THE MUTUAL EMBODIMENT OF LANDSCAPE AND LIVELIHOODS: AN ENVIRONMENTAL HISTORY OF NQABARA

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Abstract

This thesis presents a history of the landscape of Nqabara, an administrative area in a rural and coastal area of the Eastern Cape Province, South Africa. In the process of investigating landscape history, the inquiry engages with a range of data sources from diverging discursive contexts, including data from ethnographic fieldwork, from the consultation of archival documents and historical reports as well as from comparative historic and ethnographic research, necessitating a critical consideration of the epistemological contexts of data production and the dialogue between researcher and data. Furthermore, in its aim to move beyond historical description towards explanation, the study interrogates the dualist ontological conceptualisations of nature and culture, society and ecology, object and meaning upon which are built three dominant conceptual frameworks concerned with human-environment relationships: social-ecological systems theory, transdisciplinary landscape studies and political ecology. Drawing primarily upon the works of James Gibson, Anthony Giddens and Tim Ingold, an ontological foundation is developed to guide the enquiry and move towards an alternative understanding of the relationship of people's livelihoods with respect to the landscape in which it is lived, which I call here the praxis-embodiment perspective. This ontology takes the situated patterns of action of a situated agent-in-its-environment as its point of departure and proceeds to develop a framework explaining how relations among the patterns of action of different agents-in-their-environment, emerge in structures that simultaneously enable and constrain future action. The foundation is thereby provided for a monist understanding of how landscape and social structure emerge simultaneously from the complex intersection of patterns of actions and interactions of agents in their environment. This framework calls for an understanding of time, space and scale, not as independent variables influencing process and action, but as emergent properties arising from the patterns of actions of situated agents. Finally the alternative ontology is applied to the history of landscape and livelihoods of people of Nqabara. It is concluded that an appropriate understanding and explanation of the critical transformations in the landscape as well as in social institutions, should be sought through analysis of the complex ways in which patterns of action of multiple spatial and temporal rhythms and between multiple agents in an environment, intersect and resonate.

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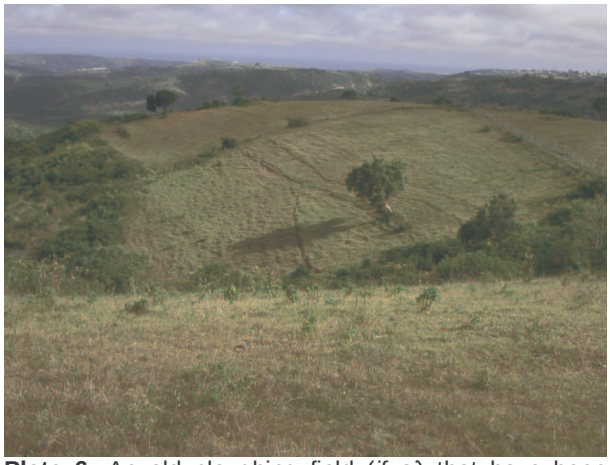

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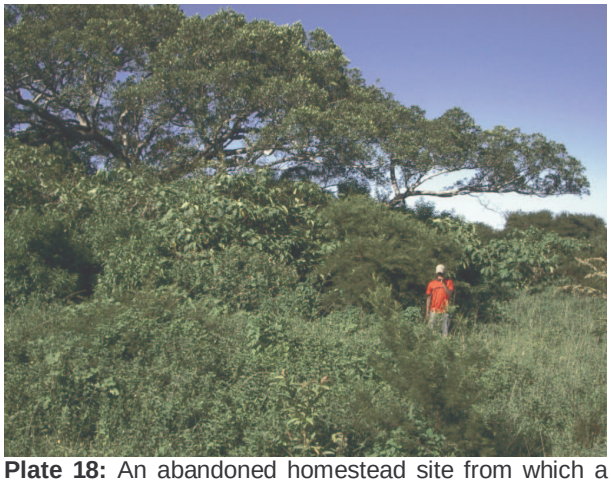

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Introduction

Historical studies of South Africa's rural areas under communal land tenure potentially draw the attention of two main groups of audiences. On the one hand, politicians, legislators, development agencies and scholars increasingly grapple with the way in which the livelihoods of those who inhabit these areas, articulate with issues of national concern such as poverty, unemployment, economic growth, land tenure and the environment. On the other, international scholarly interest from various disciplinary traditions in human-environment relationships often converge on the distant and the marginal, seeking to understand the role of people in managing natural resources, as well as the mediation of the broader political-economic context on this process. The current study will be of interest to both these audiences. Through a representation of a history of human-environment relationships over the last half century in Nqabara, an administrative area in the district of Gatyana of Mbhashe local municipality in the Eastern Cape Province of South Africa, my aim is to guide the attention of the reader through the recent history of the landscape and the most important factors that have shaped it. Although the contemporary issues of poverty, unemployment, land tenure and rural-urban linkages are touched upon directly in the consideration of the history, the greater part of the development of an argument is allocated to the insight provided by the case study on conceptual issues in human-environment studies.

Rural livelihoods, poverty and the environment in communal areas of South Africa

The last five years of South Africa's young democracy have seen unprecedented, but equivocal national economic growth. National GDP, the number of people annually moving upwards into the lower middle class, even car sales, are all reaching levels of growth higher than ever experienced before. Yet little impact seems to be made on national unemployment, economic inequality continues to expand and the proportion of the population classifiable as economically most vulnerable is on the increase (Carter and May 1999, 2001). It is becoming evident that the influence that race continues to play on economic position, is increasingly accentuated by new lines of economic differentiation, with the rural-urban distinction featuring as amongst the most important.

A significant body of scholarship have come to concentrate on the quality of life and livelihood opportunities for individuals and families living in rural areas, especially those rural areas where communal land tenure is the dominant institution shaping access to and use of land and resources (Lipton and Lipton 1993, Chambers 1995, Carter and May 1999, 2001, Barrett *et al.* 2001, Shackleton *et al.* 2001, Bryceson 2002). It is becoming increasingly recognised that the livelihoods of rural households in South Africa are dynamic and differentiated, bridging urban and rural economies, aimed at managing risk and involve maintaining complex social and economic relationships (Cundill 2005). Several studies in rural parts of Southern Africa have drawn attention to the vital role played by access to resources from 'land-based' livelihoods in buffering households against shocks and enabling them to substitute or supplement the purchasing of costly resources with practices that involve arable cultivation, animal husbandry and harvesting of natural resources (Cavendish 2000, Shackleton *et al.* 2001, Dovie *et al.* 2006). These studies have emphasised the importance of communal production regimes and the negative impacts of inappropriate policies on local livelihood security (Bank and Minkley 2005). Fundamental

to all these development strategies, is the expectation of and need for the resolution of the perceived vague and insecure character of current communal land tenure legislation and practices (Kepe and Cousins 2002, Bradstock 2006).

Studies of the human-environment interface

An increasingly wide range of disciplines and disciplinary traditions have been converging upon different aspects of human-environment relationships over the last few decades, resulting in the emergence of a number of novel and potentially fruitful conceptual frameworks and modes of enquiry (Scoones 1999). Although the literature has tended to focus on a limited number of distinct interdisciplinary topics, apparent in all is the complexity of the interactions of systems of humans and their environment as a result of spatial and temporal variability. Much of this variability has been caused by unpredictable interactions among processes across multiple scales and the contestation and negotiation among different knowledges and ways of knowing (Leach *et al.* 1999, Berkhout *et al.* 2003). As a result, the emphasis in many approaches has shifted towards detailed, historically contingent and self-reflexive descriptions of the multiple and heterogeneous actors and processes interacting materially, politically and discursively across multiple scales (Latour 1993, Agrawal and Gibson 1999).

The shift towards historical description has been accompanied by various attempts to develop synthetic and holistic conceptual frameworks and bodies of theory, in order to retain a measure of explanatory and predictory power in analyses (cf. Costanza *et al.* 2001, Berkes *et al.* 2003, Dolšak and Ostrom 2003, Moran 2006). Cundill's (2005) novel approach of combining the conceptual resources from a range of existing synthetic and holistic frameworks, in order to address the shortcomings in each, symbolises the aim of developing a meta-synthesis towards which the study of human-environment interactions seems to be increasingly striving. In the proliferation of synthetic frameworks however, scholars have seldom stopped to deconstruct the concepts and theories which they borrow and combine so freely. This would require a thorough investigation of their epistemological origins and ontological foundations. Remarkably few scholars have drawn attention to unproblematic pathways whereby synthetic frameworks have come into being (cf. Long and Van der Ploeg 1994, Westley *et al.* 2002).

The current study takes its cue from these attempts at bridging disciplinary traditions of human-environment studies, through the union of existing concepts and theories from diverse origins into synthetic and holistic frameworks. In the course of the thesis I will forward an argument that aims to illustrate that unacknowledged ontological (assumptions about the constitution of reality) and epistemological (assumptions about how such a reality is to be known) concerns plague the emergence and development of many integrative frameworks. In order to develop this argument, I now turn to three influential interdisciplinary topics of inquiry around which human-environment studies have sedimented in the last few decades. After briefly outlining the significance and contributions of each of these developments, I will elucidate what I perceive to be common shortcomings in terms of the ways in which these frameworks have combined concepts and theories from not only multiple and diverging bodies of knowledges, but also from different ways of knowing founded upon diverging pre-scientific assumptions about the subject of their inquiry. The three bodies of inquiry are studies of social-ecological systems, transdisciplinary studies of landscape and political ecological studies of human-environment interactions.

Complex social-ecological systems

Holling and Gunderson's (2002) heuristic model of adaptive renewal was developed to describe the dynamic interplay between change and persistence observed in many complex ecological systems, which had prior to that not been adequately described and explained by other partial theories. Key to the model of adaptive renewal, is the concept of ecological resilience (Holling *et al.* 2002a), which is defined as the degree of disturbance a system can endure before undergoing a transformation into an alternative stable state. The adaptive renewal model shows that the 'stability landscape' of a system, i.e. the number and characteristics of alternative stable states, is dynamic and undergo continuous change with regard to two important variables, that of potential (the limits of what is possible) and connectedness (the degree of internal control). The authors show cycles of adaptive renewal may unfold simultaneously at multiple and nested spatial and temporal hierarchies, or panarchies, and during critical periods events or transformations at one scale may catalyse transformations at other scales (Holling *et al.* 2002b). Although the model is developed from the observation of ecological systems, the authors describe the theory as an attempt to transcend the boundaries of scale and discipline (Holling *et al.* 2002a).

Anthropologists, political economists and other social scientists have subsequently investigated the applicability of the model to the systems they traditionally attend to in their respective studies, as well as when these normally distinct systems are conceived of as interacting social-ecological systems (Berkes and Folke 2002, Abel and Stepp 2003, Walker 2005). Important contributions include, developing an understanding of the importance of social institutions and ecological knowledge as feedbacks among social and ecological systems, and the potential these feedbacks hold for self-organisation and management in their capacities to store information (memory) and produce novelty.

In many ways this approach is one of the most responsive advances with regard to recent developments both in ecology and the study of social systems. It is explicitly concerned with dynamism and change in ecological systems. It recognises the complex and multiple causal relations involved in ecological change, the role of ecological stochasticity, threshold and synergistic effects and non-linear causality, and therefore also the unattainability of management through complete knowledge and understanding (Leach *et al.* 1999, Scoones 1999, Ingold 1999, Folke 2006). With this assumption in mind it has developed into a science of adaptive management based upon preliminary knowledge, continuous monitoring, experimentation and learning. Through the involvement of anthropologists it has also started to incorporate a sensitivity to heterogeneity among human actors in systems, to their different practices and knowledge bases and epistemological frameworks (Gadgil *et al.* 2003). It recognises that knowledges from a multiplicity of epistemes should be integrated in research and management.

Thus, a theory of complex social-ecological systems presents itself as an integrative approach to the human-environment interface, consciously aimed at ridding itself from the longstanding dualistic ontology, of a separated human, cultural or social field on the one hand, and a natural, biophysical or ecological one on the other (cf. Westley *et al.* 2002, Adger 2006). It is therefore ironic that many of the concepts used to build this framework, which emerges from dualistic views of human-environment interactions (such as social system, ecological system, drivers, feedbacks, social institutions, traditional ecological knowledge, self-organisation), is combined

without thorough deconstruction of the discursive origins of their construction and the worldviews upon which they are based. The irony is extended when scholars acknowledge that the delineation between social and ecological system is artificial and arbitrary (cf. Berkes and Folke 2002), yet they persist in treating them as relatively autonomous, if linked, systems (Pállson 1996). In the present critique of the ontological and epistemological origins of social-ecological systems theory, the current study is not an attempt to unearth some fatal flaw in it or any of the other two bodies of studies presented here. Rather, it points towards deep-lying rifts in the origins and foundations of these trans-disciplinary endeavours, which, if exposed and dissolved through self-reflexive, critical inquiry, may greatly enhance the capacity of scholars of differing traditions of thought to engage in research and debate around common subjects.

Transdisciplinary landscape studies

In contrast to social-ecological systems theory, the claim of the study of landscape to be an integrative and holistic approach to human-environment studies, lies not in its common origin from a general theory of change and persistence, but from the convergence of diverse scholarly interests upon a common subject (Décamps, 2000). In the last decade however, these various contributions have been increasingly brought under simultaneous consideration by scholars aiming for transdisciplinarity in landscape studies (cf. Naveh 1995, 2000, 2001, Palang and Fry 2003, Tress and Tress 2001, Tress *et al.* 2001, 2005). These studies emerge as it is realised more and more that the complex and holistic character of landscape bridges its natural and cultural aspects (Antrop 2005). Some authors have come to refer to landscape as biperspectivable cognitive and natural systems (Naveh, 2001) while others describe the ecological and semiotic approaches to landscape as separate discourses (Cosgrove 2003).

