (community groups, environmental groups and other potential lobbies)
- Media (mass communication)

Grimble and Wallard (1997) assert that the advantage of stakeholder analysis is that it provides a methodology and a conceptual framework for a better understanding of environmental and developmental problems and interaction through comparative analysis of the different perspectives and stakeholder interests at different levels. With regards to ecotourism development and consultation guidelines, Thomas and Duff (2003:48) place emphasis on the:

> identification of all the stakeholders; approaching all stakeholders on the basis of equality and transparency; producing materials that are informative, clear and user-friendly; using a variety of culturally appropriate means to seek views; emphasising the draft nature of proposals; being ready to revisit any proposals; keeping a complete and documented record of all comments, logging all contacts; ensuring that all requests for meetings, materials etc. are responded to promptly; making sure that every view has been considered,

> whether it is adopted or not; allowing time so that people do not feel rushed by the process, but not so much that they lose interest; engaging in further consultation if changes in the plan are envisaged that will affect other stakeholders than those seeking these changes; feeding back the results of consultation to all who commented; and above all treating all the stakeholders as essential partners in the conservation of the protected areas, and not as obstacles.

Ronald *et al.* (1997) argue that there is not much disagreement as to whom or what qualifies as a stakeholder. Persons, organisations, communities, neighbourhoods, institutions, society and even the natural environment can be regarded as actual or potential stakeholders.

Overview of Ecotourism in South Africa

Groenewald (2004) says that tourism is South Africa's third largest earner of foreign money. The industry contributes 8.2% or in excess of twenty five billion rands to South Africa's economy. The Centre for Public Participation (2003) maintains that whilst South Africa has made headway since the first democratic elections in 1994, the economy is still very much in the hands of a few White males. The political breakthrough also ushered in deepening poverty, widening of income gaps, extensive job losses and high levels of unemployment. The ecotourism industry in South Africa must be seen within such a context. South Africa is a well established and high profile ecotourism destination within the region. Dieke (2001) states that of the twenty countries that were profiled by the World Tourism Organisation (WTO), South Africa came up as the most favourable destination. Weaver (1998) asserts that South Africa, also, has a competitive advantage because of its well developed network of protected areas, its economy and its relatively sophisticated transport network.

The Department of Environmental Affairs and Tourism (DEAT 1996) states that after Brazil and Indonesia, South Africa is ranked as third in the world as an international biodiversity hotspot. It is the only country in the world to have an entire floristic kingdom within its border. South Africa has over 100 species of mammals, over 900 species of birds—of which 77 are endemic—and 120 species of amphibians. South Africa is signatory to

the Convention on Biodiversity (1992), the Ramsar Convention on Wetlands (1971), the Convention to Combat Desertification (1994), the Convention on International Trade in Endangered Species (1973), the Convention on Migratory Species (1979) and the World Heritage Convention (1972). The environmental legal framework includes the National Environmental Management Act (1998), the Protected Areas Bill (2003) and the Biodiversity Bill (2003). According to Goudie *et al.* (1999), the tourism industry has often come under fire for the discrepancies that arises from the different components of the industry. The promised economic benefits of tourism, especially at the community level, is seldom realised and when it is, there are other problems that plague the industry. Following closely on the heels of tourism development are social ills such as prostitution, drug trafficking and crime. Such thinking and findings about the tourism industry has particular relevance to the reconstruction and development of the South African economy since tourism has been identified as a vehicle for economic development.

Integrated Planning Services (PTY) Ltd (KwaZulu-Natal Tourism Authority, 1998) conducted a feasibility study for tourism development in the Mnweni Valley of KwaZulu-Natal, Drakensberg and found that there will be both positive and negative impacts on the social and cultural environment. The likely positive impacts would be employment opportunities, increased income, training and capacity building associated direct and indirect entrepreneurial opportunities, and the introduction of foreigners bringing different values and worldviews to the area. The likely negative impacts may be possible pressure for relocation of communities, potential for external damage to cultural sites and introduction of foreigners bringing different values and world views. The latter can be both a strength and a weakness. Groenewald and Macleod (2004) assert that in some areas, such as the Marakele National Park, the transition from farmlands to game reserves has not been smooth. Marakele National Park, which is situated in the Limpopo province of South Africa, is a public-private partnership set up for ecotourism purposes. Unhappiness on the part of farmworkers that reside on the land has resulted in law suits being filed against the private investors, the South African National Parks and the former farm owners. The lawsuit was about the unlawful eviction of the farmworkers from the farms. A lawyer, acting on behalf of the farmworkers, stated that the rights of the

environment took precedence over people's rights. Tapela and Omara-Jungu (1999) illustrate that many underdeveloped communities in Africa, in general, and South Africa, in particular, live close to or on the borders of national Parks. In the case of the Makuleke Community, a community living in close proximity to the Kruger National Park (KNP), 74.3% of the respondents used firewood as the main source of energy for the household, 77.2% required thatch for the roofing and of the 63.5% that were employed by KNP 77.8% earned less than R1 500.

South Africa, together with 170 other countries, has made official Article 6 of the Convention on Biological Diversity. The underlying principle of Article 6 requires Governments to integrate biodiversity conservation and sustainability into economic planning. According to Fakir (nd), South Africa has a set of environmental tools that allows for problems of the natural environment to be resolved well before any development takes place. With regards to a proposed N2 toll road that was to link Umtata to the KwaZulu-Natal South Coast, Macleod (2004) states that fears were around sensitive ecosystems that would be destroyed. However, environmental rights occur, not in isolation, but within the context of other rights. Whilst the South African environmental laws have caused development to move at a snails pace, the welfare of the poor and the unemployed is now at risk. The threats are from groups that focus on the environment over everything else. Hence, any claims by dispossessed people of land within these protected areas are perceived as threats instead of opportunities.

The South African Government Gazette, Act 49 of Heritage Convention Act (1999) illustrates that the objectives of this Act are to ensure that the cultural and environmental protection and sustainable development of, and related activities within, World Heritage Sites, are provided for to encourage tourism and other associated development linked to the World Heritage Sites; the encouragement of investment, innovation, and job creation; the promotion of the development of culturally, environmentally and, if applicable, economically sustainable projects with regards to World Heritage Sites; and the promotion of empowerment of previously disadvantaged individuals in projects linked to World Heritage Sites. In addition, the Act strives to protect, conserve and present World Heritage values whilst, also, placing a strong emphasis on local economic development through the tourism industry. This is especially so in situations

where there exists high levels of poverty even though there may be plenty of natural resources nearby to support livelihood activities.

Background to the uKhahlamba Drakensberg Park

The uKhahlamba Drakensberg Park is the largest protected area in KwaZulu-Natal. To the south of the province, the escarpment forms a natural border with Lesotho. It is also one of the main tourist attractions in South Africa (Aylward & Lutz 2003). The uKhahlamba Drakensberg Park is 180 km in length and extends from Royal Natal National Park in the north to Bushmen's Nek in the South. The uKhahlamba Drakensberg Park has been proclaimed a World Heritage Site for both its natural as well as its cultural significance. The Park comprises a range of mountains that reaches more than 3 000 metres in height. Evidence of *Homo Sapiens*, San hunter-gatherers, living on the mountains dates back to more that 8 000 years. Some 6 000 recognised San rock art sites within the Park dates back as far as 2 400 years (Chapman *et al.* 2003/4:60).

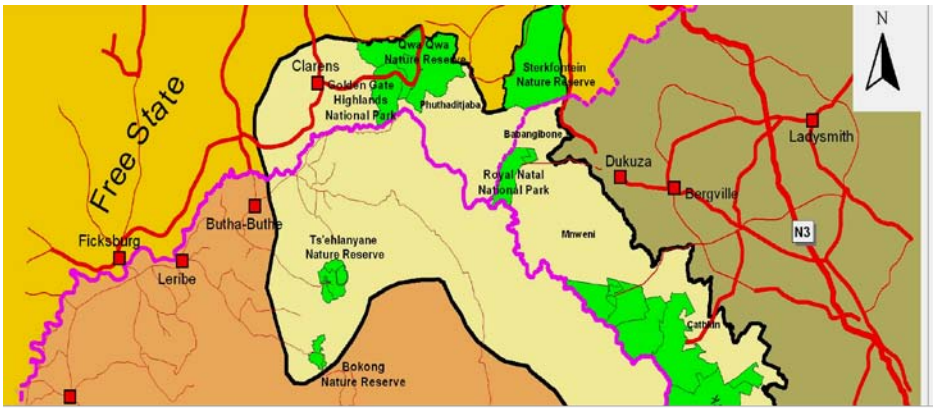
The uKhahlamba Drakensberg Park satisfied the following criteria for its natural significance:

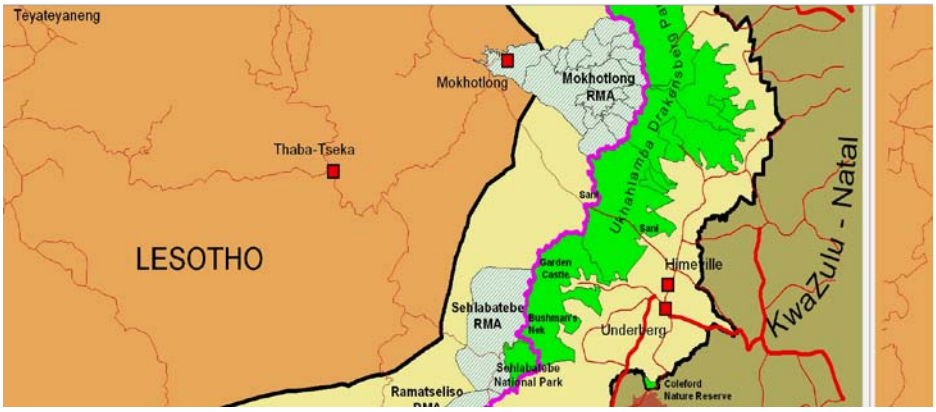
- Outstanding example of the major stages of the earth's evolutionary history;
- Outstanding example of communities of plants and animals or land forms;
- Area or feature of superlative natural beauty; and
- Important habitat of threatened species of plants and animals. (National Parks Board Commission as cited in Integrated Planning Services, KwaZulu-Natal Tourism Authority, 1998:12-13)

The Park satisfied the following criteria for its cultural significance:

- Represent a unique artistic or aesthetic achievement, a masterpiece of the creative genius;
- Have exerted considerable influence over time or within an area on subsequent cultural developments;

Map 1: Map of the uKhahlamba Drakensberg Park





Source: Maloti Drakensberg Transfrontier Project

- Be unique, extremely rare, or of great antiquity;
- Be amongst the most characteristic examples of a type of structure;
- Be a characteristic example of a significant, traditional style of architecture, construction or human settlement; and
- Be most importantly associated with ideas or beliefs, with events, or with persons, of outstanding historical significance.

(National Parks Board Commission as cited in Integrated Planning Services, KwaZulu-Natal Tourism Authority, 1998:12-13)

Methodology

Survey questionnaires with three key stakeholder groups (tourists, tour operators, local communities and accommodation personnel) were conducted at the uKhahlamba Drakensberg Park. Using purposive sampling, a total of one hundred (100) tourists were surveyed. A questionnaire survey was conducted with ten tour operators who were purposively selected using a list obtained from the accommodation outlets. A total of ten (10) accommodation personnel located in and around the uKhahlamba-Drakensberg Park, were purposively selected and surveyed. A convenient sampling approach was used to identify the accommodation personnel to be interviewed. In this regard, accommodation personnel who were available and willing to participate in the study were interviewed. One hundred households living alongside the uKhahlamba-Drakensberg Park in two communities were surveyed using a systematic sampling approach. Fifty households in each community were identified. The two communities bordering the uKhahlamba-Drakensberg Park that were surveyed were Mnweni and Obanjaneni. Two communities were included in the study to ensure geographical spread. Additionally, key informant interviews were conducted with Non-governmental Organisations (NGOs) and the National Department of Environmental Affairs and Tourism (DEAT). An interview was conducted with a representative of the Wildlife and Environmental Society of South Africa (WESSA) which is a NGO that advocates on behalf of the natural environment. An interview was also conducted with a representative from Ezemvelo KZN-Wildlife (a parastatal organisation).

Both WESSA and Ezemvelo KZN Wildlife are responsible for biodiversity conservation at the uKhahlamba-Drakensberg Park. An online questionnaire was partially completed by a representative from the DEAT. The DEAT representative did not respond to all questions posed.

Data Analysis

This section presents pertinent findings of the primary data collected. This is undertaken in relation to the stakeholders. This is followed by a general discussion of key issues emerging.

Tourists

Table 1: Respondents perceptions of the main aspect of what sustainable ecotourism should entail (in %)

	Percent (n=100)
Using resources sustainably	34
Reducing over-consumption and waste	14
Maintaining diversity	3
Integrating tourism into planning	6
Supporting local economies	9
Involving local communities	6
Training staff	6
Marketing tourism responsible	2
Undertaking research	20

Table 1 illustrates that the 34% of the respondents indicated the use of resources sustainably as being most important to sustainable ecotourism. This was followed by undertaking research (20% of the tourists). Reducing over-consumption and waste was identified as the most important component of sustainable ecotourism by 14% of the tourists interviewed. Supporting local economies, training staff and integrating tourism into planning was identified by 6% of the tourists to the uKhahlamba Drakensberg Park. A few

respondents identified maintaining diversity (3%) and marketing tourism responsibly (2%). The responses indicate that sustainable use of the natural resource base and responding to community needs were deemed to be important components of sustainable ecotourism. The latter position (that of supporting local communities) was also reinforced by other results as well. Seventy nine percent of the tourist respondents of the uKhahlamba Drakensberg Park thought that local communities should benefit from sustainable ecotourism to the Parks with only 3% stated that they should not. The rest either did not respond or stated that they did not know.