Regarding it as a physical entity, landscape ecological research has focused for the most part on the temporal dynamism and spatial heterogeneity which characterise a multiplicity of hierarchically organised scales (Blaschke 2006). Increasingly however, questions of scale and spatial and temporal heterogeneity are seen to emerge as elements of an interface where human activity and geological and biological processes merge (Antrop 2006). Landscape is therefore recognised not as passive backdrop or setting for interaction among human practice and ecological processes, but importantly as the product of such interaction (Hirsch 1995, Anschuetz *et al.* 2001). Because of it being a byproduct of the myriad of daily tasks whereby people make a living, the physical shape of a landscape can over time become deeply associated with a certain livelihood. Landscape emerges as the sedimentation of practices over time; it is the materialisation of time. Some have described this dialectical relationship between social and ecological history in landscape as interface, as co-evolution or as interpenetration (cf. Beinart and McGregor 2003, Balée 1998). In this respect, landscape is regarded as a social production emerging as the result of a way of doing.

Hermeneutic and semiotic traditions have however drawn attention to the fact that the concept of landscape, far from being physical reality only, is discursively constituted. Landscape is not only a way of doing but importantly also a way of seeing, a representation or social construction (Baker and Biger, 1992). These approaches have concentrated on landscape as a signifying system of signs; landscape as a process of semiosis. Multiple meanings of a landscape arise not only from the various traces or inscriptions left in the landscape from past actions, but also from the diverse readings of these texts by multiple observers in the landscapes (Tilley 1994,

Gow 1995, Morphy 1995). Each new 'reading' of the landscape in itself represents a different and newly constructed landscape (Cosgrove and Domosh 1993). The constant reading of landscape occurs in the practice of daily life, and from a plurality of practices emerge various meanings, underlining the instability of any one reading (Robbins 2003c). In such a way landscape can become an expression of ideology (Antrop 2005), characterised by politicised spaces (Cundill 2005) where power relations both produce and are the products of the conditions that shape landscape and livelihoods (McCusker and Carr 2006).

The view of landscape as a space of inscribed meaning, has also lead to the view that landscape is a communicative device that stores information, i.e. a mnemonic tool (Duncan 1990). Others have argued that landscape not only aids memory, but through people's readings of the landscape it becomes actively part of the process of remembering (Küchler, 1993). Landscape is therefore not only materialised time, but time materialising (Bender, 2002). The rich meaning embedded in landscape, and the various possible readings of meaning, implies that landscape is also a scene of contestation over meaning (Moore, 1996, 1998).

In the context of these diverging perspectives on landscape, Potschin and Haines-Young (2006) explain the need to develop bridging theories to better understand and represent the patterns and processes of landscape across the nature-society divide. This multiplicity of perspectives of landscape, and the assumption that it can act as some sort of interface where the perspectives of landscape as a physical, mental, social and cultural reality meet (Tress *et al*. 2001), leaves implicit the question to what degree the signifier 'landscape', when used in diverging discursive fields by different traditions, is simply a homonym, a semantic mask hiding dissimilarities of meanings. Cosgrove (2003) further develops this question by arguing that the various traditions of landscape studies share too little in terms of language, ontology and epistemology for fruitful synthesis. He argues that cultural studies of landscape can no longer be regarded as part of a coherent body of knowledge being slowly assembled growing. Rather, these studies resemble disassociated fragments, shards of reflecting glass which at once illuminate, reflect and distort the world (cf. also Cosgrove and Domosh 1993). At best, integrative conceptualisations of landscape attempt to overcome the divergent meanings of landscape by layering them over each other, instead of unpacking their varying foundations and sources (cf. Tress and Tress 2001).

Political ecology

Political ecology, like interdisciplinary landscape studies, represents an eclectic collection of approaches that have converged upon the common subject of environmental change, and the recognition that the costs and benefits of environmental change are for the most part distributed unequally (Robbins 2004). Political ecologists study relationships between society and nature within contexts of social, spatial and temporal asymmetries of power (Escobar 1996, Guha and Martinez-Allier 1997), by focusing on the political economic sources, conditions and ramifications of environmental change (Bryant 1997; Arsel 2002; Derman and Ferguson 2003). The asymmetrical relationships it studies, unfolds over nested webs of temporal and spatial scales, which political ecology therefore treats as the emergent properties of social relations (Zimmerer and Basset 2003b). Its relevance is founded upon its critical attention to historical contingency, which have lead some inquirers to define it as articulations of history and biology, and the cultural mediation through which they are established (Escobar 1999, Robbins 2004). Analysis of the politics of everyday life through richly textured, detailed ethnographies stands at the centre of political ecology (Robbins 2003c).

For this reason, more and more analyses emerge as inveterate weavings that cross the divide between social and biogeophysical sciences numerous times (Zimmerer and Basset 2003b). Such analyses pay attention to the fact that power not only involves the control of material resources, but also of ideas and meaning (Brosius 1999). Because the resources for constructing meaning are unevenly distributed (Escobar 1998), issues of meaning are inherently political in nature. The opposition of the objective categories of ecology and the subjective and constructed character of these categories means that at the core of the practice of political ecology, lies the resolution of fundamental epistemological divergences among the actors being studied (Willems-Braun 1997, Robbins 2004).

While political ecology, through its ethnographic focus, has been relatively successful at treating the epistemological dilemmas central to its task, it has not been entirely self-critical regarding the conceptual resources it draws upon in this task. To treat the 'hybrid networks' (cf. Latour 1993) of matter and meaning from which relations of power emerge among actors through contestation and negotiation, political ecology has based most of its activities on an ontology which proceeds from the dichotomy of mind and body, object and subject. Political ecologists have rarely critically unpacked these fundamental assumptions, and therefore their claims of following an integrative and holistic approach to human-environment interactions, may well be unfounded (Peterson 2000, Zimmerer and Bassett 2003a, Robbins 2004).

The conundrum

These three extremely significant contributions to the understanding of human-environment interactions, all of which lay claim to integration and holism, thus share similar inadequacies in terms of their ontological assumptions, preventing them from attaining the goals they have defined. By leaving many deep-seated dichotomies, such as that between society and ecology, culture and nature, mind and body, subject and object unquestioned and unresolved, the boundaries which these three approaches attempt overcome, are implicitly perpetuated. These dichotomies maintain the objectifying and decontextualising traditions of approaches that separate matter from meaning and practice from discourse (Hornborg 1996). In short, social-ecological systems theory, transdisciplinary landscape studies and political ecology, have assumed that the boundaries they intend to bridge, are given and stable ontological entities. In making this assumption, they have limited themselves to the interstices set arbitrarily through the process of disciplinary institutionalisation.

In a recent paper concerned with the manifold and sometimes confusing attempts at synthesising and integrating methods and frameworks in the study of complex systems of interaction between people and nature, Cundill *et al.* (2005) recognise the instability of the conceptual and disciplinary boundaries that separate approaches in the first place. Frameworks and theories aimed at 'bridging' divergent disciplines may be flawed in treating boundaries as given and stable. Studying complex systems, they argue, requires deconstruction of the boundaries which divergent approaches have set to such concepts as scale and epistemology, before meaningful integration is possible. Following on their insights, I argue that the conceptual interstices that we, as scholars of human-environment interactions, perceive to be in need of 'bridging', are products of arbitrary divisions among intellectual labour, i.e. the artefacts of academic discourse. Furthermore, following Descola and Pállson (1996), I argue that

our attempts to overcome the disciplinary divisions of the modernist intellectual division of labour, have not critically taken to task the ontological dichotomies that form the foundation of this division.

An alternative ontology

Fortunately, the task of deconstructing the dualisms inherent in 'Western', 'modern' or 'Cartesian' thinking is not a novel one. Over the last half century a number of important thinkers from disciplines as wide-ranging as psychology, anthropology, sociology and philosophy have made significant contributions in deconstructing the dominant pre-scientific assumptions of the world by the development of alternative ontologies. These alternatives seek ways beyond the incapacitating stalemate in the debate between scholars of the modernist, objectivist and positivist traditions on the one hand, and on the other post-modernists, constructivists, and critical theorists of interpretative traditions. In the next section I will bring the implications of explorations of some thinkers to bear on scholarship of humans and their environment.

I take my cue for developing such an alternative foundation for an integrative framework of the human-environment interface from the life-long academic journeys of three notable scholars of vastly different backgrounds. All three were thinkers that devoted their intellectual energy over several decades at the dissolution of long-standing dichotomies in their respective fields of interests. The first two, James J. Gibson, and Anthony Giddens, despite working in diverging academic traditions (Gibson in psychology and Giddens in sociology), were both concerned with one of the most fundamental and most enduring dualisms in social science, namely the division of the world into two separate realities, or two aspects of reality: on the one hand a purely physical and meaningless entity (associated with the tradition of objectivism) and on the other a completely psychological but meaningful entity (associated with the tradition of subjectivism). The last of the three, Tim Ingold, an anthropologist, drew upon the works and traditions of both these scholars, as well as other influential anthropologists and philosophers, and proceeded to treat and move significantly towards an ultimate dissolution of another fundamental dichotomy, both with social and natural sciences, that between humanity and nature. Here I will briefly outline the ways in which the works of each can provide an alternative foundation and approach to studies of the human-environment interface. In discussing their contributions I also refer to a number of other scholars whose quest was (or is) to move beyond the subject/ object, matter/ meaning, nature/ society dichotomies that have dominated 'Western' or 'Cartesian' thought for so long.

Gibson and the ecological approach to perception

James Gibson believed that perception lies at the heart of all psychology. He devoted most of his academic career to interrogate and provide an alternative to the received knowledge that perception is the mental representation of the world based upon sensory inputs. He emphasised the active (as opposed to receptive) nature of perception (Reed 1988). For Gibson, perception was the active acquisition of information that was inherently available in the environment (Gibson 1950). Since perception is a mode of situated activity by the organism, it cannot be understood solely through the ontology of the physicist's world. Rather, perception needs to be understood from the ecological perspective of the perceiver. The ecological environment of an organism is replete with information that arises from the perceiver's position within and movement through its environment. The information can be seen to exist as *affordances,* the opportunities for action which emerge from the unique meeting point between the characteristics of the organism and the characteristics of its environment. An

affordance arises from the specific functional opportunities that an environment presents the perceiver. The relationship between the characteristics of the environment and the functional or behavioural capacities of the organism determines what the organism perceives as affordances. An affordance is different for different observers in different environments, since they are products of both the environment and of behaviour.

Perceptual learning by the organism therefore represents an increasingly skilled attunement to the ecologically relevant properties (or *affordances*) of its environment. Gibson showed that affordances, being equally a fact of the environment of an organism, and of its own behaviour, cut across the dichotomy of subjective and objective (Gibson 1966).

He regarded the analytic separation of the systems of motor outputs and sensory inputs, which a sensationalist view of perception required, as fundamentally misconstrued. To him perception was not the pattern of excited receptors but the external pattern of information temporarily occupied by excited receptors. The information ready to be perceived in the environment consists of patterns of persistence and change in the perceptual field, for this reason he focused on perception by a moving perceiver. He could not accept that the mind was in some way operating upon the deliverance of the sensations, and thereby organising the inputs according to mental frameworks based upon past experiences. Perception could not be part mental and part physical, with separate objective and subjective contributions to it. Rather, he saw motor outputs and sensory inputs as part of a singular system whereby the organism could maintain an active orientation to its environment.

Thus, in all perception, the organism is actively involved in detecting information ambient in its environment, while simultaneously detecting information regarding itself within the environment. Perception is the active, aware self, encountering itself in its environment. One perceives oneself as in-the-world (Reed 1988). This conceptualisation of the organism-in-its-environment, was the basis of his challenge to the fundamental dualism operant in the academic world of the two aspects of reality (some went as far as seeing it as two separate realities), the physical and meaningless (object) on the one hand and the psychological and meaningful (subject) on the other. In this regard, his focus on the situated or embedded body-in-the-world, shows many similarities to the phenomenology of the philosopher Maurice Merleau-Ponty (1962) and the theory of practice of the anthropologist Pierre Bourdieu (1977). Like them, Gibson attacked the dualism of mind and body and explained the mental state of the organism as the emerging property of the behavioural relations between the organism and its environment. The basis of mental life is thus the awareness of the affordances of an environment (Gibson 1979).

If meaning is an outcome of the active perception of an organism of its environment and of itself in relation to its environment, as Gibson argues, and thus not something that is added unto sensations, then there is reason to believe that the way in which knowledge systems and belief systems are used in social-ecological systems theory needs to be reinterpreted. Meaning and knowledge should be reconceptualised as inherently part of an organism's actions, situated in an environment. Meaning is not a subjective phenomenon. The agent learns to differentiate meaning in its environment, as opposed to enriching sensations from the environment by adding

purely cognitive meaning unto it. His ecological approach to psychology is viewed as a foundation for a new understanding of our place in the world (Reed 1988).

Furthermore, the environment of the perceiver interpenetrates with the environment of all other perceivers, since the active apprehension and movement of a perceiver enable it to share through movement in space and time in the environment of other perceivers. Moving through an environment, the observer perceives the persistence of connectivities and discontinuities in the layout of the environment (Reed 1988).

Gibson's work on perception enables us to identify a single, monist point of departure for an alternative ontology, that of the organism situated or embedded in its environment, and actively perceiving it by moving through it. His notion of affordances provides the basic building blocks for interaction among organisms or agents within an environment, with no need to distinguish between social or ecological agents. But before proceeding too far in the development of an alternative ontology, let me briefly explore insights that can be gained from the work of Anthony Giddens.

Giddens and the structuration of social life

Anthony Giddens' point of entry into the object/subject dichotomy can be seen as a response to two diverging sociological approaches that have on the one hand emphasised the importance of social structure, and on the other the agency of the individual (cf. Giddens 1981). Giddens shifts the focus of analysis away from, i.e. he decentres, both the actor and his agency, and the system with its structural properties, towards a unitary concept that can account for both. By focusing on action, or more precisely regular patterns of interaction, Giddens shows that structural properties of social systems are at once both the medium and the outcome of patterns of actions (Giddens 1984). Individual actors, in their repeated patterns of actions, reproduce the patterns of action, i.e. the conditions or context of action, which had made the action possible in the first place. One agent's actions are embedded within, and constitutive elements of, structured properties of institutions stretching beyond the actor in time and space (Long 1992). Action is said to be embedded within institutional structures. Structuration theory thus describes the continuous production and reproduction, of both society and the active agents within society, through the actions of social actors in every new social encounter. Contextually situated action, including the conditions and consequences of action, thus stand at the centre of structuration theory. Some analysts have referred to historically and spatio-temporally situated action, together with the conditions and consequences of such action, as social praxis (Cohen 1989).

Bourdieu's (1977) 'habitus' (pp. 76) can provide a deeper understanding of the mechanisms through which the structures that are simultaneously the medium and outcome of action, which Giddens talks about, come into being and operate. The habitus consists of 'structured (or organised) structures', which function as 'structuring (or organising) structures' on future actions of the individual, as well as on patterns of the environment (Bourdieu 1977, pp. 72). In this sense they are the principles that generate and structure practice, and thereby enable agents to cope with unforeseen and ever-changing situations. The history of an agent's practical engagement with the world becomes incorporated into his body and thought schemas and enables the agent to act appropriately in its environment. This incorporation of experience into the body can be described as 'cultivated dispositions' (Bourdieu 1977, pp. 72) or incorporated history and interacts continuously with the body's position in

the world. It is the past making itself present by becoming incorporated into patterns of practices. Through habitus the body is enabled to appropriate the world and in the process, become appropriated by the world. The habitus comes to the fore primarily in the practical knowledge of an individual that enable's her or him to adjust her or his practices and expressions to the reactions and expectations of other agents. Although the objects of knowledge may be constructed or represented, this construction is through practical activity oriented towards practical functions. The temporal structure, direction and rhythm of actions are the primary constituents of meaning, and discursive consciousness only enters subsequently. The habitus is a socially informed body possessing in its incorporated state the instruments of an ordering of the world, which simultaneously organises all practices of the body in the world. This knowledge is practical in the sense that it is continuously practised, kept up and cultivated. For this part Bourdieu's conceptualisation of the habitus is consistent with Berkes *et al.*'s (2000) definition of traditional knowledge systems.

The idea of social praxis implies agency. Human agency lies central in the mutual constitution of action and structure (Long 1992). The agency of any actor lies firstly in an actor's capability, i.e. the transformative capacity of an actor to intervene in a course of events or state of affairs (Giddens 1984). Secondly, the origin of agency can be found in an agent's knowledgeability. Giddens' (1984) notion of practical consciousness is similar to what Bourdieu (1990, pp.96) termed the 'logic of practice'. The logic of practice is a source of unconscious cognition, acquired and enabled through tacit perception and assessment and organising principles of action which have accumulated over time in the bodily dispositions of an agent (Berkes *et al.* 2003, Gadgil *et al.* 2003).

To achieve effective agency it is necessary for the social actors to have influence and control over the agency held by other social actors. This means of control is most fundamentally exerted in the struggles of attributing specific social meanings to particular events, actions and ideas (Long 1992). There is no 'balance of power', and imbalances are a result of inequalities of capability and knowledgeability. This applies to all agents, however subordinate or superordinate since they are always situated in imbalanced degrees of autonomy and dependence (Giddens 1984). Furthermore, the knowledgeability and capability of all agents are bound by the unintended consequences of social actions, which in turn become conditions for further action. Through exercising agency, an agent engages in a constant struggle with other agents over the control of allocative (command over objects, goods or material phenomena) and authoritative (command over persons or actors) resources as well as rules of action. Social praxis thus becomes embodied in structures of domination (Giddens 1987).

However, the same routinely and repeatedly generated patterns of action and interaction that result in relationships of power (structures of domination) also lead to legitimacy and give significance to social institutions. 'Structures of legitimation' (Giddens 1984, pp. 29) refer to the ways in which reproduced patterns of action structure what is deemed by actors as legitimate, acceptable, obligatory, expected or prohibited behaviour. Structures of legitimisation refer to the normative aspects of social institutions. 'Structures of signification' (Giddens 1984, pp. 29) refer to the ways in which reproduced patterns of action influence the interpretative schemes whereby meaning is associated with certain actions. Bourdieu (1990) sees the embodied history, the habitus of an agent, as those characteristics of an agent that simultaneously enable it to act appropriately and to comprehend the practices of others. This apprehension of practice through practical consciousness is the basis

of meaning. It explains why the meaning of practice lies for the most part on the level of practical knowledge. Social praxis therefore inherently has political, normative and semantic dimensions (Giddens 1987). Through the day-to-day actions and interactions of agents imbued with agency, several aspects of the world come into being simultaneously, continually and contingently: time, the structures of power relations, norms of action and meanings embedded in action as well as the agents themselves comes into being continually and contingently. Repeated action brings about structure in an environment, which other organisms perceive as affordances. Affordances can be extended to include not only material aspects of the world, but also normative and political ones.

This tri-composite (domination, legitimisation, and signification) structural characteristic of social systems bears semblance to Bourdieu's (1981) work on the interplay between position and disposition, between objective history and embodied history. Every historical action brings together two states of history, objectified history which has accumulated over time in things and embodied history which has accumulated in the habitus of agents. Social structure itself is therefore 'out of time and space', cannot be directly observed and can only ever be inferred from patterns of action. Giddens calls the connection between the day-to-day actions of individual actors, and the extended patterns of action in a social system, time-space distantiation (Giddens 1984). The bodies of social actors are the means, or vehicles by which one set of social encounters are connected with others that are removed in time and space. Through time-space distantiation, the continuous flow of activity or *dureé* (in contrast to isolated acts) of day-to-day life, the *dureé* of an individual actor's life-span and the *dureé* of the life-span of social institutions intersect continuously. Giddens uses this intersection among the *dureés* of social life as a basis to forward an alternative conceptualisation of temporality. Time is experienced not as universal astronomical time but as the multiple and intersection *dureés* of social activity.

At this point I turn to contributions by Tim Ingold in the quest for a monist ontology of people in their environment.

Ingold and the ontology of dwelling

Since the outset of his career, Ingold has been concerned with deconstructing the rift between the two worlds of humanity and nature, which runs through the entire edifice of Cartesian thought and Western science. This dualism had for decades split his own discipline, anthropology, into irreconcilable divisions between those who studied the human as organism (biological object), and those who studied it as person (social subject) (Ingold 2001). In his struggle to show that the organism and person represent not two components of the individual, but a single inseparable unit, he has drawn extensively on, and developed further the thoughts of Gibson and other ecological psychologists, those of developmental biologists, of sociologist/ anthropologists such as Bourdieu (1977, 1981, 1990) and of philosophers in the existential and phenomenological tradition, such as Heidegger (1996) and Merleau-Ponty (1962).

His ontological point of departure, similar to that of Gibson, Merleau-Ponty and Bourdieu, is the situated organism-in-its-environment and the emergent interface that comes into being through its interactions. Following Heidegger (1996) who regards dwelling as the formal existential expression of being, Ingold (1996a) calls this view of the being, immersed in an active, practical and perceptual engagement with the constituents of the dwelt-in-world, an 'ontology of dwelling' (pp. 42). From this perspective the immersion of the organism in an

environment (Ingold 1996b) or the practical relation of a body to the world is key to understanding the world and an inescapable condition of existence (Bourdieu 1977). Ingold (1998) argues that the implications of this point of departure, which views the organism not as a discrete, bounded entity, but as the ongoing product of the continuous interactions of the body in a field of relationships with objects and processes in its environment, calls for a radical, alternative biology to the orthodox organism-centred one. The organism and its environment are not mutually exclusive categories. Rather, they constitute an indivisible and continuously unfolding developmental system where neither organism nor environment can exist without the other.

Drawing on Gibson's work, Ingold shows that this field of relationships consists not so much of the mind-in-the-body processing the sensory inputs provided by sensation, as it does the perceptual system of the organism actively searching for and picking up information that exists in the environment. In this way the mind is not limited to the brain and its 'constructions' or representations' of sensory inputs. Rather, the mind comes into being and extends from the brain and active perceptual system, through the organism's movement, into its environment. The organism becomes skilled in perception by an 'education of attention' whereby it learns to grow progressively more sensitive to the information available in its environment. This enskillment can be seen as the embodiment (i.e. becoming part of the body) of capacities of awareness and response, rooted in the engagement of an organism with its environment. Thus the mind can be seen as emerging from the whole history of pathways of perception travelled by the organism and its progressive perceptual enskillment (Ingold 2001).

Diverging from mainstream psychological theory on perception, Gibson and Ingold see the information that is available in the organism's environment, not as signs, signified by a signifier, but as ambient information (in the form of affordances) existing only in relation to an active perceiver (Ingold 1996b). What is perceived as information depends both on the characteristics of the environment and the functional aspects it represents to an organism. To perceive an object or event is to see what it affords. Different organisms may thus perceive diverging affordances in the same environment, and a single organism, as it becomes perceptually attuned and enskilled, may progressively become aware of a greater range of available affordances.

By showing that the mind is immanent in the network of sensory pathways of a perceiver's immersion in her or his environment, Ingold shows that there is no need to view the world partly as material reality and partly as an observer's cognitive representation of that reality (Ingold 2001). Since perception and cognition are inherently tied to the movement of the organism through its environment, to the affordances its environment presents and to the organism's history of perceptual enskillment, the 'material reality' and 'cognitive representation thereof' is one and the same for every organism-in-its-environment. Drawing on ideas of Bourdieu (1977), he argues that apprehending the world is not so much a construction of the world but an engagement with it. 'Meaning' thus lies not in the mind of the perceiver but in the relational contexts of the perceiver's involvement in the world, in the relational properties of the dwelt-in-world (Ingold 1993a). In this way for both human and non-human organism-persons the world exists as a meaningful place, constituted in relation to the purposes and action of the being in question (Ingold 1996a). Only the being thoroughly detached and distanced from its life-world world draws upon its own representation of that life-world as its primary source of meaning (Ingold 1998).

Ingold (1996b) sees both Gibson and Bourdieu as seeking to re-embed perception and cognition within the practical contexts of people's ongoing engagement with their environment in the course of day-to-day life, thereby attempting to escape the Cartesian dualisms of mind and nature, intellection and sensation, subject and object. Ingold's fundamental ontology provides the foundation to deconstruct not only the above dichotomies, but also those between humanity and animality, between person and thing, between reason and instinct and between morality and physicality (Ingold 1996a). He argues that the different meanings that different persons and cultures attribute to the world, lies not so much on their varying cultural constructions of the world, as it does in their diverging historical pathways of perception, their varying capabilities of action and perception and thus their different ways of attending to the world. In short, they view the world differently, not as a result of diverging cultural constructions of the world, but as a result of their diverging ways of engaging with their environment (Ingold 1996a).

Ingold's focus on the organism-in-its-environment, also has parallels with Merleau-Ponty's (1962) contention that having a body, intrinsically implies being involved in an environment. For Merleau-Ponty, the total bodily immersion in the world is the most fundamental ontology, since the body is always perceived simultaneous to the perception of the environment. In contrast to the perception of the environment though, the body is always perceived from the same perspective. Showing similarities to Bourdieu's habitus, Merleau-Ponty (1962) views the cultivation of habits as the incorporation of actions into our bodies. This provides the foundation for a 'paradigm of embodiment' (Csordas 1990, pp. 5) where the development of the organism-environment field, can be regarded as a coming into being, an embodiment, resulting from continuous engagement of the situated organism-in-its-environment. Descola and Pállson (1996) view the concept of the body as central to any transcendence or bypassing of the nature-culture dichotomy. The ongoing engagement between the body and its environment continuously co-produce both (Merleau-Ponty 1962),and characterise the history of engagement in the body-environment field (Ingold 2000). However, here the interactions, or processes of engagement, result in patterns, forms or structures that cut across and dissolve the social-ecological dichotomy. Patterns of regular and repeated action and interaction generate form, in bodies, in objects, in processes, even in the landscape.

An ontology of embodiment

In this section I will develop a synthesised argument from the insights provided by Gibson, Ingold and Giddens. Gibson's and Ingold's notion of the organism-in-its-environment places the focus on an individual's position in a field of relationships with the constituents of its environment, rather than on an isolated, bounded individual. On its part, Giddens' 'social structure' that emerges from repeated patterns of action corresponds to Gibson's description of affordances. In the notion of affordances, however, the emergent structure transcends the boundaries of social science within which Giddens originally positions his theory. By viewing the structures that simultaneously constrain and enable action as affordances, the analyst is able to investigate the mutual influences that the actions of human and non-human organisms may have upon subsequent actions.

Thus, from an organism's situated and active engagement with its environment, it is simultaneously confronted with the affordances posed to it by the patterns of actions of other organisms in its environment, while its own pattern of actions on their part emerges as affordances to itself as well as other organisms in its environment. These affordances are fundamentally determined by the positionality of the organism in a field of relationships in

its environment. They afford which actions are possible (characteristic of domination), what is appropriate, acceptable, desirable or prescribed (characteristic of legitimation). Meaning arises from the active perception of an organism of these affordances (characteristic of signification).

The foregoing explanation of structuration, or mutual affordances, arising from the interactions among agents (whether human or non-human) provides a coherent framework for the interaction among individual agents. Up until now it has been presented as a relatively simple framework, with more descriptive than explanatory power, and probably more emphasis on static than on dynamic interactions. Such a framework may be based upon a monist ontology, but its utility to the study of complex systems of people and their environment should be regarded with scepticism. How can a simple model of continuous embodiment of organism and environment, through mutual affordances arising from the continuous flow of action of multiple agents within a field of relations, account for the complexity, unpredictability and surprise that is so much part of human-environment interactions? Put otherwise, how, if at all possible, do we then shift the focus from the mutual affordances of simple and singular interactions among individual organisms, to complex patterns of actions and feedbacks between them? In short, how is it possible to 'scale up' from the 'micro-view' of the praxis-embodiment perspective, in order to apply it to higher scales of abstraction? The next section is an attempt to move the framework beyond the interactions between and among individual agents, towards the emergence of higher order entities such as landscapes. Such a task requires reconstruction of the traditional notions of time, space and scale.