Table 2: Respondents' observations of environmental impacts at the uKhahlamba Drakensberg Park: Multiple responses

	Percent (n=100)
Too many vehicles	95
Soil erosion of trails	67
Vegetation damage	32
Too much city-type recreation	25
Fire which damages vegetation	24
Too many tourists	23
Too much water use	23
Litter	20
Polluted rivers and watering holes	20
Burning plastic at rubbish dump	1

Table 2 illustrates that the responses of the visitors indicate that they had observed various forms of environmental deterioration. The vast majority of the respondents (95%) stated that they were too many vehicles visiting the Park. Two thirds of the respondents said that they observed soil erosion in the Park. Other responses from a significant proportion of the respondents were vegetation damage (32%), too much city-type recreation (25%), fire which damages vegetation (24%), too many tourists (23%), too much water use (23%), litter (20%) and polluted rivers and watering holes (20%). One

respondent observed burning plastic at a rubbish dump. The responses clearly allude to the over-use of Park resources. Too many tourists were perceived to be unappealing within a World Heritage Site setting. For example, Deng *et al.* (2003) show that at the Zhangjiajie National Forest Park in China, visitor perceptions indicated that some spots within the Park were unacceptable. Visitor usage was found to be proportionate to trampling impacts.

Tour Operators

Table 3: Types of tours offered by tour company (in %) (n = 10)

	Yes	**No**	**No response**
Nature tours	90	-	10
Culture tours	10	90	-
Adventure tours	70	-	30
Other tours (township, golf, beach)	70	-	30

Table 3 shows that ecotourism or nature tourism was offered by 90% of the tour companies surveyed. The results indicate that ecotourism is high on the visitors' list of demands. However, the results could also indicate the high supply of ecotourism by tour companies. Cultural tours were offered by only 10% of the tour companies surveyed. The marked absence of the community component of ecotourism is evident. Additionally, the high demand for ecotourism is likely to place even greater pressure on conservation areas to deliver the tourist experience.

Table 4: Problems experienced by the tour business (%)

	Percent (n=10)
Exchange rate	40
New reservation system at South African National Parks problematic	60

Regarding problems that were experienced by the tour companies, 60% indicated problems about the new reservation system at South African National Parks and 40% indicated that the new exchange rate is a problem (Table 4). Interestingly the tour companies did not state problems of an environmental or a social nature. In terms of the former, this implies that tour operators see the uKhahlamba Drakensberg Park as a marketable tourist product.

Accommodation Managers

Table 5: Respondents' specific perceptions of ecotourism principles (in %) (n=10)

	No response	**Strongly agree**	**Agree**	**Disagree**	**Don't know**
Minimise negative environmental impacts	10	20	50	10	10
Environmental awareness	10	30	60	-	-
Conservation and management of protected areas	10	30	60	-	-
Local people participation	30	10	50	-	10
Economic benefits to local people	30	-	70	-	-
Opportunities to visit natural areas	10	10	60	10	10

Most respondents (20% strongly agreed and 50% agreed) felt that ecotourism entails minimising negative impacts on the environment. Most respondents (30% strongly agreed and 60% agreed) stated that ecotourism promoted environmental awareness. Sixty percent of the accommodation respondents agreed and 30% strongly agreed that ecotourism entails the conservation and management of legally protected and other natural areas.

Ten percent strongly agreed and 50% agreed that ecotourism entails maximising the early and long-term participation of local people in the decision-making process that determines the kind and amount of tourism that should occur. Seventy percent of the accommodation respondents of the uKhahlamba Drakensberg Park agreed that ecotourism entails the direct economic as well as other benefits to local people. The accommodation respondents of the World Heritage Site were, generally, in favour of local people benefiting directly from ecotourism. Ten percent of the accommodation respondents of the uKhahlamba Drakensberg Park agreed and 10% strongly agreed that ecotourism entails the provision of special opportunities for local people and natural tourism employees to utilise and visit natural areas and learn more about the wonders of nature. The responses indicate that similar to tourist responses, sustaining the natural environment and responding to local community needs were deemed to be important components of ecotourism.

Community

Table 6: Occupation of community respondent

	Percent (n=100)
Unemployed	71
Labourer	5
Business owner	4
Manager	1
Professional	2
Pensioner	17

Table 6 illustrates that 71% of the respondents were unemployed. This is reflective of the high unemployment rates in rural communities adjacent to many conservation areas. A low 4% of the respondents are business owners. Thirteen percent of the respondents rely on government pensions. The unemployment and poverty levels of the rural areas surrounding the World Heritage Site is linked to past disparities in land distribution, colonialism and migrant labour, racial legislation, and the power relations between the colonists and the indigenous farmers. Within the current economic context, the challenge for the surveyed communities is to meet their needs through

subsistence farming as well as selling of their labour to private as well as public buyers. This can only be done if there are plentiful private and public buyers of labour. The Durban Action Plan (Vth IUCN World Parks Congress 2003), in order to realise the theme of the Congress, calls for action at different and many levels: international action, regional action, national action, local action, and protected area authority action. The Plan (IUCN 2003:3) states:

> too often protected areas are governed in the absence of a system of shared objectives, values and principles; and increasing levels of poverty result in degradation of natural resources.

The ecotourism sectors of the World Heritage Site have not (yet) addressed the unemployment challenge of these communities. The Vth IUCN World Park Congress' theme of 'Benefits Beyond Boundaries' is yet to realise itself within the unemployment maze of the communities residing adjacent to the uKhahlamba Drakensberg Park.

Table 7: Respondents' utilisation of natural resources within the Park (in %) (n=100)

	Yes	No	No response/ don't know
Plant resources	67	33	-
Water	56	11	33
Wood	60	7	33
Medicinal plants	52	11	37
Animals	52	11	37
Ancestral worship	2	22	76

Table 7 shows that 67% of the respondents indicated that they utilise plant resources from the Park. Fifty six percent of the respondents stated that they use water from the Park. Water is a relatively scarce commodity for many rural communities. Rural communities commit a lot of time and effort to access water. The uKhahlamba Drakensberg Mountains forms part of the important natural phenomena in terms of providing water for a significant

proportion of the South African population. Sixty percent of the respondents access wood from the Park. Wood in particular remains an important source of fuel for cooking and heating purposes in rural households. Additionally, poles are used for the construction of traditional homes. Slightly more than half of the respondents (52%) use medicinal plants and animals from the Park. Only two percent of the respondents stated that they use Park resources for ancestral worship.

Table 8: Respondents' views as to how the community can contribute towards local economic development and environmental sustainability in the Park: Multiple responses

	Percent (n=100)
By making handwork (craftwork)	32
Having cultural activities that will attract tourists	32
By communicating with the Parks (having a good relationship with Park management)	27
By not killing animals	26
By not cutting down of trees	25
Community must fight against crime	23
The community must expose themselves by doing local projects	15
By forming stakeholder forums	14
Communities must protect our areas and mountains against fires	14
By working together	12
Community can help by informing other communities about the Park	9
By keeping land clean and beautiful	10
Tribal Nkosi can work together with Park authorities	5
Have a committee representing local communities	5
Community must stop stealing animals from the Park	3
Community members must not rob the tourists	3

Table 8 illustrates the communities' views as to how they, as a stakeholder, could contribute towards local economic development and environmental sustainability within the Park. Thirty two percent of the respondents stated by making handwork (craftwork) and having cultural activities that will attract tourists. A further 15% stated that the community must expose themselves by doing local projects. This illustrates that respondents felt that the community must engage in activities that will generate economic opportunities linked to the presence of tourists in the area primarily as a result of them being attracted to the Park. Additionally, several respondents identified good collaboration/relationship with Park authorities. More specifically, they highlighted communicating with the Parks (27%), forming stakeholder forums (14%), working together (12%), tribal Nkosi working together with Park authorities (5%) and having a committee representing local communities (5%). Clearly, there is a strong feeling among respondents that working with the Park authorities will be beneficial. Also, there is strong support for community engagement with the Park and various mechanisms for this were forwarded. A significant proportion of the respondents also indicated that community members should protect the natural environment by not killing animals and cutting down trees (26% and 25%, respectively), communities must protect their areas and mountains against fires (14%), by keeping the land clean and beautiful (10%) and community members must stop stealing animals (3%). Assisting in addressing crime also emerged as an issue with 23% of the respondents stating the community must fight against crime and 3% suggesting that community members must not rob tourists.

Conservation Organisations

The Ezemvelo-KZN Wildlife indicated that there are major challenges with regards to balancing ecotourism and conservation principles. Infrastructure, for the provision of electricity and water, has been laid underground. The representative indicated that there are high demands from visitors to the Park for more modern facilities such as restaurants, satellite TV, etc. The Royal Natal National Park is also embarking on projects and programmes in collaboration with the surrounding rural communities. Some of the projects are job creation through recycling, arts and crafts projects as well as training of guides and rangers. In response to the questions on how the Park entrance

fees should be structured and whether differential pricing should be used (in particular, whether foreign visitors should be charged more), respondents stated that foreign tourists should pay at least twice the fees as domestic tourists.

The positive impact of globalisation on the ecotourism industry in South Africa has resulted in more tourists visiting South Africa. However, a concern was raised that ecotourism is not really understood and the environment is 'used' rather than 'appreciated'. It would appear that the negative impact of globalisation on the ecotourism industry in South Africa results in foreigners getting a Western notion of ecotourism rather than an African experience. The ecotourism industry is money-orientated. The environmental concern with regard to ecotourism development was that the incremental increase in economic development may occur at the expense of the environment. One respondent stated that 'we could be killing the goose that lays the golden egg'. The social concerns with regard to ecotourism development were that a few get richer with very little trickle down effects, especially to poorer communities. The economic concerns with regard to ecotourism development suggest that surrounding communities are not brought on board and trained, and that the flow of money to countries overseas will be increased.

The respondents agreed that although there are small pockets of change, the ecotourism industry has not transformed significantly to address past imbalances in South Africa. The constraints the ecotourism industry faces in relation to addressing past imbalances were that it is a relatively new industry and that it lacks adequate and appropriate resources. The respondents again reiterated the concerns that 'money rules' the industry. According to one of the key informants:

> Ecotourism entails wilderness trails, inclusion of local people, education of the natural ecological principles of life systems and the peculiarity of the destination. It is not ecotourism when there are luxury hotels built on a wetland or on sand dunes, sunbathing and watching animals from a car.

Government

Together with the private sector, government also generates revenue from

ecotourism. Government revenue occurs both directly and indirectly from ecotourism. Direct income is in the form of income tax from businesses and operators involved in ecotourism and value added taxes (VAT) on goods bought by tourists and operators. Indirect income is in the form of bed taxes, airport taxes, etc. Other ecotourism generating income is from tourists using health services, communications infrastructure, etc. (Bennet *et al.* 2005).

A representative of the National Ministry of Environmental Affairs and Tourism stated that there are many ecotourism operations established all over the country with new ones emerging every day and others closing. No national cost-benefit analysis has been undertaken to determine the net benefits of the ecotourism or nature-based tourism economy. As to whether local communities benefit from ecotourism, he stated that they do benefit to a greater or lesser extent from ecotourism. Ways to increase these benefits would be through implementation of responsible tourism principles, fair trade in tourism practice, Black Economic Empowerment (BEE) and measuring of these by applying the tourism scorecard. As to the positive impacts of globalisation on the ecotourism industry in South Africa, the representative outlined the following: improved positioning of South Africa as an important global ecotourism destination; exposing ecotourism (including culture products and attractions) to foreign demand; improved local awareness of the importance of responsible ecotourism planning, development and management; strengthening of the local ecotourism sector's economic base; creation of job opportunities; increase in opportunities for SMME entrepreneurs; and reduction in local economic leakage.

General Discussion

The Mnweni and Obanjaneni communities are but two of the many rural communities that reside alongside the World Heritage Site in the province of KwaZulu-Natal in South Africa. Both communities are predominantly Black Africans, Zulu-speaking, have a low level of formal education and are relatively poor. Tourists that visit the uKhahlamba Drakensberg Region comprise both domestic tourists and foreign tourists. However, the World Heritage Sites attract more domestic tourists than foreign tourists. Overall, the tourists to the World Heritage Site were White. Black South Africans, as

visitors to the World Heritage Site, were few. Tourists that were mostly White, were relatively wealthy, had good formal educational qualifications and good jobs. Most of the visitors to the World Heritage Site stated that their knowledge about environmental matters was gained through self-teaching and most considered themselves to be environmentalists of some kind. They also possess enough money to visit natural areas many times a year and their primary reason for visiting natural areas was for relaxation. Owners of accommodation for tourists visiting the World Heritage Site were predominantly White and of South African origin. They also possessed a relatively good formal education. Owners of the tour companies were all White. Most were self-taught about environmental issues, marketed their operations nationally as well as internationally and described their operations as 'businesses that sell nature'.

The tour companies surveyed did not only specialise in ecotourism but their business practices were diversified to include other tourism products as well. These included township tourism, beach tourism, golf tourism, etc. Tours to the World Heritage Site was but one aspect of their business depending both on demand and financial feasibility. Diversification of this sort is indicative of the stakeholders' vested interest within the ecotourism industry, the integral interest being that of profit-making. Whilst there was no overwhelming support as to the aims and objectives that ecotourism should strive towards, there was general agreement by the accommodation respondents of the World Heritage Site that ecotourism should be about providing special opportunities for local people. Additionally, natural tourism employees should utilise and visit natural areas and learn more about the wonders that other visitors come to see, and direct economic and other benefits to local people, maximising the early and long-term participation of local people in the decision-making process that determines the kind and amount of tourism that should occur. Contributing to the conservation and management of legally protected and other natural areas; the awareness and understanding of an area's natural and cultural systems and the visitors' involvement in issues affecting those systems; and a type of use that minimises negative impacts to the environment and to the local people were also highlighted.

There were also mixed responses as to whether ecotourism to the World Heritage Site translated into tangible benefits for the communities in

the form of schools, clinics, educational trusts, housing, sports facilities, sponsoring of events, establishment of community gardens, or any other form of social investments. The responses in general raise concerns pertaining to access, ownership and the sharing of benefits.

With regards to decision-making and stakeholder involvement it was unclear as to what the extent of community involvement was. Some of the comments were that decisions that involve the Park are made by the community Nkosi (Chief) and tribal authorities are involved on local boards. The economic impacts of ecotourism to the uKhahlamba Drakensberg Park are positive as well as negative. The economic impacts are highly positive for the tour companies and the well-resourced accommodation sector. These two components of the ecotourism industry are mostly White-owned enterprises. The economic impacts are satisfactorily positive for the up and coming Black-owned enterprises. The economic impacts of ecotourism to most residents of the local communities are negative in that it further deepens the class divide within the ecotourism industry.

Conclusion

The study reveals that stakeholders felt that the ecotourism industry could contribute to the social upliftment of the community by assisting with various projects and programmes. Stakeholder perceptions also indicated that incremental increase in economic development may occur at the expense of the natural environment.

The profile of the stakeholders of the ecotourism industry reveals distinct disparities in terms of race and class. South Africa is often said to have two distinct economies, one rich and White and the other poor and Black. With regard to the stakeholders that are involved in the ecotourism industry generally, those that are Black are poor and those that are White are rich. Hence, the ecotourism industry is a microcosm of South Africa. The stakeholders within the ecotourism industry are, therefore, not equal partners. For ecotourism to be sustainable, it is imperative that the local communities be an integral, if not the central focus of any ecotourism development. With regards to tours to the uKhahlamba Drakensberg Region, the benefits from cultural tourism by the communities residing within and outside the Park have not been fully realised. Cultural projects that form part of the tourism industry are mushrooming in present day South Africa. Whilst

the demand may not be as great as wilderness tourism it does have the potential to grow in demand. This growth in demand may be accelerated through more injection of resources into the formation of such projects, marketing, and including it in the ecotourism itinerary. The supply of cultural tourism products may help to increase its demand resulting in benefits accruing to all stakeholders within the ecotourism industry.

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The ‘grove of death’ in Pauline Smith’s ‘The Miller’

Myrtle Hooper

For some time now critics have been interested in Pauline Smith’s use of space and spatialisation. During the 80s in particular this interest was couched in terms of the ‘world’ of her work: the ‘world’ she was said to create or construct by writing. Her fiction was read as generated out of the narrative choices she makes, and evaluated (and judged) in terms of the ideology said to underlie and motivate the fictional world thus engendered. J.M. Coetzee’s 1981 ‘Pauline Smith and the Afrikaans Language’, Sheila Roberts’s 1983 ‘A Confined World: A Rereading of Pauline Smith’, and Dorothy Driver’s 1989 ‘God, Fathers and White South Africans: The World of Pauline Smith’ are cases in point.

To a certain extent this critical focus coheres with Smith’s own sense of ‘writing a world’. In a letter to Frank Swinnerton of 15 February 1936, she remarks:

> The narrowness of some of the lives lived in this valley is what Arnold would have called ‘fantastic’—yesterday we went up far into the mountains to a most beautiful little farm where they seem never to have heard of any war since the Boer war, and where no papers from the outside world ever reach them—It was as if for those few hours we were living in a little self-contained world safe within a ring of mountains over which no news of disaster could ever travel!

She concludes, ‘these are the people I understand best—so there must be something of them in myself’ (cited in Driver 1982:125). The ‘little self-

contained world' is one with which she aligns herself, as it is one that she seeks to render in her fiction.

Spatial demarcation is one of the ways she does so. So her novel *The Beadle* opens with the nominal co-ordinates that locate its action: Aangenaam hills, Teniquota mountains, Platkops district, Little Karoo, Zwartkops range, Great Karoo, Platkops dorp are listed in order to specify and to delineate the Aangenaam valley. And farm names such as Schoongesicht, Harmonie, La Gratitude, Vergelegen cumulatively register the human significance of landscape.

How we are to read this 'world' is a point of issue. Sarah Christie, Geoff Hutchings and Don MacLennan, for example, admire it:

> What remains deeply impressive about *The Beadle* is the integration of setting with theme, so that the story grows organically out of the setting, and the setting is characterised by means of the story (1980:58).

At the same time they insist that,

> for the reader, the Aangenaam valley is set in a wider world. First of all, there is the rest of the Little Karroo itself. …. Beyond the Little Karroo, to the south over the mountains, is the narrow coastal strip with Princestown and the English … to the north of the Little Karroo is the Great Karroo …. Beyond Princestown, beyond the Great Karroo, is Europe.

And while the 'purely topographical setting … merges into what we may call the human setting to the story', we do not read as if we are members of this world because we are in fact positioned as outsiders, by these 'constant subtle reminders of a wider world outside' (1980:60).

Sheila Roberts's experience, by contrast, is one of considerable uneasiness. Her 'rereading' of the novel is a resistant one that registers the 'obstacles' she finds to 'entering and remaining comfortably within the world of *The Beadle*'. The first of these is Smith's

> rendering of a conceivably imagined Afrikaans into English; the

> second is the way her works contribute towards upholding certain myths about the Afrikaner—myths that have had and are still having important political implications; and the third is the temperamental narrowness of her characters, their tendency towards single, consuming obsessions (1989:99).

It is true that Smith's fiction can be seen to set up a framework of textual enclosure. Yet I have argued elsewhere that for Smith enclosure is an enabling device, engendering a world sufficiently distant and sufficiently separate from her own writing position to make it amenable to scrutiny and interrogation. This is because her fiction is marked by narrative tensions, by disruptions of community codes, and by intermittent unexpectedness that leads to quite radical textual surprise (1997; 1999; 2004/5; 2005). And, as Margaret Lenta has shown, although some of Smith's stories are sentimental, many invite analysis of the relations of power that obtain within this world: patriarchal power, sexual power of men and of women, economic and class power, social and moral power (1998; 2000).

In the short story I wish to consider now, Arthur Ravenscroft finds the same integration of setting and theme as Christie *et al* found in *The Beadle*:

> there is the blending of the miller, desperately ill and unhappy, with the solitude of his mill and the mountain scenery as he sits in black self-imposed alienation from those he loves most, while, ironically, hearing their voices when they scramble down to the church service he has refused to attend (1982:44f).

Like the earlier critics' term 'merge', Ravenscroft's 'blending' lacks the precision I will be seeking in this present essay. Yet if we accept it as pointing up the relationship between character and environment we can also recognise it as inviting a reading of the miller with critical distance as well as sympathetic engagement.

Kay McCormick offers a more developed analysis:

> In *The Little Karoo* spatial, temporal and psychological distance interact and intersect in interesting ways, ways that reflect the

> possibilities of the narrative position(s) chosen for each story.

Spatial distance, she explains,

> refers to the distance between reader-as-viewer and that which is seen. In 'The Miller', for instance, the Harmonie church is first seen from such a distance that only its main features are discernible. Shortly afterwards, the distance having been reduced, the reader can 'see' the details of the offerings on the trestle table in front of the church. To use a cinematic analogy, the spatial setting has been given through a long shot followed by a close-up.

In her use of the term, spatial distance does not refer only to the reader's view of things, however. It also refers to

> the distance between a character and something in the setting. Attention may be drawn to that kind of distance because of its symbolic overtones, in which case it takes on something of the quality of psychological distance: we see the miller sitting up on the hill looking down at the scene of the Thanksgiving service from which he has alienated himself in his withdrawal from other people (1982:167).

Psychological distance thus exists both between the miller and us readers and between him and the community from whom he sits at a remove.

McCormick's reading of Smith, and of this story in particular, remains a definitive one for me, thirty years on, because it is theoretically illuminating and because it is precise and perceptive. Of the miller, for example, she notes,

> Repenting of his self-inflicted isolation from Mintje, he moves down towards the church where she is: he won't go into the church land but wants to call her out to him because it is with her and not with the church community that he wants to be reunited (1982:167).

Her distinction is inconspicuous, but it is crucial; because the miller's relationship with his wife (not with the church) is at the core of the story.

As might be evident from my title my own interest in spatialisation moves on from the paradigm McCormick sets up because it is centred on the grove in which the miller dies. Groves, small woods or other groups of trees, have a long association in human society with spirituality. Alexander Porteous, in *The Forest in Folklore and Mythology*, remarks, lyrically, that,

> The popular conception of the character of a grove is an assemblage of beautiful trees which together impart a peculiar beauty to the scene; and the external forms of these trees possess so much beauty, and their overhanging boughs afford so welcome a shelter, that we need not wonder if in early ages groves were considered as fittest temples for the gods, and it was believed by the ancients that ghosts and spirits took a delight in making their appearance there (1928:44).

He cites many examples, from around the world, of groves that host spiritual activities and worship. While conceding that forests have played a major role in the cultural imagination of the West, Robert Pogue Harrison, by contrast, registers their dual, even contradictory nature:

> If forests appear in our religions as places of profanity, they also appear as sacred. If they have typically been considered places of lawlessness, they have also provided havens for those who took up the cause of justice and fought the law's corruptions. If they evoke associations of danger and abandon in our minds, they also evoke scenes of enchantment. In other words, in the religions, mythologies, and literatures of the West, the forest appears as a place where the logic of distinction goes astray. Or where our subjective categories are confounded. Or where perceptions become promiscuous with one another, disclosing latent dimensions of time and consciousness (1992:ixf).

Such ambivalence is clearly evident in one of the more famous—or notorious—groves in modern literature: the grove of death in Joseph

Conrad's *Heart of Darkness*.[1] While not ignoring the numerous instances of groves, even groves of death, that occur in literature generally, I wish to refer to this one in some detail because for me, and I think for many modern readers, it has prototypic status. It thus offers a point of reference in terms of which to consider afresh the world of 'The Miller', and the place of the grove within this world. Newly arrived in the Congo, narrator Marlow strolls into the shade of some trees, and finds he has 'stepped into the circle of some Inferno', where workers for the colonial power have 'withdrawn to die'. The nearby rapids fill 'the mournful stillness of the grove, where not a breath stirred, not a leaf moved, with a mysterious sound', an 'uninterrupted, uniform, headlong, rushing noise'. It is, he remarks, 'as though the tearing pace of the launched earth had suddenly become audible'. The men he finds in the grove are scarcely men:

> Black shapes crouched, lay, sat between the trees leaning against the trunks, clinging to the earth, half coming out, half effaced within the dim light, in all the attitudes of pain, abandonment, and despair …. They were dying slowly—it was very clear. They were not enemies, they were not criminals, they were nothing earthly now … (66).

The ambivalence, the confounding of subjective categories is, I think, quite clear. Yet while the moment is ghoulish, the image surreal, Conrad's method, it must be recognised, is symbolic. His 'grove of death' therefore enables an iconic critique of the inhuman depredations of the colonial power upon Africa, from the point of view of someone outside and above it all, of someone passing through. Later, Marlow looks out from the doorway of the office of the company accountant who works in the presence of a man dying of fever, and sees, 'fifty feet below the doorstep … the still treetops of the grove of death' (70). As Marlow is just a visitor to the Congo, this experience in the grove enthrals him. And because Conrad's symbolism is fundamental, the contact between man and woods forms a powerful part of the framing context for Marlow's encounter with the 'heart of darkness' that

[1] Conrad, J. [1902] 1967. *Youth, Heart of Darkness and The End of the Tether*. London: Dent. References are to this edition.

is Africa: it confronts him, it arrests him, it forces him to bear subsequent witness.

The core features of Conrad's treatment of the grove of death are that it is rendered in first-person retrospective narrative; that the death it contains is that of others not of the narrating (or focalising) self; that the grove is, to its narrator, alien space in a foreign and hostile place; that the experience in the grove begins the story and does not end it; and that the grove contributes significantly to the ethical matrix in terms of which we read the story.

Smith's treatment of the poplar grove in 'The Miller' is different in many respects. Indeed, at first reading it is surprising that she includes a 'grove of death' in her story at all. Yet a more careful study shows that this grove plays a crucial role in its action, and in the ways in which we read and respond to its central character. The points of comparison that now follow are aimed at briefly teasing out this role.

In the first place, Smith focuses on a single location, a local space in which her characters are settlers, not interlopers or intruders. This space has been domesticated, has become 'Aangenaam valley', unlike the foreign territory to which Marlow has travelled from afar. And the poplars of her grove are exotic not indigenous, not jungle, not even woods. They have been planted, though long enough ago to form an established feature of this settled space.

In the second place, her protagonist is a member of this settled community—though one whose experience of disease and death sets him apart from it. The miller, Andries Lombard, is a 'stupid kindly man whom illness [has] turned into a morose and bitter one'[2]. He is similar in kind to many of Smith's other characters; 'simple, astute, stern, tenacious, obstinate, unsubduable, strongly prejudiced, with the most rigid standards of conduct—from which standards the human nature in them is continually falling away', as Arnold Bennett puts it (1925:10). It is clear at the outset that he is dying, and much of the interest of the story lies in the effects of this on his sense of relationship with those around him: his wife and children whom he torments; the other farmers of the Aangenaam valley whose routine he rejects; his master who, contrary to his calumny, is a just and generous

[2] Smith, P. 1930 (1925). *The Little Karoo.* London: Cape, page 67. References are to this edition.

man; and, significantly, the Jew-woman, Esther Sokolowsky, who is with him when he dies. In important ways he defines himself against the culture of the valley—though in equally important ways he is defined by nature, as I will go on to show. The ethos in terms of which we read him is activated within this interstice, by this tension.

In the third place, although Smith makes use of free indirect discourse her narrative is in the third person. Thus while the miller's consciousness is foregrounded, he is presented as object as well as subject of the narration; as part of a 'process frame' which registers Smith's grasp of nature and of her characters' relation to it. This is especially evident in her rendition of the grove. Her style is pastoral not symbolic; and unlike the marking of Marlow's entry into the grove of death, the miller's entry into the poplar grove is almost incidental; it happens late in the course of events; and it leads almost serendipitously to his death.