Time, space and scale

A focus on the situated actions of an organism-in-its-environment, enables us to look at time as it is experienced by the organism. The organism, in its active perception of its environment, experiences time as a product emerging from continuous flow of action. Experienced time is thus neither chronology - a regular system of dated time intervals in which events are said to have taken place- nor history – a series of events which may be dated in time according to their occurrence in one or another chronological order (Ingold 1993a). Each event, or action, encompasses the pattern of retentions from the past and protensions of the future. Whereas the traditional conception of time views history as a series of dates and events with a known causality linking them (Foucault 1972), an alternative view (Ingold 1993a) sees time as heterogeneous. The boundaries and elements that constitute a time series are not self-evident and have to be inferred from patterns of actions or events.

To explain this notion of perceived temporality, Ingold (1993a) develops the idea of a taskscape. Each practical action by an agent embedded in relationships with her or his environment, as part of the business of day-to-day life can be seen as a task. 'Task' is thus the application of 'action' in reference to the everyday doings of a situated agent. Every task occurs within a context of an ensemble of associated tasks, which Ingold (1993b, pp152) refers to as the 'taskscape'. The passage of time is effected when an organism is at her or his task. Bourdieu (1977) views the temporally structured character of practice as fundamental to the meaning constituted by the practice. Thereby the meaning of many practices is indissolubly connected to their tempo.

In the taskscape however, an organism may be involved in a complex of overlapping and concurrent tasks, each unfolding at a different tempo or dureé and over a different extent in geographical space. As a result, multiple strands of experienced time may be said to co-exist at any moment in 'astronomical time'. Ingold argues that

each task or repeated pattern of action can be thought of as having its own rhythm, and that the plurality of experienced time can be seen as a complex 'resonance' emerging from overlapping rhythms of multiple tempi of the taskscape. Therefore experienced time, or rather multiple strands of (resonating) experienced time, comes into being, or is embodied, through the situated action-perception of an organism in its environment. This view is congruent with Heidegger's (1996) view that being-in-the-world is a measurement of time.

The intersection of the dureés of multiple tasks within and among taskscapes is analogous to the view in ecology of interaction between 'fast' and 'slow' variables. Systems ecologists view the interaction between slow and fast variables as fundamental to the key features of an ecosystem (Holling *et al.* 2002b) and the episodic nature that characterise ecological change (Holling and Gunderson 2002). In contrast to this ecological view, the notion of intersecting taskscapes does not distinguish between ecological and social variables.

A similar argument can be forwarded for the perception of space. An agent at its task, is simultaneously involved in multiple tasks that vary in spatial extent. Multiple spatial scales come into being through the spatial rhythm of the taskscape, and the resonance among the taskscapes of different organisms therefore also have a spatial dimension. Therefore space and time come into being, or are embodied, in the action itself, rather than being mere backdrops for action.

These notes on the perception of time and space by organisms situated in their environments, enable me to problematise the ontological priority that is afforded to *scale* in studies of social-ecological systems, where scale is often treated as an independent variable. By serially varying the extent and resolution of observation, the two factors that comprise the scale, the conventional argument describe objects and processes to successively become observable or pass out of observation. By this same argument scale is of fundamental concern in the design of any research since it disproportionately influences the patterns that will be observed. The alternative argument, centred on the situated agent and the multiple patterns of spatial and temporal resonance emerging from the patterns of interaction with the constituents of its environment, views scale as emerging from action, and therefore that pattern of action is ontological prior to scale (cf. Zimmerer and Bassett 2003b). Multiple scales of time and space exist and intersect in the instant and present (the here and now), but only because multiple temporal and spatial rhythms similarly intersect in the present.

Furthermore, from simple rhythms of the taskscape of a single organism, diverging spatial and temporal scales come into being. Some scales that come into being from patterns of action relate to the dureé of actions, others to the frequency of repetition of action and others still to scales emerging from the affordances that patterns of actions represent to other organisms. I will argue that this aspect of mutual affordances, i.e. the dissonance or 'rattling' of scales, between those scales that emerge from patterns of actions, and those emerging from affordances, accounts for much of the scale-related dilemmas in understanding complexity of human-environment interactions. The patterns of action of one organism in its environment may therefore represent affordances for other organisms, at a range of scales, and the configuration of the rhythms and resonance of intersecting patterns of action among organisms play a fundamental role in the emergence of higher order spatial patterns such as landscape.

A note on terminology

At this point a brief clarificatory note on terminology is necessary. I will use the terms 'actor' and 'agent' interchangeably when referring to the active perceiver in its environment. I will extend the application of 'actor/ agent' to non-human organisms and even inanimate processes. My motivation is that the complexity and stochasticity of ecological processes and the unpredictability of animal and plant behaviour approximates the agency associated with human action. Latour (1999) uses the term actant to stress the inclusion of non-human and inanimate organisms and processes as actors. I use the term 'action' as a flow of activity, which differs from 'acts', which are discrete. I use the term 'praxis' to denote the situated character of action, as well as the conditions and consequences of action. I will use the term 'affordance' in preference to 'structure'. I also give preference to the terms 'embodiment', 'coming into being' and 'incorporation' over the term 'structuration', although I acknowledge the way in which these former terms exercise a structuring role over action. I will refer to the combination of Ingold's ontology of dwelling, Giddens' structuration theory and the paradigm of embodiment, either as the embodiment perspective, the ontology of embodiment, the embodiment of practice or the 'contextualist paradigm' (cf. Hornborg 1996, pp. 45).

Relevance to social-ecological systems, landscape and political ecology

A new conceptualisation of time, space and scale, inevitably raises further questions regarding the implications of the embodiment perspective for social-ecological systems theory, landscape studies and political ecology. Although it is not the aim of this thesis to fully develop the implications of an embodiment perspective for these three bodies of study, some explanation is necessary.

Most fundamentally, landscape and social-ecological systems come into being or become embodied continuously and through continuous flow of patterns of action. The patterns of action need not be distinguished as being social or ecological. It is, however, important to note that 'landscapes' or 'social ecological systems', from an embodiment perspective, exists only with regard to the agents that are embedded in them. They can not be comprehended by detached, objective observers removed from the world. Rather, they are the world as perceived by agents dwelling and making a living in it. The moments in which the landscape or social-ecological system comes into being, are moments of action-affordance. These moments unfold processually, are embedded within a total field of relations and cut across the interface of organism and environment. The embodiment of landscape or social-ecological system is not an 'inscription' of actions onto a medium, but rather an 'incorporation' of actions into patterns. Through multiple interlocking and overlapping patterns of actions and interactions among a diverse range of actors, places, time, and meaning come into being, and together constitute the 'temporality of landscape' (Ingold 1993b, pp.152).

For this reason, a conceptualisation of a driver as any natural or human-induced factor which indirectly or directly causes a change in the flow of an ecosystem service (sensu Millennium Ecosystem Assessment 2005), and which functions as feedbacks into the alternative subsystem, is unsatisfactory in understanding social-ecological systems. Drivers are often seen as originating in either one of a set of mutually exclusive categories: endogenous or exogenous to a system, at a particular spatio-temporal scale and driving processes in other scales, or within either the social or the ecological subsystem and driving processes in the other subsystem (Walker 1995, Folke *et*

al. 2002). Drivers and feedbacks are simply emergent properties that come into being through the intersecting of multiple rhythms of the taskscapes of human individuals, other organisms and even ecological processes. For this reason a driver always emerges from a multiplicity of scales, even though its 'structuring' effect, i.e. the influence it has on affordances for action, may disproportionately affect patterns of actions of particular tempi or spatial extents. The idea that changes in patterns at some scales 'drive' the changes in patterns of actions at higher scales (the 'revolt' of Gunderson and Holling's 2003 adaptive renewal-panarchy model) or lower scales (the 'remembering' stage of the adaptive renewal-panarchy model) may be coherent for a being that is detached from the world and experiences it as an object, from no particular point of view, but it ceases to be useful under the ontological assumption that being-in-the-world is the only direct access and insights afforded to an observer. For the being-out-of-the-world, scale is a frame of reference, a departure point, whereas for the being-in-the-world, scale is a consequence of patterns of action.

The need to distinguish between exogenous and endogenous drivers (cf. Cundill 2005) becomes obsolete since all 'drivers' represent affordances that are specific to each actor in the landscape. In contrast, in the current study I view the task as a search for a particular configuration of the resonance/ dissonance among concurrent and overlapping patterns of actions (with multiple spatio-temporal rhythms), which result in transformations of the structures emerging from their intersection. In a way these particular configurations of resonance can be regarded as drivers, with the important distinction that they do not emerge from a specific spatial or temporal scale, are not constrained to either a social or ecological subsystem, and are neither endogenous nor exogenous to the system under scrutiny.

Furthermore, the resonance of multiple patterns of action bringing into being multiple concurrent and overlapping scales, are analogous to feedbacks across multiple scales described by social-ecological systems theorists (Holling *et al.* 2002b). However, since scale is an emergent factor of these patterns of actions, it is more useful to think of these feedbacks as affordances resulting from actions from a variety of places and pasts. In this way the time and space emerging from patterns of action, can be thought of as the 'making present' or the 'presencing' of a variety of 'pasts' and of a variety of 'distants'. Furthermore, the dissolution of the meaning/ matter dichotomy in the embodiment perspective implies that no feedback can be purely cognitive or purely belief on the one hand, or purely material on the other. All beliefs and mental operations are intricately tied to an individual's history of, or pathways of action-perception. Similarly, the perception of an object, event, pattern or trend in the environment that could serve as a feedback to human action, is always conditioned by the skills of perception arising from past learning.

The term social-ecological system itself is problematic, since it perpetuates the dichotomy (although unintentionally) which is no longer necessary from an embodiment perspective. As alternatives other scholars have proposed using 'socionatures' (Swyngedouw 2003) or 'trans-ecological systems' (Descola and Pállson 1996:15). I will use the term 'systems of embodiment', 'embedded systems' or 'trans-ecological systems of embodiment' in this thesis. The production of landscape and trans-ecological systems, like that of Pred's (1984) 'place', is inseparable from the reproduction and transformation of society. Landscape, or the trans-ecological

system, is formed and shaped through the everyday and historically contingent patterns of actions of those inhabiting these places.

Since the contextualist paradigm seek to re-embed cognition and perception within the practical contexts of people's ongoing and day-to-day engagement with their environment, any research endeavour built on this perspective needs to take as its most basic empirical building blocks, the day-to-day actions of actors moving, dwelling and making a livelihood within the landscape, and the affordances that such actions represent to other actors (human and non-human). Despite the fact that trans-ecological systems 'interact at a variety of spatial and temporal scales, it is at the local level, and on a daily basis that this interaction takes place' (Cundill 2005:203). These day-to-day actions are the 'stuff' of which history is made.

The embodiment-approach requires detailed qualitative data on the ways in which heterogeneous social actors perceive, know and make sense of their environment. A detailed and ectended ethnographic component of fieldwork is an absolute necessity in translating the theoretical argument outlined in this chapter, into a useful methodological approach. However, such an ethnographic compenent needs to be supplement by a detailed and clear broader historical account, constructed from archival documents, historical records and the historiographies and analyses of other scholars. The challenge is to construct such a history in a self-reflexive and critical manner, so as to enable subsequent analyses of the embodied experience of this history by the people making a living in the landscape. In other words it is necessary to interpret the constructed history through the day-to-day activities and discursive modes of the actors (both human and non-human) embedded in the landscape. The sensitivity to historical contingency is thus intensified through the praxis-embodiment approach, since it is necessary to interpret history from the point of view of day-to-day actions of actors in the landscape. In chapter three the implications of the embodiment approach for research methodology and its application in the current study is further developed.

Research aim

Having outlined an alternative ontological foundation for the study of human-environment interactions, it is now possible to formulate a general aim that will guide the current enquiry and from which a research strategy can be developed in order to apply this conceptual foundation to a case study of the recent history of landscape and livelihoods in a rural area in South Africa's Eastern Cape Province.

The purpose of the current study is to develop an understanding of the transformations in livelihoods and landscape at Nqabara from 1960 to 2006, using a fine-grained, contextualist approach. This is achieved by focusing on the spatial and temporal resonance and dissonance among patterns of actions of multiple actors, from which both landscape and livelihood are continuously and simultaneously brought into being. In order to achieve this aim, the study has as its main objectives, to:

1. Investigate and describe changes in landscape and livelihoods in Nqabara in the period from 1960 to 2006;
2. Interpret these historical changes in the context of actors, their actions and the affordances these represent to other actors;

3. Analyse the utility of a conceptual framework based upon an ontology of embodiment, in explaining historical interactions between livelihoods and the lived-in landscape; and
4. Extend this framework using data and analysis from this study, in order to move from historical explanation towards prediction.

Outline of thesis

In Chapter one I have outlined the relevance and theoretical context of the current topic of enquiry. In Chapter two I present a brief contextualising background on the study area, with reference to its biophysical, historical and administrative contexts. In Chapter three I will introduce some general methodological concerns arising from the topic of enquiry, and address how I have attempted to respond to these concerns. In Chapters four and five I present the history of the landscape which forms the main focus of this study. This presentation is structured around what I perceive to be four key arenas where landscape comes into being through mutual affordances between the actors inhabiting it. Chapter four is concerned with the first of these arenas, that of homestead agricultural production. Given the complexity of this arena and it being the first to be introduced, I limit the emphasis to historical detail and only make limited ventures into aspects of agency and meaning in this coming into being of the landscape. Chapter five continues this exposition of the history of the landscape through a presentation of the three additional arenas where landscape comes into being, namely i) the interactions between livestock grazing, fire and vegetation, ii) the interactions between natural resource harvesting and vegetation and iii) the interactions between processes that create pioneer-favouring patches and vegetation successional trajectories. Here I progressively bring into focus the agency of individual actors as well as the meaning that comes into being through situated praxis. In Chapter six I move to dissolve the distinctions between these arenas and present a unified history of the embodiment of the landscape. Furthermore I bring this history under analytical inquiry in order to move beyond description towards explanation. This I do by focusing on the periods of most marked change in landscape and livelihood, and investigating the changes in the configurations of resonance among patterns of actions and their affordances, of various key agents in the landscape during these periods of profound change. I conclude with some critical reflections on the prospects for and relevance of an alternative ontology for social-ecological systems theory, transdisciplinary landscape studies and political ecology.

Chapter 2: Introduction to the study area

Introduction

The area that forms the geographical focus of the current study lies between the Nqabara (eastern boundary) and Nqabarana (south western boundary) rivers in the present-day Gatyana district of the Mbhashe municipality, Eastern Cape Province, South Africa. The study area corresponds to the local government administrative unit that is referred to as the Nqabara Administrative Area (Nqabara AA), and covers approximately 65km^2 of the lower catchment between the Nqabara and Nqabarana rivers. It is situated approximately 30km from the town of Willowvale and 60km from that of Idutywa. According to a report by Statistics South Africa in 2000, the district of Willowvale is one of the two poorest districts in the country (in Timmermans 2004) (cf. figure 2.1).

After 1878 and the Cape colony's annexation of the first districts across the Kei river, the study area was referred to as location 31 under headman Mazamisa (1878 to 1942 and subsequent to 1961) or headman Soshankana (1942 to 1961) (CADa Undated). These districts were consolidated and named the United Transkeian Territories in 1903, and after being afforded 'self-government' in 1963, they became known only as the Transkei. In keeping with scholarship seeking to draw attention to the composite ways in which Transkeian self-government, and later independence, was constructed and perceived by the South African government and the rest of the international community, I will use the definite article when referring to the territory in this period, i.e. *the* Transkei (Palmer *et al.* 2002). Throughout the twentieth century the current district of Gatyana was referred to as the magistracy of Willowvale. Since 'reintegration' into South Africa in 1994, the Transkei forms part of the Eastern Cape Province. Currently Nqabara AA forms the eastern half of ward 17 of the Mbashe local municipality, and is regarded as a 'place' in the 2001 census, consisting of eleven 'sub-places' (also referred to as sub-villages or *iilali*). In 2001 3369 people (53,6% female) resided in the study area in 836 homesteads (Statistics South Africa 2001). The age distribution of the population of Nqabara in 2001 is given in figure 2.2.

Nqabara was chosen as study area since a standing relationship between the community and scholars at the department of Environmental Science at Rhodes University, where the research was based, was already in existence at the outset of the study. Nqabara has been less well studied than some of its neighbouring localities in terms of the history of land use and livelihoods, but the studies of these areas provide ample opportunity for comparative analysis. The majority of South Africans still live in rural areas with communal land tenure. These areas are known for high levels of poverty and unemployment, where the utilisation of natural resources and other land-based livelihood strategies are important contributions to the making of a living of rural households (Carter and May 1999, 2001, Barrett *et al.* 2001, Shackleton *et al.* 2001). These considerations were important in the choice of Nqabara as study area.

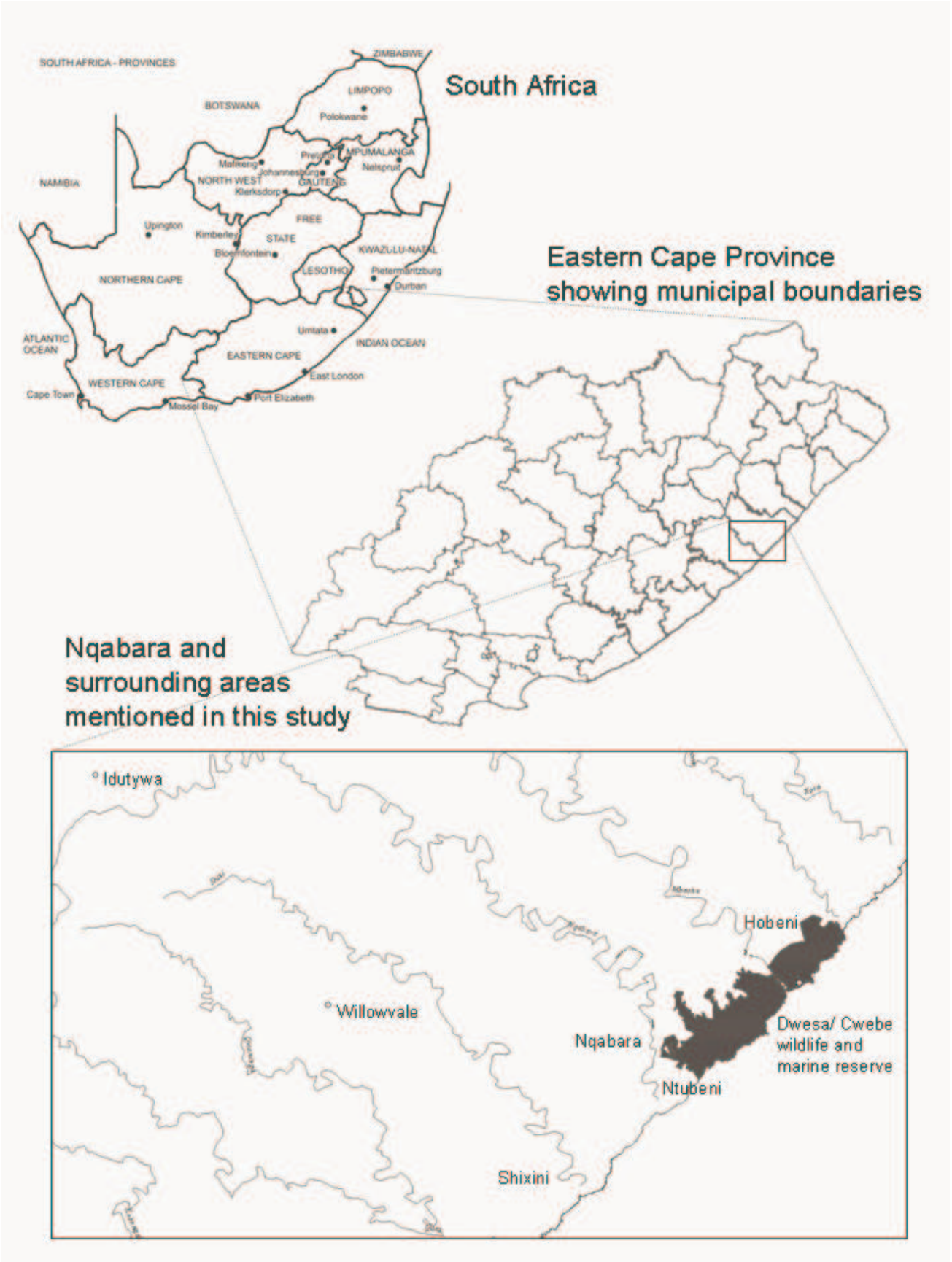

Figure 2.1: Map of the Eastern Cape showing Nqabara and adjacent areas where extensive anthropological research has been undertaken (Shixini, Hobeni, Ntubeni).

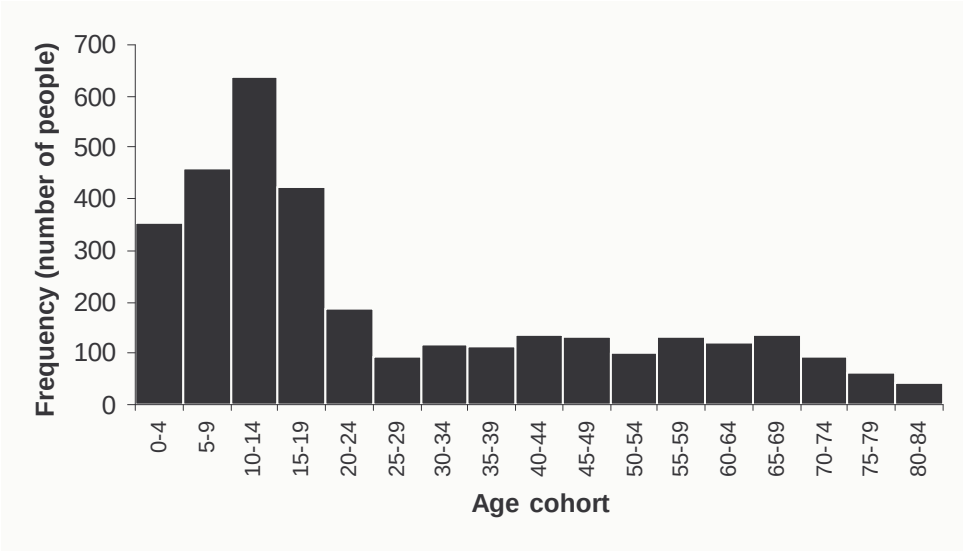

Figure 2.2: Age distribution of population of Nqabara in 2001 (Statistics South Africa 2001).

Boundaries and units of the study

The boundary of a study area is never naturally given (Ainslie 1998). In the present study, with its focus on the intersection among patterns of actions of diverse actors, it is problematic to describe the study area with reference to set and impermeable geographical boundaries. The current study's preoccupation with a dwelt-in landscape, consisting of multiple overlapping places that come into being through action, presents a central dilemma to those parts of the study (spatial analysis and statistics referring to bounded units) which are fundamentally built-upon the notion of bounded units (cf. Robbins 2003a, 2003b). In this study, I assume that people's lives are lived around and extend from centres, rather than being contained by boundaries. Resource use and the perception of the landscape extend diffusely from these centres. Furthermore, people's movement through the landscape, in contrast with the illusion of uniform straight movement that remotely sensed data enables, is in tune with topography and physiognomy.

In the spatial analysis however, I was unable to deconstruct the notion of a bounded study area. I therefore regard the western, southern and eastern boundaries of the study area as constant throughout the period covered in this study, and given by the respective courses and the confluence of the Nqabara and Nqabarana rivers. The north eastern boundary of the study area corresponds to the administrative boundary of the Nqabara Administrative Area and connects the Nqabara and Nqabarana rivers.

In all other aspects of the study, I have been lead by a broader conceptualisation of 'study area' which pays attention to the entire physical extent of the actions of actors who inhabit, whether temporarily or permanently, and associate themselves with a place identified as 'Nqabara'. The people who live in the eleven sub-places which constitute Nqabara AA form the centre of the notion of 'study area'. It is their day-to-day activities that specify the geographical scope of the enquiry. People's daily activities, even their gaze from moment to moment, cross the rivers which the spatial analysis assumes to be boundaries on the one hand, and on the other, consistently overlook patches of the landscape that are hidden from view through topography or where access is prevented through vegetation. Furthermore, their lives and perception of the landscape takes place at multiple scales in multiple and overlapping places. In varying

contexts, the places of the homestead, of the *ilali* or of Nqabara as a whole, may be more salient. When people do refer to boundaries, these are often based upon social relations and thus arise out of action. Changes in patterns of actions thus lead to continuous emerging and disappearing boundaries in the landscape.

I have thus been unable to find a way to overcome the dilemma presented by the divergent epistemologies which characterise the various conceptualisations of place, of centres and of bounded places whenever data from the spatial analysis is juxtaposed to data elicited from those who inhabit the landscape. Being unable to dissolve this epistemological tension, it is necessary to trace its emergence and spell out its consequences for interpretation as clear and detailed as possible throughout the presentation of the results.

Building on the notion of centres of dwelling and centres of livelihood, the concepts of neighbourhood and homestead forms central units of this study. The eleven 'sub-places' (some have called these villages or localities) referred to in the 2001 census, are referred to locally as *ilali* (pl. *iilali*) (cf. plate 7). This is a flexible term that, when used in the locative (*elalini*) refers to rural areas in general, but depending on the context, can also refer to the 'sub-place', or even smaller demarcations within the sub-place. The terms *isiphaluka* (pl. *iziphalika*), *umango* (pl *imimango*) or *isithebe* (pl. *izithebe*) which other scholars of rural areas with communal land tenure (cf. McAllister 1979, 2001, De Wet 1995), have encountered as ways of referring to different local groupings of homesteads below that of *ilali,* was never heard in Nqabara. Each *ilali* in Nqabara manages its own complaints and applications for the tenure of homestead and cultivated field sites, through the traditional institutions of *usibonda* (sub-headman) and *ibandla* (group of senior men from the *ilali*). The clusters of 'residential space' as defined in chapter three, can consist of a number of *ilali*, and sometimes of a section within an *ilali.* It is thus important to remember that they refer to remotely sensed spatial clusters and not to local descriptions.

The *umzi* (pl. *imizi*) or homestead is used extensively in this study as unit of analysis (cf. Plate 1). Three aspects of the homestead make it a functional choice as a unit of analysis: i) its organising role in consumption and production patterns, ii) as a locality of decision-making, and iii) the way in which it surfaces as a spatial unit in the organisation of tenure. However, in order to make explicit the ways in which using 'homestead' as unit of analysis, influence the perspective of the analysis, each of these aspects needs to be critically problematised and deconstructed.

Firstly, in terms of making a living, the units of production and consumption in rural, communal areas of the Eastern Cape, are not exclusive and static entities. They vary in different social contexts, and with regard to different commodities of production and consumption. Production in the study area and other areas of rural Transkei entails the mobilisation of labour and technology from flexible and continuously changing units which in most cases do not correspond to the unit holding tenure to the cultivated area. The labour for homestead production is commonly sourced from social units extending beyond the homestead to larger kin and neighbourhood associations (Kuckertz 1984, 1985, Heron 1990). Similarly, consumption extends beyond the unit of the homestead, especially for products associated with rituals and ceremonies, such as cattle, sheep and goat meat as well as *umqhomboti* beer (McAllister 1979, 1986, 2001). The flexible nature of production and consumption complicates the act of relating statistics from

censuses and surveys in the past or from other study areas with the present case. The homestead is salient as a unit of production and consumption only inasmuch it shows the least variation (with regard to other such units) in terms of constitution.