In the fourth place, her story is structurally quite simple. Its action hinges on two significant moments in time, and two significant points in space. Because this is the cultivated environment of an agrarian community, the time for sewing and the time for reaping are well defined. The story opens 'on a cold, clear spring morning' (68), 'in the month of September, when, in the Aangenaam valley, other men planted their lands with sweet potatoes and pumpkins and mealies' (67), and it closes 'in the month of May … on the Thanksgiving morning [when] the men of the Aangenaam valley brought their gifts of pumpkins and mealies, dried fruit, corn, goats, pigs and poultry', and, '[o]n a long trestle-table in front of the church door the women spread their offerings of baked meats and pastries, their konfijts and waffels and custards and cakes' (71). The temporal cycle in the valley shifts from sowing to reaping, from planting to harvesting, and this cycle shapes the time-frame of the story.

The miller is at odds with this cycle because he is ill and expects to be dead before the harvest. He thus defines himself not in relation, but in opposition to the received practices and temporal patterns of his community. First he refuses to plant. Justifying this to his wife, he says:

> I will not plant my lands. If I plant me now my lands surely by the time it comes for me to dig my potatoes and gather me my mealies I shall be dead of this cough that I have from the dust in the mill. And

> so surely as I am dead, the day that I am buried they will drive you out of the house in the rocks and to the man that comes after me they will give my potatoes and mealies. So I will not plant my lands. God help you, Mintje, when I am dead and they drive our children and you out in the veld the day that I am buried, but I will not plant my lands for the man that comes after me (67f).

The miller is ill and dying, it is true. Yet in resisting the seasonal imperative by refusing to plant he is also rejecting his role as farmer and as man of the valley, and abjuring his responsibilities as husband and father. His insistent 'I will not' is an assertion of obstinacy, and his repeated 'the man that comes after me' a malediction based both on sexual jealousy and a desire to hurt his wife by referring to the replacement and to the erasure that he anticipates coming at the future moment of his death. Gratuitous this may be, it reveals the strength of his consciousness of mortality, and his inability to perceive any way in which the community will accommodate his death. It is also a masochistic reminder to himself that his life will have had no meaning if his wife and children are, on his death, driven 'out in the veld', out of their settled stable existence into the wilderness. Although his own 'master' is in fact a 'just and generous man', these fears for his family are not ungrounded. In 'Desolation', one of the more brutal explorations of poverty that Smith essays, a seventy-year old widow and her grandson suffer this very fate. After her son's death on the farm on which he has worked for many years, they are summarily and pitilessly ejected into the 'Verlatenheid'—that region of the Karoo that 'takes its name from the desolation which nature displays … in the grey and volcanic harshness of its kopjes and the scanty vegetation of its veld' (161f). It is just such a prospect that obsesses and torments the miller, that drives him into obstinate and arbitrary reaction.

Thus he also refuses to participate in the Thanksgiving, the annual occasion on which the community celebrates the success of its harvest, observes a sacrament of gratitude:

> 'Why then should I go?' he cried. 'Is there a thing this day in my lands but the grave that I have dug there? Is it for my grave that you would have me praise the Lord? Go you, then, if you will, and praise him for it, Mintje, but surely I will not' (70).

In opposition to the simple obeisance paid, at this time of year, by those who work the land, the miller couches his relation with God in novel and complex and self-defined ways. The desire to inflict pain on his wife is quite clear, but the logic of his position involves a triadic and hierarchic relation of power that has emerged out of the 'new cunning of his illness'. This is his reasoning: 'If God, who loved him, made the miller suffer, he, who loved Mintje, would make Mintje suffer' (69). It is in the spirit of this power that he drives her from him: 'Timid, humble, down the mountain-side she went, in little quick fluttering runs, to thank the Lord through her tears for His many mercies' (73).

In fact the cycle he is caught up in is a different one. At the start of the story we learned that illness has turned Andries from a 'stupid kindly man' into a 'morose and bitter one' (63). It is a damaging transformation because he takes his illness out on those around him. As this illness advances, he is 'more and more frequently possessed' by 'sudden bursts of fury' (69) that drive his children from him in terror and reduce his wife to tears. Their terror and her tears delight him. Invariably afterwards he is stricken with remorse, and longs to call her back, to 'speak with her of his sorrow and his love' (70). Invariably he resists the urge. Yet now, having driven her away from him on the morning of Thanksgiving, he reflects, 'If Mintje would but turn and call to him: 'Andries! Andries!' he would go to her, and this pain in his chest, this lightness in his head would surely leave him' (72). She does not do so: she doesn't even dare to turn and look back. Thus the cycle of brutality and repentance is not broken.

This leaves him alone in the first of two significant spaces in the story. It is a space that anchors his view of the valley, and offers an occasion for reflection and contemplation. Seated on a plank bench outside his home in front of the mill on the mountainside, he has a vantage point from which to look down over the valley. From this vantage point, as McCormick notes, he sees 'the square whitewashed church, built by Mijnheer van der Merwe for the Aangenaam valley, [standing] at a little distance from the homestead, close to a poplar grove near the Aangenaam river' (71). Although the church is dominant, this first view of the grove serves to place it within the settlement: in proximity to church and river, and at a remove from homestead. This first mention of the grove is then reprised in a more clearly focalised account:

> Down in the valley at Harmonie carts and wagons were now being outspanned, and close to the low mud wall of the church-land a fire had been lighted for coffee-making. From his plank seat in front of the mill Andries could see the smoke of this fire rising straight up into the clear blue sky like a burnt-offering to the Lord. In the poplar grove the winter sunshine turned the tall yellowing trees into spires of gold. Through Mevrouw van der Merwe's flower garden, and through the grove, ran the brown bubbling stream which up here in the mountains turned the mill wheel (73).

Overtly symbolic Smith's style may not be, but her use of language is precise and evocative. The passage sets out what the miller sees from his seat in front of his mill, and so, at a factual level, provides visual details of the scene. At a deeper level, it offers his impressions of this scene. This is evident in his analogy, 'like a burnt-offering to the Lord', and his metaphor, 'spires of gold'; both of which indicate the potency of the religious frame of mind that shapes his perceptions. It is also evident in his deictic reference, 'up here', which evokes the 'simultaneous presence and absence' of awareness that Genie Babb ascribes, in a fascinating study of embodiment in narrative, to 'exteroception', and specifically to 'the mechanisms of perception whereby awareness of the sense organ is 'lost' or subsumed in awareness of the object of sensation' (2002:204).

Perhaps because the narrative is focalised through his consciousness, and so registers and tracks his moving awareness of space, there is a preponderance, here, of prepositional phrases: 'in the valley', 'at Harmonie', 'close to the low mud wall', 'of the church-land', 'for coffee-making', 'from his plank seat', 'in front of the mill', 'of this fire', 'into the clear blue sky', 'to the Lord', 'in the poplar grove', 'into spires of gold', 'through Mevrouw van der Merwe's flower garden', 'through the grove', 'in the mountains'. This preponderance delineates, like a tableau, the settled space-time matrix of the world of the valley. Spatially, the world he sees is a contained one: in the present he is seated at a remove from the activities in the valley below; in the future he anticipates with brooding obsession the ejection of his family out of the valley on his death.

Geoffrey Haresnape notes of *The Beadle* that

> Smith has another method of giving her characters a definite place in the community. She provides some of them with a physical environment in which they are at home and with which they have more connexions than any of the other people in the novel (1969:71).

I think this method is evident here too. In the miller's case, it is his mill that gives him identity, his home on the mountainside, his lands that he refuses to cultivate, the grave he digs in a corner of them. The prospect of death makes him cling to his 'place': conversely his fear of death is extreme because it will entail losing this place. Nor does the community seem to recognise or register this situation. There is no instance of conversation that suggests a reply to his bitter talk to his wife, his refusal to plant his lands, his boycott of the Thanksgiving, his viciously rhetorical questions. Nor is there much evidence, in the cultural environment of the valley, of provision for his death, besides the presence of the churchyard in which, presumably, rest the bodies of all the community's dead.

This first tableau does not last. Its stasis is disturbed by a principle of dynamism that drives the miller from his vantage point by his home down the mountainside and into the grove, the second significant space in the story. What activates this principle is his recognition of his wife's suffering in the Jew-woman's, and his own role in that suffering. The process is gradual. Immobile as he is, his gaze traces the features of the scene before him, and his mind wanders over the relationships that give it meaning. He recalls the history of the white stone paths round the church, dug out of the mountainside by Mijnheer's sons in vain search of gold, and placed round the church as a tribute by Mijnheer to 'the judgments of the Lord' (71). He hears the voices of his children 'shrill and sweet as they [scramble] like conies among the rocks', but not that of his wife, and suddenly it is 'the one sound in all the world that he wishe[s] to hear' (72). He sees the carts and wagons outspanned at Harmonie for the Thanksgiving he will not join, the fire lit for the making of coffee he will not drink. His eyes follow the route of the 'brown bubbling stream' through the flower garden and through the grove, and relate it to himself, 'up here in the mountains', and to his work, 'turned the mill wheel'. He tracks it to where it joins the Aangenaam river 'close to the little whitewashed store where the old Russian Jew-woman,

Esther Sokolowsky, kept shop with her grandson Elijah'. He reflects that '[e]very year the Jew-woman, who went by no other name in the valley, baked a cake for the Thanksgiving' (73), and recalls that, 'for the first Thanksgiving after she came to Harmonie, [when] old and bent and thin, cringing like a hunted animal, with her thin grey hair tied up in a handkerchief, [she] had come to Mevrouw van der Merwe with a cake on a blue-and-white plate' (74). With this image in his mind, he connects her with his wife, and himself with her persecutors.

> In no other human being had Andries ever seen such fear as one saw sometimes in the Jew-woman's eyes …. And now suddenly, as he sat in front of his mill on this Thanksgiving morning, it was not the Jew-woman's eyes that he saw before him, but his wife, Mintje's, terror-stricken through her tears.
>
> In an agony that was half physical, half mental, the miller rose from his seat. God forgive him, he thought in horror, but if it was the terrible things that had happened to her in her own country that had turned the Jew-woman into a frightened animal, it was he, Andries, who had turned Mintje into a nervous hen …. God forgive him the evil he had done, but never again would he drive Mintje from him in tears. If he could but reach her now, to speak with her of his sorrow, this pain in his chest, this lightness in his head would surely go and she would be again his little dove, his little gentle fluttering bird, soft and warm against his breast (75f).

This shift from spatial to psychological connection triggers recognition that forces him to see himself anew and spurs him into movement. The shock is sharp enough to unseat him, and the insight, the anagnorisis, powerful enough to draw him after his wife down the mountain to ask her forgiveness. His route takes him into the poplar grove that is close to the church at which the Thanksgiving service is being held. He hopes to call her to him when she comes to the fire by the wall of the church-lands to make coffee. But he is 'weak and shaken by emotion and pain' (76). A 'new, suffocating pressure in his throat' (79) only lessens briefly with his panic at the Jew-woman creeping towards him, but, 'as suddenly as it had lifted the pressure in his ears, in his throat, descended upon him again, and the miller

turned, wild-eyed and suffering, to the old Jewess for help' (80). This moment in the story is important both because it shows him reaching out to another person, and because his inability to speak to her accentuates the link between his wife and her. It also initiates the second tableau of the story, the frozen moment of suspended action that ends with his death.

It is possible to read the story as endorsing a particular relation with the environment that celebrates natural cycles and communal alignment with them, and sanctions the miller for setting himself obdurately at odds with them, unreconciled into the sacramental patterning of work with nature and of celebration of its bounty. Certainly, when he pauses in a clearing of the grove, he looks 'from group to group' and it seems to him that

> he alone, in all the valley, was not at the Thanksgiving. He and the Jew-woman, who though she baked a cake for the table, and came every year to look over the wall, remained always, by her faith, an outcast from the gathering (78f).

Such a reading might be strengthened by the location and the manner of his death. When he turns to her for help, the Jew-woman leads him away from the church-wall, and thus away from the group, to draw him down onto a low mound among a little heap of leaves, and to bring him water from the stream. In agony he cries his wife's name, 'But Mintje! Mintje', and she goes to call her. His wife then kneels by his side, draws him up into her arms and responds through her tears, 'Andries! Andries!' (81). But he is unable to speak or to draw her head down on his breast before he slips from her grasp and dies. Although he reaches out for her and she responds to him, the unities he has resisted are affirmed, leaving him to die unreconciled and unredeemed.

Yet so pat a reading of the story is qualified and complicated, I think, in several ways. One of these is the representation of the grove of trees and its role in the action. The grove is given quite specific qualities. The first thing we learn about it is the proximity to it of the 'square whitewashed church', which stands 'at a little distance from the homestead'. This proximity is necessary to the action of the story because the miller's reason for entering the grove is to call to his wife in the churchyard. Yet it also has the effect of locating the grove within a religious frame; a frame that is

strengthened when we see the sunshine turning its trees into ‘spires of gold’ (73). Secondly, the grove accommodates the ‘brown bubbling stream’ (73) that is elsewhere in Smith’s work called ‘the River of Water of Life’ (‘The Pain’, 40). And thirdly, the air in the grove is so ‘bitterly cold’ that, cut off from the ‘brilliant winter sunshine’, the miller’s body, ‘which pain and exertion had thrown into a heavy sweat, grew suddenly chilled’ (78).