Secondly, the activities in which a homestead is involved and which constitute the 'building of the homestead' are underlain by a variety of heterogeneous decision-making processes and decision-makers, at levels within and beyond the homestead. The members of the homestead each influence homestead activities according to the network of social relationships in which they find themselves as individuals. Homestead actions are the outcomes of negotiation and contestation among individual homestead members with varying social roles and obligations. The composition of the homestead and the social networks in which members of the homestead (both in corporal and spiritual form) find themselves, are central aspects that influence homestead decision-making in agricultural production and its position in the building of the homestead. Furthermore, the actions of individuals within the homestead are bound-up in the continuous production and reproduction of social institutions that stretch beyond the homestead, and reflexively structure future actions of individuals within homesteads. The agency of homesteads is therefore to a large extent only the outcome of contestation among the agency of individuals within the homestead.

However (and this is the third aspect of the homestead making it functional as a unit of analysis), since the activities of a homestead are disproportionately influenced by a set of structured practices, or social institutions, which concerns the arrangements of tenure over land, and since this tenure is intimately tied to the homestead as social actor, it does not make analytic sense to completely dissolve the focus on homesteads in favour of individuals. Access and use of a residential site as well as an extensive cultivated field are inseparable from the notion of homestead (*umzi*). It is through this common route to access and use of land that the agency exercised by individuals within a homestead, scale up to be expressed in the agency exercised by the homestead in its decision-making with regards to land use.

Umzi or 'homestead', is preferred as opposed to 'household' or 'family unit', most importantly because of the tenurial and spatial component of 'homestead'. Neither household nor homestead is necessarily homogeneous in its composition with regard to kin. A homestead often, but not always, consists of individuals related through kin. In Nqabara I have come across several homesteads that have taken in non-kin individuals whose circumstances have been unfavourable, and where these individuals participate in homestead activities like any other member. Historically, a homestead was regularly composed of individuals from several households of different ages in a household cycle. As the number of people in a homestead has decreased, the distinctions have blurred which used to separate it from 'household'.

I have chosen to pay particular attention to and to treat as a primary unit of this study, the activities of the homestead, which I regard simultaneously as the people living and making a living from within the residential site, as well as the residential site itself. Anthropological work among Xhosa-speaking peoples living in rural areas of the Eastern Cape have come to persuasively argue the utility of regarding the complex of material, social and religious livelihood strategies of these people, as together constituting the 'building of the homestead' (*ukukwakh' umzi*) (cf. Mayer 1963, McAllister 1979, 1986, 2001). This

complex of activities can be regarded as consisting of a variety of nested patterns of actions, each simultaneously representing social, religious and material strategies of livelihood (Fay 2003a). I will draw on the notion of building the homestead, but extend its use through the distinction I have drawn between action and praxis. By viewing the patterns of actions which constitute the building of the homestead together with the conditions in which they were produced and the consequences of the production, I will give priority to the *praxis* of building the homestead. This emphasis on praxis enables me to include the mutual affordances among human actors 'building the homestead' and those actors constituting the landscape in which the homestead is being built (cf. Figure 4.1). A more thorough discussion of the concept of building the homestead is presented in chapter four.

Biophysical context

Nqabara is situated within a climatic transition zone between the temperate south coast and the subtropical north-coast of the South African eastern sea-board. The temperature is modest with an average winter maximum of 21,5 degrees Celsius and 24 degrees Celsius in summer. Summer months are characterised by high temperature and humidity with spells of cooler windy days. Winter months are cool and dry and generally frost-free (Palmer *et al.* 2002). The average rainfall over the period 1972 to 2005 at the nearby Dwessa-Bos (sic) weather station is 1080mm, which is well above the regional average of 815mm (Palmer *et al.* 2002, WeatherSA 2006).

The soils in Nqabara are, similar to those described by Palmer *et al.* (2002) for Dwesa and Andrew (1992) for Shixini, derived from Beaufort and Ecca series of the Karroo system with numerous doleritic intrusions which form dramatic cliffs where exposed through the erosion of river valleys. The Glenrosa, Mispah and Swartland soils over shale and sandstone have high permeability and are therefore prone to desiccation in winter (Whisken 1995, cited in Palmer *et al.* 2002). Soil fertility is generally low except on doleritic intrusions and on river floodplains.

Topographically, Nqabara consists of a number of broken hills, of altitudes up to 320m, loosely connected through land bridges that on their part divide several deep valleys and streams that cut down towards the Nqabara and Nqabarana rivers by which the area is bounded (cf. plates 2, 4, 6-9). The mosaic of hills, ridges, valleys and flood plains represent a wide spectrum of slopes. The upper slopes of hills and ridges are generally more exposed to coastal wind and therefore can be expected to have higher levels of evapotranspiration and desiccation. As a result of the latitude, south-facing slopes receive less direct sun than north-facing ones and therefore experience lower levels of evapotranspiration and desiccation. It may also be possible that steep-north-facing slopes receive less precipitation as a result of rain-shading by hills, since rain is carried predominantly by on-shore winds. Thus, through a combination of aspect, slope and altitude, a range of microclimates are created, resulting in varying habitat conditions in which plant and animal communities with varying habitat requirements establish and persist as spatially structured populations. The topographic variation causes sharply contrasting climates over short distances (Cawe and McKenzie 1989). The soil moisture balance is critically important in determining the spatial distribution of vegetation patterns (Cawe and McKenzie 1989).

Although the area is classified as part of the savanna biome, the varied topography results in the presence of vegetative elements from several biomes in a mosaic pattern in the study area. For this reason the

floristic region is known as the Tongaland-Pondoland Regional Mosaic. The vegetation is variously classified as coastal forest and thornveld (Acocks 1975) or as grassland-woodland-forest mosaic (Palmer *et al.* 2002).

In the nearby Dwesa Nature Reserve, Moll (1974) identified five major plant communities, namely dune vegetation, estuarine fringe and mangroves, grassland, scrub (*Acacia karroo, Maytenus heterophylla* and *Diospyros sp.*) and forest. McKenzie and Cowling (1979) revisited the sites categorised by Moll (1974) and modified his classification slightly. The first type they identify is the vegetation of the coastal shelf and dunes. This type is negligible in Nqabara since the study area does not have an extensive coastal strip. The second type they identify is grassland communities. Wooded grassland, although a type of grassland, was considered a vegetation unit in its own right. A number of woody species that can be considered forest pioneers are identified in wooded grassland. The last two vegetation units they identify is forest and vlei (sic) or wetland vegetation. They considered the vegetation units of tall grassland, wooded grassland and forest as manifestations along a successional spectrum, influenced mainly by fire and grazing. Although colonial foresters viewed forests as the vegetation type most widely distributed prior to colonisation by humans, recent research, based upon archaeological evidence regarding fire activity, soil development as well as plant and animal fossil remains, suggests grasslands to be the more extensive vegetation formation since pre-hominid times (Mentis 1992).

Human habitation and historical context

Shell middens dotted along most of the South African coast, including localities in close proximity to Nqabara, such as Mpame and Shixini and Dwesa, indicate intertidal resource use by humans as far back as 4500 ago (Lasiak 1992). Linguistic evidence of place names and archaeological evidence of ceramic ware attest to the residence of Khoi-Khoi (sometimes referred to as Khoi-Khoin) groups around Nqabara as far back as the first millennium A.D. The first domestic animals to arrive in Southern Africa, namely sheep and cattle, were kept by these various Khoi-Khoi groups. Husbandry of these animals was a practice passed down among a diverse range of peoples along the eastern part of Africa. Their livelihood, based predominantly upon seasonal hunting, the gathering of wild foods and husbandry of sheep and cattle, necessitated a certain extent of transhumance (Palmer *et al.* 2002).

The first peoples to more or less permanently settle the area today known as Nqabara, were Bantu groups of the Nguni linguistic complex, referred to in historical and archaeological literature as Cape Nguni. It is accepted that Cape Nguni peoples arrived in Southern Africa from the east coast of Africa in three stages between 700 and 1500 AD (Cronin 1982, Feely 1987, Derricourt 1977). By the sixteenth century Khoi peoples of the area currently known as the Wild Coast were largely displaced by or absorbed into Nguni speaking groups (Peires 1976). The Cape Nguni were semi-sedentary pastoralists who engaged only to a limited extent in crop cultivation. The accounts of the survivors of at least seven shipwrecks along the stretch of coast between Algoa Bay (currently Port Elizabeth) and Delagoa Bay (later Lourenço Marques, currently Maputo) between 1552 and 1686, most notably those of the *Nossa Senhora de Belem* (1635) and the *Stavenisse* (1686), give evidence of the inhabitants of this coast, their way of life, the names of groups and languages spoken (Wilson 1959). Some scholars estimate that the area near Dwesa and Nqabara had first been settled by groups of the Cape Nguni at around 1100AD (Switzer 1993, Palmer *et al.* 2002).

The area between the Kei and the Mbashe rivers, were inhabited by a Xhosa-speaking group known as the amaGcaleka, at the start of the nineteenth century, when the Cape Colony came into British hands for the second time, and that time more permanently. The ensuing three quarters of a century of alternation between frontier wars and uneasy peace, largely escaped the peoples east of the Kei river, with the important exceptions of the sixth frontier war in which Hintsa was killed (1834-1835), the Cattle Killing Tragedy in 1855-1856 and the ninth frontier war (1877-1878) after which the area was formally annexed and incorporated into the Cape Colony (Mostert 1992). After annexation, colonial influence in the day-to-day lives of the amaGcaleka rapidly speeded up.

A number of people who identified themselves as amaMfengu, and who had fought on the part of the colonial forces in the war of 1877-1878, were granted pieces of land on areas from where the amaGcaleka had fled during the war. Nqabara and Dwesa were two such areas. The clan names of many people from Nqabara still bear testimony to this spatial relocation more than a century ago. Although some people still jokingly refer to themselves as amaMfengu, the distinction that had persisted in material livelihood between amaMfengu and amaGcaleka in the early part of the twentieth century have been completely effaced. During the 1880s the amaGcaleka returned to their abandoned homes apparently without any outright conflict. At the same time a magistrate was being stationed at the town of Willowvale, to oversee local affairs and importantly implement a system of taxation. The district was divided into localities over each of which a headmen was appointed. An amaMfengu headman was appointed over Nqabara. A mission station from the Wesleyan Methodist Church was established in Nqabara during the succeeding decade, where one of the first schools was also established. By the start of the twentieth century, permits to occupy trading posts in Willowvale district were being issued, and by 1903 sixteen such posts were being built or occupied (CADd Undated).

The expansion of cultivation

The amaMfengu, had had a history of prior contact with the colony by working as farm workers on colonial farms. They thus brought with them knowledge of the use of ox-drawn ploughs and the cultivation of crops theretofore not cultivated by the amaGcaleka. The presence of trading stores among them facilitated the adoption of ox-drawn ploughing technologies by amaMfengu and amaGcaleka alike, as the traders not only sold ploughing implements, but also bought various agricultural produce, which they in turn sold to markets further afield, which had been growing in response to the booming inland economy after the discoveries of diamonds and gold in the South African interior (Mostert 1992).

As a result of the combination of these factors, the first three decades of the twentieth century had been a period of phenomenal and unprecedented growth in agricultural output. The locations in Willowvale district, including Nqabara, that had been settled by people who associated themselves with a Fingo or amaMfengu identity (see discussion of terminology in methods chapter), had a preferential status among missionaries and colonial authorities. This, combined with their longer experience with ox-drawn ploughing, enabled them to be at the forefront of a synthesis of western and traditional livelihoods that manifested in enormous expansions in agricultural production (Palmer *et al.* 2002). New cultivation technologies and implements as well as wage earnings to invest in agriculture had become more widespread over the last few decades of the nineteenth century, and combined with a growing commercial

demand for agricultural produce driven by the mineral revolution in the rest of the Union of South Africa. The first two decades of the twentieth century was a time of relative prosperity in which the wealth of homesteads in the area then known as the Transkei, grew through their adaptations to migrant labour, cash cropping and investment in livestock. Despite several diseases and droughts, cattle numbers were at their highest recorded levels in the 1920s and 1930s, although the distribution thereof was unequal (Fay 2003b). Indeed some commentators have termed it a localised black agricultural revolution (cf. Bundy 1979).

The bulk of the produce was maize and tobacco but other products (wool, sorghum, wheat, barley, oats, hay, tobacco, hides, horns and skins) were also sometimes sold and several families had also planted fruit trees and even coffee trees. During this period a substantial proportion of homestead agricultural production, at least for the more industrious homesteads, had been for the purposes of commerce. The growth in cultivation was not equal among homesteads. Septuagenarian respondents of Nqabara recounted that homesteads with expansive agricultural output could be recognised from afar (and were widely spoken of) by such symbols as large herds of cattle and other livestock in the several large kraals in the homestead, several large sleighs (*isileyi* pl. *izileyi*) as well as the presence of an oxwagon in the yard. Respondents also recount that the dams which their livestock frequent daily, had been built by such wealthy homesteads who invested their combined earnings from agriculture and labour migration, in the building of dams. Nevertheless, like the poorer homesteads, these agriculturally prominent homesteads relied on the wages of labour migrants in the homestead for agricultural investment, taxes and other expenses.

For this reason, and the necessity to have at least some access to cash income for the payment of taxes and school fees, migrant labour expanded and solidified concurrently with the growth in agricultural output (whether for commerce or subsistence) and indeed a positive correlation has been demonstrated to exist between homestead access to wage income and agricultural output, from early in the century even up to the 1980s (Palmer *et al.* 2002). Labour migration became institutionalised as a means for young men to build up resources to be able to afford bridal wealth (v.i. *ukulobola*) or the expenses involved in building one's own homestead. Labour agents cooperated with the trading store owners in the recruitment of potential labour migrants, sometimes even arranging transport to their places of employment in the factories, firms, mines and agricultural cooperations of Johannesburg and Cape Town. Many places of employment also provided accommodation and meals, further creating a situation in which a large proportion of earnings could be saved and invested back in the rural home.

The district of Willowvale in general, and in particular its so-called Fingo locations, had been seen as one of the best areas within which labour agents could contract labourers (Hammond-Tooke, 1956). These Fingo locations, of which Nqabara was one, had a longer tradition of education (Nqabara had one of only two secondary schools in Willowvale up to 1960) and the proportion of males that could secure higher skilled jobs, and therefore had access to higher wages, were higher in these locations than in more traditional Gcaleka locations (Fay and Palmer 2002). Nqabara senior secondary school was famous in the area as a school that, up to self-government, taught not only agricultural and technical subjects but even Latin and Classics. From the interviews of life histories with people in Nqabara, it is evident that in

the 1970s labour migrants worked as policemen, soldiers, clerks, electricians and pipe layers, at hotels as bellboys and in kitchens, as cleaners and chefs in musea or hospitals, on fruit factories in the Drakenstein, on the West Coast fishing industry, on mines in the Witwatersrand, on commercial farms owned by white farmers in the Free State and Transvaal, in breweries and as bus drivers. Apart from wage income, homesteads had access to cash through old age pensions of retired labour migrants, and gradually, commencing from the proclamation of legislation in 1965, also through old age pensions for rural Africans (De Wet 1995).

In a study published in 1994, the Bureau for African Research and Documentation (BARD) estimated that oscillating migration for males between 15 and 64 years of age for the whole of Willowvale magistrate had already been 21% in the first decade of the twentieth century and grew to more than 45% by 1960 (Muller an Mpela 1994a). Those localities in Willowvale with a longer history of education through contact with the missionaries, have been shown also to have had better access to migrant labour employment and had a higher proportion of migrants working in better paid jobs such as clerks in firms and factories as opposed to hard manual labour of the mining and construction industries (Palmer *et al.* 2002).

Analysts of long-distance labour migration in the last two decades of the nineteenth century and early twentieth century (cf. Beinart 1982, Bundy 1979) have noted that increased access to cash through wages earned enabled males to finance bridewealth and capital investments into homesteads independent from their parents and thus to establish their own homesteads at an earlier age than before. These studies have documented how a systematic reduction in the average number of people per homestead has accompanied the institutionalisation of long-distance labour migration among young males. As a result of the increased access by young men to wage labour cash earnings coupled with the transformation in labour organisation which was brought about through the adoption of ox-drawn ploughing technologies, homesteads in the rural communal areas of the Eastern Cape grew steadily smaller during most of the twentieth century. The smaller homesteads thus established were able to supply the labour demands of cultivation partly as a result of a revolution in the technology of homestead production that had preceded the growth in labour migration. The knowledge and use of ox-drawn ploughs had spread in the last two decades of the nineteenth century, focusing the main labour requirement of cultivation around a short period of labour intensive ploughing, whereas in the pre-1900 era ploughing and the clearing of weeds were done throughout the year, by women as part of their daily labour practices. The adoption of tractable technologies in the last few decades of the nineteenth century, changed the organisation of labour in cultivation with regards to gender. Ploughing, which now involved the inspanning and handling of oxen, grew dependent on adequate supplies of male labour, whereas before it was for the most part a female activity.

The shift from the cultivation of sorghum to that of maize also relieved the homestead of labour demands of guarding ripening crops against wild birds, which were less destructive on maize than on sorghum with its smaller seeds unprotected by sheaths. Over the years, polygyny declined in importance as a combined result of the spread of missionary values and growing poverty (especially measured in homestead cattle holdings). At the same time, a slow but steady growth in individualism, associated with the spread of missionary-based education, especially in amaMfengu settled areas such as Nqabara,

encouraged young families to establish their own homestead at an earlier age. The administrative powers granted to headmen and the increasing land scarcity of the 1930s and 1940s shifted land allocation and land use decision-making powers from the *ibandla* of the local *ilali* to the headman, and afforded the applications of younger families for their own homestead sites a greater chance of being approved (Beinart 1991, McAllister 2001).

Collapse of commercial agriculture

Since the last two decades of the nineteenth century, white settlers farming commercially in the Eastern Cape, had been lobbying strenuously for the government to restrict blacks from accumulating land, so that independence and competition of black farmers could be halted. Starting with a series of Acts since the turn of the century until 1909 the state aimed to convert the independent homestead agricultural producers and sharecroppers into wage labourers. From then on black farmers were competing in a market regulated by a state that set out to reduce the viability of independent black producers while strengthening that of the whites. In 1912 the state established the Land Bank to provide loans on favourable terms to white farmers only. The growing commercial tobacco production by Transkeian smallholders was virtually halted in its tracks with the tobacco excise introduced in 1921. In the decades following the 1913 Land Act white farmers developed formal associations to promote commercial farming, assisted by the 1922 Cooperative Societies Act. Between 1910 and 1935, 87 Acts were passed in the Union Parliament rendering increasing assistance to white commercial farmers at the expense of production by black rural homesteads. The Agricultural Marketing Act of 1937 facilitated the creation of marketing boards for grains and other produce for their members (who were white only). The prices which Xhosa producers could obtain for their produce at the local trading store depended increasingly on the South African market as peasants increasingly competed with white commercial agriculture (Palmer *et al.* 2002). A proliferation of restrictions (ban on subdivision, leasing of arable lands and sharecropping and restrictions on cattle numbers) exacerbated the changes in market conditions and limited the possibilities of further intensification of agriculture.

Furthermore, since the late 1920s the tenure of cultivated fields was subject to increasing and progressively more rigid government control. Up until the proclamation of the Native Administration Act of 1927, *de facto* administration of the tenure of homestead sites and cultivated fields remained with the local *ibandla* (traditional authority on neighbourhood/village level) and its subheadman (*usibonda*) subject to the approval of the headman under which the village fell. With the proclamation of the Native Administration Act, however, land tenure and grazing in the reserves were brought under the authority of the Natives Affairs Department (later becoming known as the Bantu Affairs Department) in consultation with chiefs and headmen. It also represented a centralisation of bureaucracy with the associated aims of greater efficiency and internal coordination and subsequently also rigidity and insensitivity to local conditions (Palmer *et al.* 2002).

Since the 1930s to the period covered in this study, fewer and fewer homesteads were able or found it worth their while to produce a surplus on a regular basis to sell at the local trading store or in town, and agriculture was seldom more than a supplement to wage labour for the majority of homesteads (McAllister 2001). Ainslie (2002) describes to period from 1940s to 1970 as one of considerable economic hardship in the ‘reserve areas. The grain mill at one of Nqabara’s trading stores shut down after its owner had

passed away in the 1950s and his son had subsequently moved away after a few years. The licences for hawkers or peddlers (Promulgation 72 of 1958) first issued in the previous decade essentially 'missed the party' of commercial agricultural output of the 1930s and 1940s. Similarly the second trading store in the area was abandoned by the white trader. Obviously agricultural productivity had been one reason among others for the traders' retreat, the threat of increased political instability in Transkei throughout the 1950s being a major contributory factor (CADd Undated). These stores were taken over by local inhabitants who received far less sympathy or credit or marketing support from authorities.

Nevertheless most homesteads continued to practice agriculture as an important contribution to their material livelihoods, as well as a means to retain a conservative identity and resist incorporation into a wider society that was becoming increasingly oppressive toward blacks. They experimented with new forms of homestead production, broadly corresponding to an intensification in cultivation inputs, a diversification of crops produced and adaptations in the organisation of labour to suit the continuing decline in the size of local units of production (McAllister 2001).

The cultivation of extensive fields up to 1961 required few capital investments other than cattle, from the migrant worker's wages or those few homesteads who had a member in receipt of a relatively small pension. Fields, if fenced, were still done so in a communal way and using sticks and branches (*izinti namahlahla*). Commercial fertiliser was rarely applied in extensive fields. Investments pertained largely to oxen, ploughing instruments and labour, and were sometimes indirect in the costs of brewing beer or slaughtering a livestock to hold an *ilima* for the labourers of the fields. As the price of cattle relative to wages of labour migration continued its increase since the 1940s, the frequency with which cattle was bought probably decreased. By the 1950s and 1960s some families had started to buy galvanised tanks to store grain in, rather than in the grain pits (*isele* pl. *amasele*) dug inside cattle kraals.

Land administration context

After the promulgation of the Native Trusts and Land Act of 1936, the magistrate played an increasingly active role in land administration. The Natives Affairs Department, with the local magistrate as their primary player, broadly took over the existing local system of administration of land tenure, but shifted decision-making power away from the local village (*ilali*), thereby making the process less flexible and with less attention to local conditions. Letters from land applicants and occupants to the magistrate at Willowvale, between 1920 and 1950 indicate increasing levels of frustration due to a perceived scarcity of land and colonial bureaucracy. Administrative obstacles and scarcity of land clearly made it very difficult to obtain security of tenure (Palmer *et al.* 2002) (CADa Undated, CADb Undated and CADc Undated).

Applications for a site for field cultivation were conditional on the tenure of a homestead or kraal site. The following criteria were used in the allocation of homestead sites (imizi): Was the applicant a local resident? Was the application essentially necessary, i.e. did the applicant already have a site? If so, did the application to move away from the old homestead have reasonable merit? Was the applicant a married man and did he have a growing family? Was both the hut tax and general tax history of the applicant in order (General Tax and Local Tax Act 41 of 1925)? Did the local *ibandla* and headman support the application and if so did they support the proposed locality of the site? Were there any existing local disputes over that specific site? Was the site on commonage or close to a government

forest? Was the site, in terms of slope and drainage, suitable for habitation? These correspondences would often travel to and fro for months, often via the native commissioners at the working places of migrants and their complex argumentation and fluent handwriting testify to the remarkable persistence of land tenants or applicants. After due consideration, the magistrate would then certify the application and send officers to inspect its marking out (CADa Undated). Land was not heritable, but application of widows or heirs received priority over those of other applicants (CADb Undated).

Having been granted permission to occupy a homestead site, the occupant was then allowed to apply for a field for the cultivation of crops. Gradually from the latter part of the 1950s, the allocation of new field became subjected to further criteria. Each homestead was allowed only one cultivated field, of which the maximum size was regulated. The site had to fall within the designated area for the cultivation sites of the *ilali* of which the applicant was resident in and no sites were allocated in 'virgin' land anymore. If a field had not been ploughed for three consecutive years, or its owner had not paid due taxes, it could be reallocated to a new applicant. In practice, a site was less likely to be reallocated if it had had 'improvements' such as fences, buildings, wind breaks and fruit trees on it.

Since the 1930s, the Transkei Forestry Department also intervened in local land tenure by declaring certain forests state forests and precluding any use of forest products from these, and regulating the use of so-called 'headmen's forests' through the use of a permit system (Palmer *et al.* 2002).

Labour migration

An intensification of labour migrancy in the area complicated tenure issues, as a migrant was formally required to inform the headman and the magistrate at Willowvale whom he has appointed to look after and cultivate his site on his absence. Judging by the contents of many land complaint correspondences between tenants of cultivated field sites and the magistrate, a labour migrant often found the tenure of both a homestead site and arable allotment insecure during his absence. Tenure insecurity was exacerbated by a growth in the percentage of women on migrant labour: more than ten percent of females in Transkei between 15 and 65 had been on external labour migration in 1982), although these were often daughters remitting to their parents rather than wives with their own homesteads (Wakelin 1983).

Labour migrancy also put pressure on homestead labour resources to fulfil agricultural tasks. To mediate homestead labour shortages, homesteads have, possibly since pre-colonial times, engaged in various forms of inter-household labour cooperation. The role played by inter-household cooperative labour groups in rural homestead production have been well documented among various Xhosa-speaking groups since the 1930s (Mayer 1980, Beinart 1982, Bundy 1979, McAllister 1979). These observers have demonstrated that the organisation and composition of such assistance groups have evolved in response to changes in contextual factors. More recent studies have also shown that mutual help has become increasingly flexible as average homestead size has shrunk (Heron 1990, McAllister 2001). In Nqabara, decreasing average homestead size as well as decreasing average herd size per homestead made it almost impossible for a homestead to successfully produce a harvest without some kind of labour cooperation with other families in the neighbourhood. The arrangement of the cooperation could take various forms and depended among other things on the disposition of the homestead regarding oxen and human labour, on the history of cooperation between ancestors of the current homestead heads as well as

on social relationships with neighbours. As homestead sizes decreased, these labour sharing arrangements (which effectively increase the size of production units) were becoming increasingly varied in terms of their composition (in terms of kin or neighbours) and in their longevity, necessitating a similar flexibility in the classification of the types of 'mutual help' (McAllister 2001, Palmer *et al.* 2002).

The history of land use and livelihoods in Nqabara after 1960 forms a major concern of the present study and will be discussed in greater detail in chapters four and five. For this reason this brief contextualising discussion is cut short at this point. The preceding discussion of the context of homestead agricultural production and its articulation with wider socio-political factors through the institution of labour migration will nevertheless form an important consideration in situating the discussion of the chapters to follow.

Chapter 3: Methods

Introduction: Personal biography and the unfolding of the research process

Early in 2004, as a student with a background in biological sciences, but who had recently become overly enthusiastic with the ethnographic method of research, I commenced the task of designing a research project where I could try my skill at my newfound fascination with reflexive research through immersion in a social setting. How thoroughly unprepared I was (and still am) for a task of such magnitude!

As is fit for a proper hybrid of the social and natural sciences, I had set out to keep my ethnographic scope as open and broad as possible, yet in the field, after a day of intense observation and note-taking of all the detail I could possibly be attentive to, I would turn to an academic book or article and chip continuously at a 'conceptual framework' to guide my research. I managed to convince myself that no contradiction lay at my simultaneous attempts to do inductive research on the one hand, and to continuously grapple with theory and abstraction on the other.

As it so often happens with scientific enquiry however, personal biographical matters of the researcher abruptly steered the process in an alternative direction. Seven months into the study, I chose to follow-up an unexpected academic opportunity which necessitated suspension of the investigation for a period of approximately fifteen months. During this period I was in a setting physically and culturally distant from Nqabara, and though still academically occupied with human-environment issues, only at infrequent intervals did I have time to ponder about the situation in Nqabara and which pathways I would follow upon recommencing the study. Upon my return to Nqabara, to my notes and to historical and comparative sources, the rather smooth fit between the situation in the field and that of the pre-defined conceptual framework which I had been working at during the outset of the study, began to appear increasingly suspect.