Given these qualities and given his condition, it is inevitable that moving into the cold dark damp grove will precipitate his death. In this sense, his death is rendered unsentimentally, as a matter of fact; and, in this sense, although the grove is not malevolent it is lethal. True, it offers him support, as he leans against a tree trunk. True it hosts the intervention of the Jew-woman who functions, perhaps, as its agent, its moving spirit. At first reading, her actions are helpful. Responding to his wild-eyed suffering, she leads him ‘away from the wall, through the grove, towards her store’ (80), and towards the stream. She strips off her apron to wet and press against his throat and chest, her shawl to make a pillow for his head, and the handkerchief that ties up her thin grey hair to bring him water. She also crosses the spatial and social boundary of the church-wall to call his wife to him. Yet her help cannot forestall what is inevitable, and leading him away from his wife, as she does, delays their reunion and prevents him from reaching the redemption he seeks.

> The miller opened his eyes and saw above him the little dove, the little gentle fluttering bird to whom his love and sorrow were never now to be spoken. With a vague, weak movement he raised his arm and tried to draw Mintje’s head down on to his blood-stained breast. He failed, slipped from her grasp into the rustling yellow leaves, and lay still (81f).

The nature of the grove, together with the offices of the Jew-woman in it, works to bring the miller’s life to an end, and it is a bitter ending.

So if the miller defines himself against the natural cycles and the cultural practices of the world of the valley, nature acts back upon him, paradoxically, to define his death. This is a second source of qualification and complication of the pat reading outlined above. I noted earlier that, in contrast to Conrad’s ‘grove of death’, the grove of poplars is a feature of the

settled space of the community. Planted by the community, it reflects an alignment, I think, with the belief that trees, groups of trees, host spiritual presence and are to be valorised because of this. Read thus, we may see the grove as having been established in order to anchor or ground the community, to connect it at a deep level with the trees' spiritual life. Read thus, we may also register more fully why it is the locus of the miller's death.

Although the miller's attachment to his mill and his home is intense, even definitive, the logic of the story requires that he not be left to sit outside his home and look down on the valley and the grove. He does not die there; he moves down into the valley and into the grove to do so. What draws him down the mountainside is his need for forgiveness from his wife and reconciliation with her. It is with her and not with the church community that he wants to be reunited, as McCormick insists. And he enters into the grove because from within it he will be close enough to her to call her to him. This, at least, is his plan, and the desire that directs his movements. Yet, as Harrison points out, the forest is a place where the logic of distinctions goes astray. I outlined above how I think the grove acts to frustrate the miller's purpose. I speculate here, however, that at a subliminal level the miller is drawn by the grove itself: without being aware of it, or knowing why, he seeks entry into the grove and once in it he finds rest. His emotional quest to reach his wife is thwarted, but the deeper spiritual quest to enter the grove and to find the resting place that it offers him is achieved. My speculation is that, like the epiphany that Marlow experienced in the 'grove of death' in *Heart of Darkness*, an ethical relation is released here too in the encounter between man and trees.

In support of this speculation, I wish to consider Smith's repeated use of the word *turn* in the story, since to me this word most intensely reflects the ecological ethos in terms of which we can make sense of—and judge—the death of the miller. The word can of course be either noun or verb. One of the verbal uses noted above occurs in the concatenation, *turn and call*, which projects an action, as does the phrase *turn and look back*, which is used soon after it. After indulging himself in 'sudden bursts of fury' that drive his children and his wife from him in terror and in tears, Andries's heart is 'tormented by a remorseful tenderness for which he could find no expression' (69f). Thus, on the day of Thanksgiving, having driven her away

from him, he realises that Mintje's voice is 'the one sound in all the world that he wished to hear. If Mintje would but *turn and call* to him: 'Andries! Andries!' he would go to her' and, he imagines, his illness would disappear. The shift he longs for is one of both physical direction and emotional orientation, and, of course, she does not make it. She does not even dare to *turn and look back.* The other two verbal uses of the word occur in prepositional phrases that suggest process and movement. First *turned … into* is a categorical change from one state of being into another. It is used of the miller himself (he 'was a stupid kindly man whom illness had *turned into* a morose and bitter one'), and of the Jew-woman, and of his wife ('God forgive him, he thought in horror, but if it was the terrible things that had happened to her in her own country that had *turned* the Jew-woman *into* a frightened animal, it was he, Andries, who had *turned* Mintje *into* a nervous hen'). In each of these instances, the agency that brings about change is negative, and the change is irreversible, thus locking the story into tragedy. The second prepositional phrase, *turned … to*, suggests a shift in physical and emotional orientation. When, in the grove, Andries *turns* **to** the Jew-woman for help, he is both focussing on her and opening himself up to assistance by another person. He is also, through her mediation, able to *turn to* his wife who kneels by his side, draws him up into her arms and responds through her tears, 'Andries! Andries!', belatedly in the way he has longed for earlier (81).

As well as being used of people, the word is used of aspects of nature, specifically the stream and the trees, and with significant effect. If the miller excludes himself from the cultural and religious ethos of the valley, the more important ethos is ecological, and its judgements are very subtle. What triggers the miller's anagnorisis is his visualisation of the Jew-woman, and what leads him to this visualisation is his view from above of the 'pillar of smoke' from the Thanksgiving fire, of the grove of poplars, of the flower garden, and of the stream which runs through them all and in the valley joins the Aangenaam river close to the Jew-woman's 'little white-washed store'. Tracing the course of the stream links him, the Jew-woman and his wife in his imagination. The stream is thus a connective trope amongst the central characters. More importantly, it is both a part of nature and a part of the process of cultivation: 'the brown bubbling stream … up here in the mountains *turned* the mill wheel'. The subjective cast of the

sentence lends agency—even volition—to the stream: it seems to co-operate of its own will with the work of the wheel. In similar vein, the smoke of the fire built for coffee-making rises 'straight up into the clear blue sky like a burnt-offering to the Lord'. The natural phenomenon, smoke, lends itself emblematically to the religious meaning-making of the awareness focalising it. The last important use of the word is this one: 'in the poplar grove the winter sunshine *turned* the tall yellowing trees *into* spires of gold'. The agent here is sunshine, which, despite the season of cold, has the power to transform tall trees into spires, and yellow into gold. The direction of the transformation is positive, and the object of the transformation receptive, even co-operative with this process working upon it. It thus forms a tacit but powerful backdrop, a tonal contrast, to the miller's resistance to communal practices and to natural cycles.

This said, the ecological ethos also invites positive recognitions. It was tracing the course of the stream that triggered the miller's recognition of the Jew-woman in his wife, of his culpability for her torment. In an image of veiled communion, the water is brought to his lips by her, and it comes from the brown bubbling stream that runs through the different parts of the landscape and connects them all. Prepositionally linked with this stream is the love for his wife that lies deep under the miller's torment: 'through all his blundering cruelty and through the wild and bitter exultation with which her tears and the quick rise and fall of her bosom filled him ran the memory of his old affection for her and the yearning for her love' (69). His love for her is like the stream flowing, unacknowledged, underground, 'at the bottom of all things/Utterly worn out/ utterly clear'[3].

In an article entitled, 'A Personality and a Place: Formative Influences on Pauline Smith', Arthur Ravenscroft quotes a letter to her from Arnold Bennett dated 16 February 1923, in which he reacts to his reading of 'The Miller'. Praising it as 'very good indeed', as 'fine', as 'the best thing of yours I've seen', he nevertheless labels it 'a sketch', and offers some trenchant advice:

[3] The reference is to Ted Hughes's poem, 'How Water Began to Play', line 21. 1972. *Crow*. London: Faber, page 93.

> I have suddenly perceived, comprehended, and understood what is the matter with *all* your stuff from the public point of view. You take for granted throughout a complete knowledge on the part of the reader of the conditions of life in the place and time of which you are writing …. Damn it, you don't even give it a point on the earth's surface. Who is to guess that it is in South Africa, even? Geographically, sociologically, climatically, ethnologically, ought to be explained & set forth … (in Driver 1982:44f).

Ravenscroft infers that Smith did take up Bennett's advice: 'for one of the virtues of her art is the fine selection of rich details of setting, which place her characters very sharply and make them appear to belong organically to the South African landscape they inhabit' (1982:44f). I hope the present essay has shown how important I think 'setting' is in 'The Miller', and how her use of space and spatialisation is crucial to her treatment of character.

Yet Ravenscroft's word 'belong' needs interrogation in the case of the miller because Smith registers tension between the centrifugal force of social cohesion and the centripetal thrust of individuation—and she does so through setting, landscape, environment. On the one hand a gap, a space, is inserted between the miller and his world that is key to his characterisation. Whereas the community's occupation of space and time (its 'enclosed world') is relatively unthinking, the miller's desperate need to be in control of his death if not his life impels him into individual choices, decisions and actions. He is alienated from the community in which he lives, and rejects the cycles, the natural rhythms of cultivation that shape its life. The broader consequence is that he is distinguished from its members in coming to read the meaning of his environment in conscious and reflective ways. Indeed, his awareness of, response to, and movement through space, and his sense of his own decidedly mortal location in time are central to what makes him so unique, so tragic a figure. And this figuration is exacerbated by his community's imaginative inability to grasp his experience of dying and of death.

On the other hand, then, environmental dimensions of space and time offer rich resources for an ethical reading of the story. Indeed, I might go so far as to say that the natural ethos can be seen to pass quiet, covert judgements on both character and event. In the first place, it is the miller

who is singled out to enter the grove. He does this alone, and he does this instead of joining the group around the church who, in the 'brilliant sunshine' are 'singing together: 'Praise God, ye servants of the Lord'' (81). In the grove he encounters and is succoured by the non-Christian Jew-woman. He does not reach his wife or even, himself, manage to call her to him: he has to rely on help to do so. His wife does come to join him in the grove. But he fails in his attempt to 'draw her head down on to his blood-stained breast' (82), and so is denied the physical reconciliation he so deeply desires. Initially drawn down by the Jew-woman 'onto a low mound among a little heap of rustling yellow leaves' (80), he struggles to rise and falls back fainting among them (81), and his death, when it comes, takes the form of slipping out of his wife's grasp into the leaves, where he lies still.

His death, when it comes, is a literal enactment of Macbeth's falling 'into the sere/the yellow leaf', and I think Smith's allusion is a nudge to the reader to step back and view this 'little self-contained world' in broader perspective. Haresnape remarks, of a passage in *The Beadle* in which its central character questions the sacrifice of Christ, that Smith

> can on occasion completely undercut the dogmatic foundations on which the conservative, Puritan-oriented society of her fiction is erected. She understood that this milieu of stubborn, rigorous faith could give rise to great passions, some of them ugly in their nature and intensity (1983:194).

Whereas before the miller was caught in the grip of a punitive spiritual conundrum ('If God, who loved him, made the miller suffer, he, who loved Mintje, would make Mintje suffer', 69), in the grove he is released from it. Where before he was possessed by fury and an obsessive dread of death, here we see him 'slip' from the thrall of mortality into stillness.

Smith abjures, for this character, the containment, the closure that reconciliation with his wife and his community would supply. By choosing the grove over the churchyard as the site of his death she achieves for him an incorporation, an integration into the ecological ethos of the natural world it represents. This is a pagan choice. Echoing and re-inscribing the gold of the poplar spires in yellow leaves is also a subtle narrative manoeuvre that evades the orthodox religious fellowship of the world of the valley, and

evokes the meditations on mortality of Shakespeare's dark sonnets. In one of several studies of the Navaho, American ethnographer Keith Basso remarks, deprecatingly, 'geographic landscapes are never culturally vacant' (1992:24). In accommodating the complexity of individual experience in tension with the cultural life of the valley, Smith generates a geographic landscape in 'The Miller' that is particularly full, particularly rich. Regional and intimate as it is, it also draws quietly on a broad literary history and imaginative tradition, lifting her grove out of the 'little self-contained world' of her small canvas and showing her prescient willingness to respond to and render an ecological ethos—an ethos that is released in the encounter between human and natural. It also reveals a narrative vision at once compassionate and clear.

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The Occult, the Erotic and Entrepreneurship: An Analysis of Oral Accounts of *ukuthwala*, Wealth-giving Magic, Sold by the Medicine Man Khotso Sethuntsa

Felicity Wood

Introduction

This study examines the way in which the economic, the erotic and the supernatural are brought together in the practice of *ukuthwala*, the Xhosa term for a dangerous, powerful procedure for long-term wealth, widely believed to involve the ownership of a wealth-giving being[1]. An individual receives medicine for ukuthwala and acquires a familiar, the *mamlambo*, which bestows wealth upon its owner. However, the mamlambo's owner is required to sustain the ukuthwala pact with sacrifices that come at a great personal and moral cost.

The combination of the occult, the sensual and the economic that characterises the ukuthwala process is embodied in the form of the mamlambo. The word mamlambo derives from the Xhosa for river, *mlambo*. Because *u-Ma-Mlambo*, her full name in Xhosa, resides in deep water, she is known as 'the mother of the river'. The mamlambo is a shape-changer, who is often said to appear in the form of bright, shining objects, which call to mind symbols of wealth, such as sparkling, shining coins (Niehaus 2001:59;

[1] Italics are utilised on the first occasion terms from Xhosa, Sotho or Zulu are used. Thereafter, the words are not italicised. Many of these terms have become part of South African English and there are no concise, appropriate English equivalents for them.

Broster & Bourn 1982:59). However, the mamlambo is most often envisaged as a snake, a mermaid or a seductive woman. The wealth that she grants comes at a terrible price. She wreaks havoc in her partner's life, damaging or even destroying close personal relationships and undermining individual sexuality. This study examines the genesis of the mamlambo, and discusses why the practice of ukuthwala has become widespread in southern Africa (Niehaus 2001:56).

Specific reference is made to oral accounts concerning the leading ukuthwala practitioner in southern Africa, the medicine man Khotso Sethuntsa. Khotso, as he is commonly known, was born in a mountain village in Lesotho in 1898. Initially he was a farm worker, then he set up business as a herbalist in Kokstad in the 1920s. He became highly successful, and his medicines were much sought-after, particularly his medicines for wealth and success. In 1960, Khotso relocated to the Transkei. He established his principal headquarters in Lusikisiki, where he lived and worked until his death in 1972 (Wood & Lewis 2007).

Methodology

This study draws on years of research into Khotso's life[2]. Information concerning him comes primarily in the form of oral accounts, derived from interviews conducted between 1997 and 2008 in the Eastern Cape, KwaZulu-Natal and Lesotho, some of which are cited in the Appendix[3]. Many individuals who had been close to Khotso were interviewed. The principal informants consisted of close friends, wives, family members and

[2] Some of the principal research findings in this paper are drawn from *The Extraordinary Khotso: millionaire medicine man of Lusikisiki* (2007), produced by Felicity Wood, in collaboration with co-investigator Michael Lewis.

[3] I interviewed many people who had been close to Khotso, sometimes in conjunction with my Research Assistant, Sylvia Tloti, or my co-investigator, Michael Lewis. Both Ms Tloti and Mr Lewis also carried out independent interviews. Details of the specific interviews on which this study is based are provided in the References. Work was also carried out by several student researchers, as indicated in footnotes and in the References.

business associates. Next, people residing in the areas where Khotso had lived and worked, and who had known him personally, or had received information concerning him from those who had known him well were also interviewed[4]. Finally, interviews were conducted with a range of traditional practitioners, including herbalists, spiritual healers and diviners. Khotso's work as an ukuthwala practitioner came to the fore during most of these interviews. It became evident that the practice of ukuthwala was a significant but under-explored feature of the southern African supernatural, thus warranting further academic investigation.

In this study, the socio-economic context within which Khotso operated is taken into consideration, since it exercised a considerable influence on the relationship between magic and economics in his career. Consequently, it has shaped the narratives that have arisen concerning this, bearing out Ken Plummer's observation that oral narratives should be perceived as expressions of the social worlds within which they are embedded (1995:18). Many other narrative theorists, including Ruth Finnegan (1970:14, 331), also draw attention to the way in which oral narratives form part of their social and economic context, and are influenced by their narrators' places in that milieu. Towards the conclusion of his study of oral narratives, Plummer (1995:167) maintains: 'I have tried to show how stories are truly sociological phenomena—rather than mere narratives or texts in the abstract' (167). This study, consequently, pays some attention to sociological aspects of narrative theory, such as those developed by Plummer.

Commenting on the fact that, according to traditional African beliefs in the spiritual and supernatural, humankind 'lives in a more than human context', Isidore Opkewho posits that '[m]agic therefore exists in traditional

[4] Some of the individuals who provided the oral accounts in the Appendix fall into this second category of informants. The man Khotso liked to call his prime minister, James Lunika, is one of the principal informants in this study. Two other principal informants are Pascal Makeka, from Lesotho, who knew Khotso from the early days onwards; and Lalo Yako, who knew Khotso very well in the 1960s, when he regularly purchased medicines from him. Extracts from interviews with these three men are contained in the Appendix.

life and lore as a means of asserting the human will in a world which poses severe dangers to human existence' (1983:179 - 180). This applied to many of Khotso's clients, inhabitants of some of the poorest parts of South Africa and Lesotho, who turned to him for his medicines for money and good luck, including the full-scale wealth-bestowing ukuthwala procedure, in order to exert some measure of control over their lives. Comparably, Khotso himself, an individual from remote, impoverished rural origins and a black inhabitant of a country under oppressive white minority rule, turned to the supernatural as a means of manipulating circumstances, and attaining power and wealth which would otherwise have been beyond his reach. Moreover, it should be borne in mind that Khotso's clientele came not only from economically embattled southern African communities. A substantial number of middle-class entrepreneurs, both white and black, visited Khotso, seeking to shape the economic trends in their own lives, rather than be at the mercy of market-related forces beyond their control.

Findings and Analysis

Orality, Commerce and Witchcraft

The oral accounts of Khotso's prowess as a seller of ukuthwala formed a key component of his entrepreneurial activities. Khotso's customers, both black and white, believed in him because they had heard the numerous stories describing his ability to bring about financial miracles in peoples' lives. Information about Khotso's ukuthwala procedure comes to us primarily in the form of these oral accounts. Khotso himself devised some of these narratives and was responsible for ensuring that they received widespread publicity. Russell H. Kaschula comments on the way in which aspects of the South African oral tradition can be put to commercial use (2002:7 - 8), and Khotso provides one early example of this phenomenon. The creation and dissemination of stories drawing attention to his skill, wealth and renown became a cornerstone of his entrepreneurial activities.

Khotso's stories carried additional weight because in many of the communities within which they were related, they exercised potency at an imaginative as well as a mercantile level, holding out the reassuring promise that even the harshest of economic circumstances could suddenly be overturned. In this, they provide an illustration of what Kennedy Chinyowa describes as the strategies of survival adopted by African orality to

strengthen, restore and benefit (even if only in an imaginative, psychic sense) one specific group that is dominated by others (2001:131).

In its interweaving of dangerous magic and money, ukuthwala provides an instance of what Peter Geschiere terms 'the modernity of witchcraft':

> To many Westerners, it seems self-evident that the belief in witchcraft or sorcery is something 'traditional' that will automatically disappear with modernisation. But this stereotype does not fit with actual developments in Africa today. Throughout the continent, discourses on sorcery or witchcraft are intertwined, often in quite surprising ways, with modern changes. Nowadays, modern techniques and commodities, often of Western provenance, are central in rumours on the occult (1997:2).

The problematic aspects of the term 'witchcraft' should be acknowledged. As Geschiere himself has noted, translating various local African terms as 'witchcraft' can in fact be reductive and misleading, since the original notions may be complex and ambiguous, possessing a diversity of meanings (1997:14). The interconnectedness of sorcery and modernity to which Geschiere makes reference is manifested in the physical appearance of the mamlambo herself. Because she tends to be associated with western forms of prosperity, like money, the fact that she is sometimes depicted as a curvaceous pale-skinned western mermaid with long flowing hair seems apt. Moreover, some of anthropologist Monica Wilson's informants told her that the mamlambo often appears wearing western clothes (1936:287).

There are a number of mermaid figures in African traditional belief, one of the best-known of these being the West African Mami Wata. Like the mamlambo, she is a dangerous, seductive figure, offering wealth and power, but able to bring about terrifying ruin. Both Mami Wata and the mamlambo are well-known figures in their respective parts of the African continent. Belief in ukuthwala occurs in many parts of southern Africa, and some of the factors that gave rise to this will now be examined[5].

[5] Some of the information relating to the practice of ukuthwala and Khotso's ukuthwala ordeals derives from interviews and discussions with student researchers Fanele Sicwetsha (2002) and Anele Mabongo (2003).

Ukuthwala in Southern Africa

Khotso's ukuthwala clientele came particularly from the regions where he lived and worked: the Eastern Cape, southern KwaZulu-Natal and Lesotho. However, he also drew many customers from other parts of southern Africa, including present-day Gauteng. More recently, in a series of interviews I conducted in 2001 and 2002, various informants stated that the mamlambo could be obtained from Indian or White shopkeepers in Durban or Johannesburg. Wilson observes that, because of their relatively prosperous, privileged positions, members of these groups were viewed as having access to relatively strong magic (1936:287).

W.D. Hammond-Tooke indicates that ukuthwala was practised in KwaZulu-Natal from the earlier part of the twentieth century onwards, since Durban was one of the principal places where it could be purchased. In 1962, according to Hammond-Tooke, the two most famous sellers of the mamlambo resided in Kokstad and Durban (1962:285). Khotso was the Kokstad man; and the man from Durban was Dr Israel Alexander, who derived much wealth from his mail order business in herbal medicines (Blades 1982:75).

Hammond-Tooke mentions that while the Zulu traditionally had zooform occult familiars, the mythical supernatural beings with partly human features such as *uthikoloshe* and the mamlambo derived from the Cape Nguni (1975:19)[6]. Moreover, the mamlambo's name derives from the Xhosa word for *river*, rather than the Zulu term, *umfula*. This suggests that the mamlambo originated among the Xhosa-speaking peoples. A student researcher reports that various Zulu people with whom she has discussed this matter say that the mamlambo is not a traditional Zulu spirit (Wood/ Abbey 2008). Nonetheless many Zulu-speakers know about ukuthwala. Many South African peoples allude to the mamlambo using her Xhosa name. For example, Niehaus notes that Tsonga- and Northern Sotho-speakers in the Lowveld area do so (2001:56 - 61)[7].

[6] According to Hammond-Tooke, the Cape Nguni are Xhosa-speaking peoples who inhabit what is now known as the Eastern Cape (1975: 15).

[7] In Lesotho, however, the mamlambo is known as *mamolapo*, a word which has the same meaning as the Xhosa name.

Belief in the mamlambo spread from Nguni-speakers to other southern African peoples, particularly as a result of the migrant labour system (Niehaus 2001:56). Many accounts of the mamlambo describe how this being had been purchased on the mines, and also often from whites or Indians (Wilson 1936:287; Hammond-Tooke 1962:285; Wood & Tloti/ Lunika 2003 and 2004).

The prominence of the mining industry and migrant labour in numerous accounts of the mamlambo is significant. Various socio-economic and political dynamics, in conjunction with specific religious and cultural processes, gave rise to the mamlambo. In contrast to other beings in traditional southern African beliefs, such as the *abantu bomlambo* (the river people) spiritual presences associated with the ancestors, and the tornado snake, the *inkanyamba*, the mamlambo is a relatively new presence. She has arisen in part from a sense of disconnection to a traditional, communal way of life; inequalities and inbalances in the socio-economic order; and the lure of western materialism. The westernised forms which she often adopts testify to this.

Next, there are the mamlambo's serpentine aspects. These will be examined in the light of the political, socio-economic and cultural forces that have shaped this being.

The Changing Forms of the Snake

The fact that the mamlambo frequently manifests herself as a snake, or a serpentine mermaid, has its origins in the centrality of the symbol of the snake in many traditional southern African belief systems. For instance, according to Hammond-Tooke, the serpent is the being that appears most frequently in the symbolic structure of Cape Nguni cosmology (1975:27).

Indeed, in Africa and world-wide, the symbol of the snake has long had deep-seated mystical significance. A few examples include serpent imagery in ancient Egyptian myth and iconography; the snakes that appear as totem animals and spiritual messengers in Dogon beliefs in Mali; and the Naga, sacred serpentine beings guarding temples in Bangkok and Cambodia. There are also feathered mystical snakes in the Americas, such as the Aztec divinity Quetzalcoatl, and the Rainbow Snake of the Aborigines.

In Africa, the python is especially associated with spiritual power.

There are, for instance, the sacred pythons in voodoo temples in Benin; while in Zulu tradition, the python (and sometimes the puffadder) is a manifestation of the ancestors, and the mamba of the kings[8]. In Zulu and Xhosa traditions, the *amakhosi*, protective ancestral spirits, can manifest themselves as snakes; and serpents also appear as spiritual emissaries. Earliest of all, the snake featured prominently in San rock art as a rain-making animal.

In contrast to these beneficial, life-giving mystical snakes, the mamlambo's serpentine aspects are suggestive of her menacing, treacherous nature. The association between the snake and sinister occult forces such as the mamlambo arises from the impact of outside forces on African beliefs. There is, firstly, the influence of Christianity, in which the snake was intrinsically associated with evil. The mamlambo also is a product of the impact of the Western economic system on African society. The anthropologist Penny Bernard argues that the negative aspects of the snake, in the form of wealth-giving 'muti' snakes, developed through contact with modern economic forces, specifically the pressure to accumulate individual wealth (2000:13). This ties in with the way in which belief in the mamlambo was disseminated through southern Africa as a result of the migrant labour system, which arose as individuals lost the capacity to sustain themselves through their traditional lifestyle and became economically dependent on white-owned capitalist operations, such as mining and commercial farming, as Niehaus observes (2001:46, 56). Similarly, anthropologist Barbara Frank notes that the belief that individual wealth could be gained through a dangerous pact with the spirit world, in the form of Mami Wata, became more widespread in West Africa after western capitalist practices resulted in marked economic inequalities (1995:331).

The oral narratives concerning the mamlambo, in which the ancient spiritual symbol of the snake is transmuted into a dangerous occult presence, reflect and also reinforce these altered perceptions. 'As societies change, so stories change', Ken Plummer remarks (1995:79). Similarly, Chinyowa draws attention to the way in which African society constructs and reconstructs itself by means of orality (2001:128).

[8] Information concerning the snake and Zulu tradition derives from a conversation with the anthropologist Penny Bernard (Wood/ Bernard 2002).

This is evident in one oral account from Amalinda, near East London, in which the sacred python becomes a manifestation of the mamlambo. A woman who employed a domestic worker named Phumza described how she saw a python in the garden while Phumza was working outside. (Pythons do not occur in this region, so the snake in question may have been a large puffadder.) Shortly thereafter, the snake vanished. Phumza then confessed that she was associated with the mamlambo, who would take the form of a man and have sex with her at night (Musakwa / Nghonyama 2008)[9].

Not only do elements of traditional beliefs acquire disturbing new forms in oral accounts concerning the mamlambo, but aspects of western modernity also take on malign occult qualities.

'Magicalities of Modernity'

The mamlambo, Jean and John Comaroff contend, is a symbolic expression of the dark 'magicalities of modernity' (1993:xxx). Western concepts of modernity, the Comaroffs maintain, had their own long-standing irrational, even mythic aspects, including 'various alibis ("civilisation", "social progress", "economic development", "conversion", and the like)'. The Comaroffs go on to argue that the Eurocentric notion of modernity lent itself to being perceived in an occult light particularly as a result of the terminology by means of which it was presented to colonised peoples:

> For modernity ... carries its own historical irony ... the more rationalistic and disenchanted the terms in which it is presented to 'others', the more magical, impenetrable, inscrutable, incontrollable, darkly dangerous seem its signs, commodities and practices (1993:xxx).

Such perceptions would be reinforced by the apparently boundless malign power exercised by forces of colonialism, as they exerted forms of control at socio-political, cultural, economic and religious levels, separating African

[9] This interview was conducted by University of Fort Hare student researcher Wendy Musakwa.

peoples from many aspects of their pre-colonial cultures and ways of being, while reducing them to a subservient state.

In consequence, the relatively new denizens of the sinister side of the supernatural such as the mamlambo problematize the notion of an opposition between concepts of tradition and modernity. Ruth Finnegan comments on the relationship between aspects of tradition and modernity in contemporary African societies, noting that 'individuals do not necessarily feel torn between two separate worlds; they exploit the situation as best they can' (1970:53 - 54). This applies particularly to ukuthwala practitioners: one specific group of people who have capitalized upon the changes that outside western influences have wrought upon elements of traditional beliefs in the supernatural in African society.

The mamlambo embodies some of the sinister mysteries and enchantments of the perceptions of western modernity to which Geschiere and the Comaroffs make reference. The allure she exerts is rooted in material actualities, but appears comparable to the workings of witchcraft in its force and its deadly consequences. According to the Comaroffs, witches

> embody all the contradictions of the experience of modernity itself, of its inescapable enticements, its self-consuming passions, its discriminatory tactics, its devastating social costs (1993:xxix).

In the specific case of the mamlambo, these are evidenced in the oral accounts detailing the nature of her relationship with the individual who enters into an alliance with her, and the price she exacts in exchange for the wealth that she offers.

The Cost of Ukuthwala

The mamlambo's partner is, in a figurative sense, required to sacrifice his soul, in that he has to compromise his moral being and his human relationships in order to sustain his bond with her. She demands offerings, which can include bread or banknotes or the blood of animals and even, it is related, the blood of those closest to its owner, such as family members. 'If you want to get rich quick, get rid of your heirs', a man from Maseru once remarked. Khotso drew many of his clients from Lesotho, so he had heard much about Khotso's work and the consequences of ukuthwala (Lewis/

Allah 1997). One Transkeian woman, who lived near Kokstad, also commented on the demands that mamlambos impose on their owners: 'They want blood, and you must slaughter and slaughter and slaughter. At some point, they will want human blood' (Wood/ Madyibi 2001).

Appropriately enough, the Tswana use the same word for blood and money, *madi*, suggestive of the way in which money is the lifeblood of modern existence, yet is also associated with danger and destruction. A craving for wealth can prove damaging to individuals driven by this desire, and also to those around them. The phrase 'blood money', with its connotations of betrayal, is appropriate here, in that it is suggestive of the price that a mamlambo's partner is required to pay, as he forfeits the lives or well-being of his family members. Because the accumulation of wealth can take place at the cost of personal relationships, the belief that the mamlambo feeds on the blood of those closest to its owner is symbolically appropriate. It is said that even if the man who has entered into a pact with the mamlambo does not physically sacrifice those closest to him, he will witness sorrow and misfortune being visited on his family: the damage that his 'marriage' to the mamlambo has wreaked.

The perils that the ownership of a mamlambo entails are suggestive of the hazardous allure of western materialism, which promises far more than it delivers, results in marked economic inequalities, separates wealthy individuals from those around them, and possesses the potential to harm individuals, families and communities.

In this regard, as Niehaus indicates, the mamlambo, with her specific nature and associations, embodies a form of cultural critique (2001:62). The Comaroffs expand on this, arguing that sinister occult presences—often given
disturbingly sensual form, such as the mamlambo—are

> modernity's prototypical malcontents. They provide ... disconcertingly full-bodied images of a world in which humans seem in constant danger of turning into commodities, of losing their life blood to the market and to the destructive desires it evokes (1993:xxix).

As the imagery in the above quotation intimates, the perilous desires associated with the mamlambo can take on both economic and sexual forms. The lust for money and material possessions brought the mamlambo into being; while she often manifests herself as an alluring female, partly because she represents that for which many deeply long. Because the mamlambo is perceived as exerting a seductive force over males, she is sometimes referred to as *inyoka yamadoda*, the snake of men (Morrow & Vokwana 2004:192). This sensual aspect shapes certain accounts of the ukuthwala procedure, while also influencing descriptions of the nature of a relationship with the mamlambo.

Erotic Enticements and Dangerous Liaisons

Firstly, Khotso's ukuthwala process involved undergoing a series of ordeals. Some accounts of these tests are included below in the Appendix, although the ukuthwala accounts discussed in this study are only a few examples of the wealth of southern African oral narratives concerning Khotso's ukuthwala procedure[10]. In general, the ukuthwala experience had a frightening, phantasmagorical quality, often involving a confrontation with snakes. Most of the narrators of the ukuthwala accounts describe events that were related to them by others. Individuals who have undergone ukuthwala prefer to keep the matter secret, because of the stigma attached to this practice. However, some first hand accounts of the ukuthwala process are related by James Lunika, the man Khotso called his prime minister. Lunika was Khotso's right-hand man for a long time, and he had helped Khotso

[10] Most of the oral accounts of ukuthwala in the Appendix depict the terrifying, hallucinatory quality of the ukuthwala ordeals. Many of these narratives describe how individuals failed these tests. However, a few of these accounts relate how those who had the courage to withstand the ordeals became rich. One of Lunika's accounts describes how a white man who successfully underwent an ukuthwala test. Like many of Khotso's other clients, this individual was convinced that Khotso had unleashed one of his supernatural serpents on him during the ordeal. Yet he passed the test and was convinced that the prosperity he acquired thereafter was due to Khotso's agency.

administer the ukuthwala ordeals. As a result, he acquired many insights into the nature of Khotso's work as an ukuthwala practitioner.

One example of an ukuthwala ordeal is related by the District Secretary of Qacha's Nek in Lesotho, who takes much interest in local history in Lesotho, and in the adjoining regions in South Africa (Wood and Tloti/ Tseane 2004). He has heard many accounts of the ukuthwala procedure, some of which were related to him by people who had undergone the process. He describes the experience of a relative who went to Khotso for ukuthwala:

> And, as they slept, he was not alone; he was with friends, because they had come for a common purpose. People had many objectives to go there, but he would group them accordingly. Now, ultimately, they realised that the room they were sleeping in was full of water, whereas it was dry before they went to sleep. But then they discovered that they were covered with water and there was a big snake in this water. They had been warned that whether they feel anything or see anything they should not be scared. They should be brave enough. The snake started wrapping itself around them and at the start they enjoyed that. Then it pretended to swallow them, and they got scared and cried out. They tried to open the door and run outside, but somebody opened the door for them and there was nothing. So they were sent away because they had failed.

This description has a weirdly erotic quality to it, as the snake winds its body around those of the men and they find the sensation pleasurable. This sensual dimension of the ukuthwala experience was also emphasised by a man from Teyateyaneng in Lesotho who knew many individuals who had been through ukuthwala in the 1950s and 1960s. 'There is the pool test', he said.

> The snake winds around your body: don't panic. Mermaid, naked lady. Don't act, just stand. Don't be tempted. She will give you love kisses. Pretend nothing is happening (Lewis/ Faro 1997).

Fraught as they are with an alluring serpentine temptress at their centre, the ukuthwala narratives do not always stop short at the suggestion of perilous titillation. A number of them incorporate accounts of sex with the snake woman, who takes on a human female form for this purpose. As the earlier account of the domestic worker's python indicates, the mamlambo can also transform itself into a male sexual partner.

The mamlambo's sexual qualities are not surprising, since a number of witchcraft familiars are believed to have erotic connections with humans. One such creature is the *impundulu*, or lightning bird, which can appear to a woman in the form of a handsome young male lover, often in western clothes, 'dressed as if he comes from the goldfields' one of Wilson's informants said (1936:282). Once again, the connection between dangerous occult beings and the mining industry is apparent.

Uthikoloshe (the tokoloshe) is a mischievious, licentitious spirit. The male's penis so long that he carries it tied around his waist or slung over his shoulder (Hammond-Tooke 1975:20; 1962:280 - 281)[11]. He offers far greater sexual gratification than men can provide, but women who have sex with uthikoloshe can become infertile, have miscarriages or give birth to monsters. A man who has sex with the huge-breasted female uthikoloshe can become sterile and impotent (Laubscher 1975:130 - 131; Niehaus 2001:53). This creature's disruptive, destructive effect on human sexual relationships and reproductive capabilities is comparable to that of the mamlambo. But the mamlambo is the most powerful and perilous of all the occult beings associated with sexuality. She exerts the strongest allure, for her sexually enticing qualities are intensified by the desirability of the wealth with which she is associated; and the greatest dangers of all lie in wait for those who succumb to her.

The mamlambo demands that her consort put her before all others, and some narratives expand on the erotic implications of this. They describe how a man's serpentine lover proves so insatiable in her sexual demands that she eventually drains him of his carnal energies. And so, it is said, he will neglect his wife's physical needs, leading all too often to the end of his marriage. 'Many men who go for ukuthwala divorce their wives, because that snake needs sex regularly. Wives get frustrated, and when the snake is

[11] See also Broster and Bourn (1982: 58 – 59).

satisfied it becomes a snake again', someone who had heard many of these stories concluded[12].

The mamlambo can damage her partner's sex life in other respects. Sylvia Tloti, a University of Fort Hare researcher, provides the following account, based on her interviews with a member of Khotso's household and discussions with an inyanga from Flagstaff, Transkei:

> The mamlambo is strikingly lovely. She is a demanding woman and is reputed to have an overwhelming appetite for sex .... A man who has sex with the mamlambo is unable to have sex with an ordinary woman, because his penis eventually becomes the size that will satisfy the mamlambo, but which is obviously not suited to an ordinary woman.

To an extent, these descriptions of the consequences of insatiable physical lust metaphorically depict the results of an all-consuming passion for individual wealth. Both result in a breakdown of key aspects of human relationships, and the consequence is dissatisfaction, rather than fulfilment. Also, these accounts suggest that the apparent desirability of the western capitalist system, with its promises of individual affluence and personal power, is a dangerous seductiveness, resulting in forms of deprivation and a loss of potency, in an essential sense of the word.

On one level, this again indicates the human cost involved in the pursuit of wealth. It is also worth noting that a man was not allowed to have sex, not even with his spouse, while he was in the process of using Khotso's ukuthwala medicine. 'If you want to get rich quick, don't sleep with your wife', said one man from Lesotho. Among many others, Joan A. Broster and Herbert C. Bourn corroborate this, mentioning the belief that a man who has taken on a mamlambo does not often marry, although he tends to become very prosperous and lucky (1982:59 - 60).

The mamlambo's disruption of sexual relations within marriage calls to mind a key feature of witchcraft accusations in Africa. It is often said that agents of sorcery strike at their victims' reproductive capacities, harming their abilities to procreate and to generate that which will sustain a healthy

[12] Name of informant withheld.

family and community life. For instance, Ralph A. Austen observes that

> a central trope of witchcraft beliefs [in Africa] is the misappropriation of scarce reproductive resources from households or communities (1993:100).

A mamlambo, for instance, presides over her consort's household, depriving him of his spouse, harming his offspring and sapping his sexual energies, thereby impairing his ability to maintain a secure, harmonious domestic environment.

But there was another, very different dimension to the sensual aspect of Khotso's ukuthwala medicine, for an element of sexual testing seemed to be involved in the process of obtaining this concoction. Khotso sometimes utilised seductive, semi-dressed women to tempt his customers, even after they had left his premises. (Some accounts of this are included in the Appendix.)[13] Lunika recounted: 'Khotso would tell his patients to avoid women .... He used to encourage abstinence'.

The link between celibacy and access to supernatural or even spiritual power is a longstanding, widespread intercultural phenomenon. For example, in African tradition, men and women seeking purification before certain crucial undertakings, whether of a spiritual or military nature, have often been instructed to refrain from sex, while members of Western religious orders have been commanded to embrace chastity in order to attain spiritual purity and strength. In the case of Khotso's ukuthwala tests, however, sexual purity served as a path to economic advancement, rather than spiritual potency.

Moral Fables and Compensatory Tales

Towards the end of Khotso's career, the relationship between sexuality, economics and the occult took on a different form. Khotso's health failed near the end of his life and his customers began abandoning

[13] Two of Lunika's accounts describe this, as does an account from Darlington Nyankuza, formerly from Flagstaff, near Khotso's headquarters in Lusikisiki.

him when they saw him turning to white doctors. He also began publicly complaining that his sexual capacity was ebbing away. It was almost as if the decline of his sexual and economic prowess was intertwined: both the result, some stories claim, of his dealing in dark magic.

Some said that Khotso's 'marriage' to the mamlambo was breaking down, as his fortunes declined and, some argued, his power over supernatural forces diminished. In part, some ascribed this to Khotso's promiscuity. Mamlambos, it is said, become jealous of their owners' sexual partners, and Khotso surrounded himself with wives and concubines, especially in the latter part of his career. '*Nkosazana* [the euphemistic name that Khotso and certain informants bestowed on the mamlambo] didn't like Khotso's constant meddling with woman', someone who knew him well said. 'He was changing them left and right all the time and eventually she got tired and left him'[14].

On the other hand, it could be argued that tales in which the occult and the erotic visited punishment on those who succeeded economically in the midst of poverty and suffering fulfilled a compensatory function,. The advantage of the narratives that contained moralising, compensatory qualities of this nature was that they offered outsiders a way of coming to terms with their own harsh economic situations, by reassuring them that a fortune as great as Khotso's could bring no lasting good[15]. Thus, some of the extraordinary elements of the ukuthwala accounts relate in part to their narrators' needs and desires. In this regard, they bear out Sean Field's observation that oral histories do not only describe what actually took place, but also depict that which their narrators wished could have happened (2001:250).

Moreover, such accounts provided a means of levelling condemnation against Khotso on the grounds of his wealth, which constituted a controlling force in his life and which he flaunted in the midst of poverty-stricken communities. In this respect, these narratives are illustrative of what Niehaus has described as the mixture of antagonism and

[14] Name of informant withheld.

[15] Pascal Makeka's and Joe Jordan's accounts in the Appendix are two of the many oral narratives depicting the disasters that befell those who became wealthy as a result of ukuthwala.

'envy and desire' that pervades attitudes towards the alluring but potentially damaging forces associated with white domination in Africa, such as capitalism (2001:82).

Ukuthwala as Effective Magic

Despite these above aspects, which suggest that some of the features of the ukuthwala narratives stem from the yearnings and the imaginations of their narrators, many of these accounts do have a sense of underlying solidity to them. The fact that many of Khotso's clients had faith in his medicines lent weight to many of the ukuthwala accounts. In an oral narrative context, conviction is fuelled by many factors, apart from the direct influence of specific belief systems. Luise White, for instance, refers to the potency of rumour and hearsay (2001:286); and David William Cohen draws attention to the convincing nature of a claim to truth and the power of unfinished accounts (2001:265, 274, 277). These qualities were intrinsic characteristics of many of the ukuthwala narratives, helping bestow a sense of actuality upon them.

This sense of authenticity that infuses many ukuthwala accounts also arises from a number of other factors, one of which being that many people who successfully passed through Khotso's ukuthwala ordeals did indeed experience considerable economic improvement in their lives. An Eastern Cape businessman who visited Khotso for his medicines recently stated sadly: 'If Khotso were alive today, I wouldn't have the financial problems that I have now'[16].

There are a variety of reasons why many of Khotso's clients became wealthy after undergoing ukuthwala. Some of these are connected to the entrepreneurial aspects of his ukuthwala procedure. Firstly, Lunika, among many others, believed Khotso's ukuthwala clients probably did experience something very frightening (Wood & Tloti/ Lunika 2004). Possibly hallucinogens were administered to many of his customers, in order to induce the weird phantasmic visions that characterised the ukuthwala ordeals. For instance, a herbalist in Matatiele recently described one concoction as 'Khotso's recipe' (Lewis 1997). This contained *isipili*, a

[16] Name of informant withheld.

mixture which summons up otherworldly visions by inducing altered states of consciousness. One informant said: 'I took it once, and it was like things from dreams came alive and walked around me'[17].

In this way, Lunika concluded, Khotso was testing his clients' determination. If they could endure the test, possibly they would possess the firmness of purpose to become successful entrepreneurs. A Lusikisiki man whose father had worked for Khotso contended: 'It's just testing your character, how strong you are, to go through that process'. Various Transkei locals share this view, sensing that the significance of the ukuthwala ordeals might have resided primarily in the psychological trials they entailed, rather than the uncanny dimensions they appeared to embody[18]. Many of Khotso's clients, for their part, believed they had proved themselves worthy of the ukuthwala medicine and the riches that it would bring. This strengthened their resolve to succeed in life.

There was, too, the fact that Khotso preferred to bestow his ukuthwala medicine on those that he thought possessed the skill to advance themselves economically: for example, clever, energetic, purposeful young men. There was another, concrete reason why Khotso's ukuthwala procedure appeared to be effective. Successful clients might receive not only medicine but also business assistance from him. Long before the days of rural development agencies, Khotso helped many would-be entrepreneurs on their way. 'He'd give them good business advice', Lunika recalled. 'He might even give them some money to get started'.

Conclusion

There is, however, more to the ukuthwala ordeals than pragmatic material concerns. While it could be argued that Khotso became highly successful as a seller of ukuthwala because he hedged his bets and did not rely on supernatural forces alone, the exact nature of Khotso's powers still remains in doubt and whether or not some of the inexplicable events described in the ukuthwala accounts actually took place is impossible to ascertain.

[17] Names of informants in this and the next paragraph withheld.

[18] Roseberry Maloi, among many others, expressed this view (Wood/ Maloi 2002).

Similarly, in studies such as this, there is always a danger of explaining away worldviews that allow for unaccountable, mystical dimensions of experience, or reducing them to symbolic expressions of the workings of socio-economic or political forces. There are conceptions of actuality containing areas of mystery and power, both benevolent and hazardous, which elude clear-cut explanation and containment (and thus neutralisation) within the parameters of factual academic analysis.

The Comaroffs offer another perspective on the material actualities and supernatural mysteries contained in ukuthwala. They maintain that this practice provides one distinctive example of what they term the occult economies: 'the deployment, real or imagined, of magical means for material ends' (1999:279). They argue that occult forces such as ukuthwala, which offer a means of swiftly attaining prosperity and success, have become a marked feature of the postcolonial South African landscape, because wealth still lies beyond the grasp of many, despite the fact that the new dispensation held much promise for those who had been economically deprived in the past (1999:283 - 284). For reasons such as this, ukuthwala continues to be practised in South Africa, especially in the Transkei, the most poverty-stricken region of South Africa's poorest province. Some of Khotso's followers and family members work as ukuthwala practitioners today.

Yet this is only part of the picture. For some South Africans, ukuthwala is significant primarily on a symbolic level. They perceive the ukuthwala accounts as meaningful in that they convey warnings about the cost of the pursuit of individual affluence in a society rife with economic inequities. There are, too, the compensatory elements of the ukuthwala stories: that wealth acquired speedily (possibly through dark and dangerous supernatural means) can bring about no lasting good. Niehaus argues that certain stories which some might regard as myths can nonetheless acquire such profundity that they become part of lived experience, 'provid[ing] a framework through which experience achieves significance' (2001:50).

Bearing these varying viewpoints in mind, how best can oral narratives such as those concerning ukuthwala and the mamlambo be apprehended and discussed? When discussing the complex, heterogenous, fragmented nature of the African continent, with its multifarious voices and diverse worldviews, the Comaroffs propose that at an academic level it should be engaged with 'in a dialectic of discovery', rather being perceived

in monologic terms (1993:viii). Such an approach, certainly, seems appropriate in a study of this nature, bearing in mind the fluid, ambiguous aspects of concepts of modernity and the occult; and the way in which they take on new and complex forms as they intereact, each exerting influences upon the other. In this study we have seen how they have given birth to the ukuthwala process and the mamlambo herself, weaving together sensuality, the supernatural and entrepreneurship as they do so.

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Appendix: Ukuthwala Accounts

1. Lekhotla Tseane (Qacha's Nek, Lesotho)

I am telling you about this man I knew who went to Khotso for wealth. The other stages of the test, he did not mention them, but he wanted to talk about this one, the final stage ... it was more powerful. That is the stage if one goes through it, one has won. With him, it was in the final stage when he was asked to tell his wife to brew some beer. She had to carry it in a traditional clay pot to a place that was between two mountains in Lesotho, actually a pass.

The man had to sit and wait near the clay pot and not look around. He had to stay there, and he would see a lot of things happening. He was also told not to react; he had to just let them happen and go by. And this story was said by him.

He said he first experienced some poultry, chickens, hens coming and dipping their heads in the pot, drinking a little bit of beer and then passing by. And then there followed some livestock: sheep, goats and then cattle, horses—in groups, all drinking from the pot. What surprised him was that the pot remained full. And finally, he heard a sound coming from the East, and he saw a big light coming through the pass, as if the moon was passing over the pass. It was by then at night.

He sat, he waited, and the sound grew louder and louder as it approached, and the light also grew wider and bigger, until it got to him. Then he realised the light was actually like a big eye. As it approached him, he realised that the body was that of a snake, a huge snake with one big eye. And when the body of the snake started wrapping itself around the pot, himself he got a fright and stood up and ran away. He had failed.

2. James Lunika (Caquba, Transkei)

The following day, we went to one of Khotso's special pools, there on the Mzintlava. Khotso said that the white man would have to bathe there for luck. Actually, Smith would have to take all his clothes off, and step onto this stone, just in the water, near the bank of the river. Khotso gave me a rope. One end would have to be tied round Smith's wrist. I would have to hold onto the other end of the rope. Khotso went away and we did everything he'd told us to do.

Then the stone Smith was standing on moved! It went right towards the middle of the pool. It sunk right below the surface. Smith disappeared underwater and then he'd reappear from time to time, looking terrified. I called out to the man—but I'd forgotten to hold on to the rope.

Afterwards, I thought that the stone this man had been standing on could have been the back of Khotso's snake itself, and that the snake was wrapping itself around Smith, under the water, cleansing him, to attract luck and money.

Next thing, Smith rushed out of the river. I suppose the snake must have finally let go of him. He ran off, straight into a thorn tree, then he rushed into town, towards the main street and disappeared. He didn't even stop to put his clothes back on. I tried to follow him. ... But I didn't know where he'd got to. As I was searching for Smith, I saw Khotso. He said, 'What's the matter with you? I told you to look after the white man, and now you've gone and lost him!'

So we were looking for Smith. And then we saw this police van, with two black policemen in the front and there was Smith in the back. They'd given him an old pair of white overalls to wear.

As soon as he saw us, he started shouting: 'There's the old devil! There's the young devil! They tried to kill me! They put me in the river with this huge snake!'

Khotso kept calm. 'Oh' he said to the policemen, 'my son here was just taking him for a cold bath in the river. But then he started shouting things about snakes and ran away'.

The policemen must have decided that this was all Khotso's business and they shouldn't get involved. So they tried to calm Smith down, but he wouldn't listen. He just stormed out of town.

But—six months later, Smith came back! He had a new car, he was wearing smart clothes and he had his wife with him. He was so pleased to see us. He introduced his wife to us and he hugged Khotso and called him his friend. 'Thanks to you, my business is doing so well that now I can afford to employ three new mechanics at my garage!' he said.

3. Joe Jordan (East London and Transkei)

Khotso gave my relative a small bottle and told him: 'Immediately you

Get your salary, put all of it in a purse with this bottle and put the purse under your pillow when you sleep. And don't tell your wife!'

The following morning, my relative opened his purse and counted the money and it was five times his salary, so he went to buy a car in Kokstad from the Weeks family. When he got home in his new car, he opened the purse and found double the amount he had used to buy the car. So he went out and bought more stuff, furniture and so on and every time he bought, the money came back, doubled. My relative made the mistake of informing his wife. His wife told him: 'You know what, you are going to have a tikoloshe or a snake as your new wife and I will be driven away!'

His wife forced him to throw the bottle into the sea and he lost everything—no money and the car moved by itself and crashed into the house and everything was in chaos. ... Then his wife deserted him! I believed my relative's story and was forced to recognize Khotso's power.

4. James Allah (Maseru, Lesotho)

This guy goes to the snakes. He was very brave. He became a successful diamond dealer in Lesotho. The man went naked through an underground tunnel in the house to a pool. The snake licks him. The snake has bad eyes and a slippery body. Its tongue is rough and it has big teeth. The snake swallows the man and spits him out.

5. Pascal Makeka (The Hermitage, Lesotho)

This is what happened in the winter of 1946. Thabo Tlali, from Maseru, who had an understocked café and a taxi, and Reverend Mokoena, who had a cafè in Tsoelike, went to Khotso's place for ukuthwala[20]. At 6pm, just as darkness had fallen, Khotso told the two men to go into a river pool and stay there. They had to stand right up to their necks in freezing cold water. They kept their shoulders hunched and their arms folded tight over their heads. They were trying to keep just a small part of their bodies out of the river. Mokoena kept looking at his wristwatch. By 6.15pm, time had been passing so slowly he thought his watch was stuck. By 6.30, he couldn't stand it any

[20] Not the real names of the individuals in question.

longer, so he got out of the pool. Khotso offered him a room for the night. But the Reverend refused, saying he had organised a place somewhere else. Tlali stayed in the water. Later on, he joined Mokoena. He never told him what happened after he left the river.

Three months later, Tlali's shop was full stocked. Next year, he bought two buses. But both his sons died from sudden and surprising illnesses. Then by 1950, Tlali himself was dead. He died in great pain. His business crumbled and his woman had to start again, from nothing.

6. Darlington Nyankuza (Mdantsane)

In the days when I had a garage in Flagstaff, a man from Port Elizabeth who stopped for petrol told me about this. After one of Khotso's clients had qualified to go back and do his business, he would be given a lot of instructions and conditions. For instance, if the client was male, one of the instructions would be not to pick females up in his car en route to his home. But this particular guy had done exactly what he was told not to do. It was strange, because this whole incident happened far away from Khotso. When this guy was passing through Qumbu, he saw this beautiful girl hitching a lift, so he stopped to pick her up.

Of course, these were Khotso's tricks: people would forget things he had told them. Things went horribly wrong for this guy and he wrecked his car. So he decided to go back to Khotso to explain the situation. Khotso said the man had disobeyed him: he should have driven straight home.

7. James Lunika (Caquba, Transkei)

A young man visited Mount Nelson (Khotso's Transkei headquarters) to get good-luck medicine for his butcher's shop. After he spent three weeks there, Khotso gave him a small bottle of muti and said: 'All who want meat, they must come to Bennet's butchery, there is no better butchery!'

Before the young man left, Khotso told him: 'Don't sleep with a girl for seven days after using the medicine'. He warned him that the muti would attract women, but that he should resist them, and use its power for his business only.

The man returned to Johannesburg. He travelled by train. He was all by himself in a compartment when an attractive young woman walked in. She flung herself on him and began making love to him. The young man was pleased that this had happened to him! But he had the bottle containing Khotso's special medicine in his shirt pocket. And suddenly the bottle exploded. The man shouted at the woman: 'You have spoiled my luck!' So he got off the train at the next station and went back to Khotso. He made the young man work on his property for some time. After that, he gave him more medicine.

I know about this, because Khotso made this young man tell me all about what had happened to him. And yes, I believed him. Khotso called me in to listen to this story as part of my training. It was a true story and a strong warning to me!

8. James Lunika

Khotso would also tell his patients not to drink or smoke, which was a good thing, you see, good warnings: *ungaseli*, *ungatshayi* and to avoid women. Today, that is the message that Khotso would have given people so as to avoid HIV-AIDS, because he used to encourage abstinence.

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