In an academic atmosphere that never shirks to ask deeply introspective questions about the process of research, especially the pathway through which eventual 'patterns in the data' are established, I started to see that what I had been recognising in the data since the outset of the project, was not so much a product of patterns in the data, as it was of the conceptual window through which I was regarding the data. This realisation seriously challenged the validity and veracity of the data elicited up to that point and therefore also their use in planning the direction in which to proceed. The study was confronted with an incapacitating crisis of conceptual identity.

What I had stumbled upon was of course hardly novel in the process of research. All inquiry, whether consciously or not, is informed and guided by pre-scientific assumptions arising from the personal history of the enquirer. It should therefore be of little surprise that I was unable to find a satisfactory way out of this stalemate. The moment was nevertheless important, since it catalysed a process of critical introspective interrogation of ontological and epistemological issues fundamental to the current inquiry. It provided an impetus for critical reflection on the epistemological dilemmas and ontological foundations facing this type of research, which heretofore I had treated as unproblematic.

Consider figure 3.1, depicting a simplified diagrammatical representation of the research process. The researcher, in the process of research, continuously engages and disengages with different data sources (A-E) in the process of distilling or triangulating a unified history. This dialogical process of engagement and disengagement, has at its core the meeting of the diverging epistemologies in which the various data sources and the researcher herself or himself are embedded. This dialogue takes place within and is fundamentally shaped by the researcher's framework of ontological presuppositions. These presuppositions may take the form of subconscious and unacknowledged worldview and beliefs, or of conscious and acknowledged cognitive frameworks. Two fundamental questions problematise this dialogue. Firstly, to what degree is the data produced in a specific epistemological field intelligible to an observer outside that particular episteme and therefore, secondly, to what extent is the data from one episteme comparable to data produced in other epistemological fields? Both these questions indicate that the co-indexicality among the epistemological fields of different data sources and between the epistemological field of the observer and the data sources cannot be regarded as unproblematic.

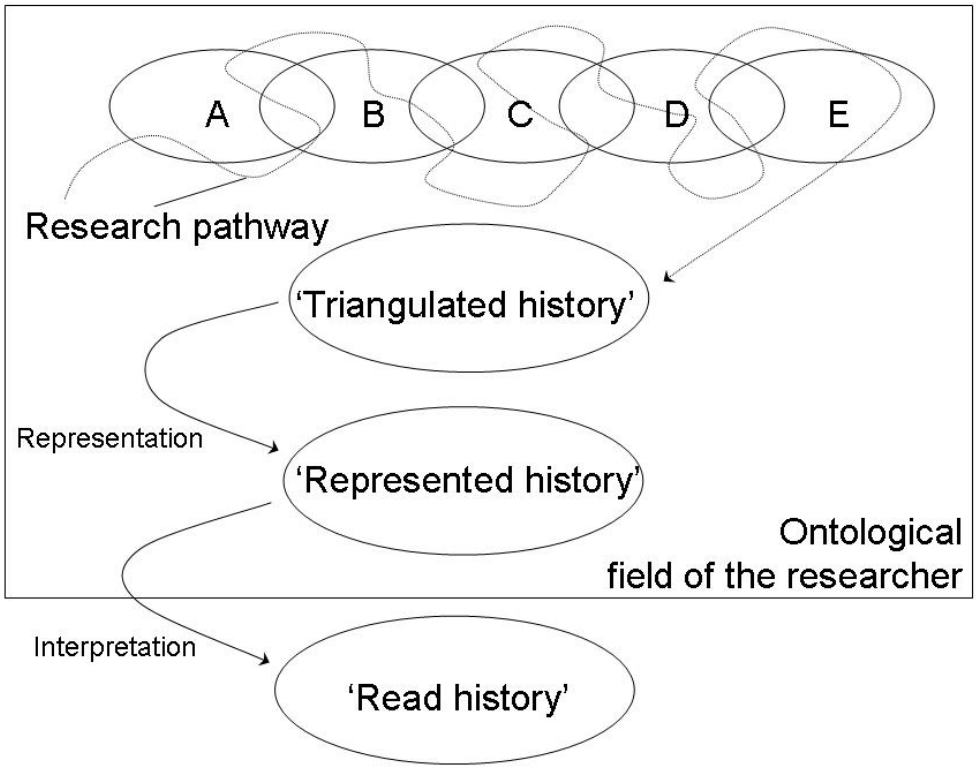

Figure 3.1: Diagrammatic representation of the research process showing the engagement and disengagement of the researcher with diverse data sources (A-E) each emerging from a specific discursive field. From this process of negotiation emerges a 'triangulated history', which through manipulation into texts, tables and figures are transformed into a 'represented' history which in turn is transformed again in the interpretation thereof by readers.

The process of rendering an intelligible history from the dialogical engagement with different data sources, is further complicated by the processes of representation and interpretation. Duncan and Ley (1993) present a critical exposition of the first of these two processes, representation. They show that representation occurs in one of four possible forms. The first two types of representation are both types of mimesis, and leave unquestioned the attainability of producing an accurate reflection of the world through scholarly communication. In the positivist tradition, mimesis of research findings typically occurs in the presentation of

abstractions and theory. In contrast, ethnographers have traditionally argued that a true reflection of the world can only be presented by trained observation transcribed into clear prose and unencumbered by abstract theorising. Ethnographers thus acknowledge the way in which the 'research pathway' of figure 3.1 travels through multiple epistemes and agree that it is the task of the ethnographer to observe in detail the information available and present this in a coherent fashion. In doing so, they leave unquestioned the fact that during the process of observation the ethnographer has already overlooked, over- or under-emphasised, or misinterpreted a great deal of information as a result of epistemological divergences between the researcher and the context of data elicitation. In response to the mimetic activities of both positivist science and the tradition of descriptive fieldwork, various post-modern and anti-foundational approaches have let loose a 'crisis of representation' in their attack on mimesis. Extreme relativist postmodernism represents Duncan and Ley's (1993) third type of representation. This strand employs a relativist approach to epistemology and show that different representations of reality may be equally valid and true. The focus thus shifts to meta-narratives on the contestations among various representations, rather than on what is represented itself. The fourth form of representation can be broadly considered as a self-reflexive interpretative approach based on hermeneutics. In this form of representation the producer of the representation explicitly recognises and theorises her or his representation by describing the dialogical encounter between the epistemological contexts of the data and that of the observer. Hermeneuticians recognise that representation always operates within a specific discursive field (Duncan 1993b) and that clear representation needs to be self-critical in simultaneously representing the phenomena as well as the discursive fields they occur in.

The second complication, that of reading or interpretation, is in essence no different from the process of epistemological dialogue or 'triangulation' which occurred between the researcher and the data. The only distinction lies therein that now it involves not the dialogue between different data sources and an observer, but between a 'represented text' and the epistemological and ontological fields of a reader.

The above discussion serves to underline the cul-de-sac within which I perceived the study to be upon recommencement after my fifteen month absence. The goal of engaging with data sources on an absolutely neutral and unbiased playing field remained out of reach. Every possible shape or form of dialogue between myself and the data, even the process whereby data comes into being and are identified as such, could not escape being informed by conscious or unconscious selection, omission and differential emphasis. Restoring credibility could therefore not be found in avoiding or rendering neutral my positionality with regard to the research process. Rather, the credibility of the study hinged only in its success at making explicit the unacknowledged, often subconscious assumptions, emphases, omissions, indeed epistemes of the various authors of data sources, including the role of myself in the process of collection and data sources. Since knowledge cannot escape being a product of a negotiated relationship between the contextualised, embedded or situated researcher with her or his environment (Hornborg 1996), as opposed to a constructed or represented image in the mind, of an object existing outside of it, the only way forward for the study lay in making explicit as much as possible my negotiated relationship with the different data sources and their discursive contexts.

Epistemological concerns

The epistemological concern of this study is one inherent to all studies concerned with the complexities of the human-environment interface. It is a field of study incapable of escaping the conceptual boundaries and

interstices created by diverse and often isolated scholarly disciplines. Most integrative approaches to the subject, as diverse as political ecology, human ecology, cultural ecology, historical ecology, the adaptive renewal/resilience approach, radical development geography, the sustainable livelihoods approach and the list could go on, in some way or another draw upon conceptual frameworks that have their roots (or the roots of some components in the framework), in different epistemes, or ways of knowing. This in itself represents no unconquerable obstacle. However, the logical consistency of arguments developed from such frameworks may be compromised when one fails to acknowledge and pay sensitivity to the ways in which different discursive frameworks have shaped and shape the meaning and interpretation of concepts. Similar compromises arise when one fails to acknowledge and explicate the effects on meaning that these diverging contexts of production may have. In short, without critically problematising the dialogue between elements of diverging epistemological origins within these frameworks, the integrating and synthetic capability of the conceptual framework may be severely debilitated or even rendered useless. The challenge is thus to explicate the epistemological origins of shared concepts in the frameworks employed, and to make explicit the ways in which the divergent epistemologies of concepts inhibit co-indexicality.

Methodologically, a similar fundamental epistemological dilemma faces this study. In its aim to follow the history of the embodiment of social action in the landscape, this study has gone in search of data that not only sufficiently explicate the chronology of human and ecological action, but which importantly also present dense spatial, social and historical contexts for such action. The interface between various data sources represents a space of epistemological contestation where different knowledges and ways of knowing vie for dominance against each other. The data from various sources are produced in contexts that diverge in the language and theoretical constructs they employ. If this is overlooked, i.e. that the data sources used in this study draw on a range of heterogeneous epistemologies, the analysis will tend to lead to false convergences or distinctions among data sources. In order to be sensitive to the different ways of knowing that are at play in the production of data from the four main sources of data used in this study, it is necessary to be sensitive to the context in which they were produced. The present study's methodological concern with epistemology lies on two levels, i) the original context in which the data sources were produced and ii) their representation in the current study.

Firstly then, each data source used in this study emerges from a unique discursive context in which the path-dependent histories of perception of multiple actors, through negotiation and contestation, have sedimented in an account that can be regarded as data and therefore is manipulable. In this study, I do not regard epistemological concerns as the pre-occupation with mental representations (cf. Rabinow 1986). Rather, following the insights from chapter one, I regard epistemological divergences to emerge from different actors' varying ways of moving through the world and their different skills of perception and attention to the world, and not from diverging abstract cognitive and cultural reresentations of the world. For this reason each data source should be regarded as a socially situated, and politically informed episteme.

This study drew on four main sources of data. The first data source is a collection of my own notes and experiences of observations of and participation in the daily activities and informal conversations of the people living the landscape of Nqabara. The second is spatially explicit data, remotely-sensed through an historical series of digitally orthorectified images of aerial photographs of Nqabara. The third source of data consists of

semi-structured interviews held with respondents from a non-random sample of homesteads on themes that had been identified during participant observation and that had emerged from the spatial data analysis. Lastly, data were used from a range of secondary sources including agricultural and population censuses and surveys, climate records, cattle dip records, archival communications and official documents, statistical data series and reports as well as analyses by other scholars. Each source represents a partial and socially situated perspective (or perspectives) of a history (or histories) in which the producers of the data were themselves social actors embedded in relationships of power and involved in struggles over meaning.

Interdisciplinary studies often claim to triangulate among data sources and convergently validate both source and conceptual frameworks, but since triangulation implies the convergence of several methods and/ or perspectives on the *same* phenomenon, the question should be asked whether indeed the present data sources used share a subject of attention (Jick 1983). In other words, before meaningful integration (triangulation or even conversation) among data sources can be rendered possible, the context of their production and the subject of their attention must be critically problematised. This task befalls the current chapter.

Secondly, my attempt to engage these sources in the reconstruction of a spatially explicit, context sensitive history of social action in the landscape is necessarily partial in itself. It is just one of a range of alternative socially constructed versions of the story of the landscape of Nqabara and people's making a living in it. The writing of a history of the actors and their actions that become embodied in the landscape and in social institutions, cannot escape being a representation among a range of possible representations, struggling for dominance in meaning. Similar to the data sources presented above, my reconstructing of a history has been a social and political act, embedded in relationships of power, and drawing on the various discursive frameworks that are available to me in my cultural context. As investigator, my task is not merely to level the playing ground among various representations and present them in as objective and distanced manner as possible. Indeed it is an arena of contestation as to whether this may be possible at all. Rather, the task is to describe the unequal topography of the playing field where different epistemes and interpretations engage as clearly as possible, and to critically reflect and render visible the ways in which this has influenced the line of inquiry, the scope of vision and the analytical predilections I have employed in the process (Ainslie 1998).

Participant observation

The fieldwork for this study was undertaken from February 2004 to July 2004 and again from December 2005 to March 2006, in seven different visits, ranging from one to four weeks each. The majority of the fieldwork period was spent living in a homestead centrally situated with regard to the villages of Nqabara, where four family members were present at the time. This homestead had been chosen by the traditional authorities of Nqabara in conjunction with the Nqabara Community Development Trust. I also spent a week each with the families of three different homesteads in more distant sections of Nqabara. Considering the goal of uncovering the different ways in which inhabitants of Nqabara have been able to exercise agency in the making of a living, amidst social structural factors at local and wider scales, the amount of time spent in the field, totalling just over four calendar months, was inadequately short. If fieldwork is to be perceived as an education of attention (Ingold 2001), in order for my perception of the landscape and people's livelihoods to approximate their own ways of perceiving, then it is imperative to engage in a sustained and extended period of perceptual enskillment in the field. This remains one of the greatest shortcomings of the present study.

Given the complexity of the case history which came into full focus near the end of the research cycle, it is now apparent to me that successive cycles of research similar to the one from which this account is produced, is needed to render a nuanced understanding sensitive to complexities and apparent contradictions in livelihood and landscape.

A further shortcoming in the unfolding of the research process, and linked to the relatively short time-frame of the study, is that the scope of observation was subjected to too rapid funnelling (i.e. the scope was not as broad as possible for as long as possible, cf. Wolfcott 1995), and the process was not entirely inductive as various analytical frameworks influenced the ethnographic gaze throughout the period of study. Initially, ideas from socio-ecological systems theory, and the new institutional approach of political economists shaped the formulation of the line of enquiry. The processes and structures these frameworks emphasised were, however, impossible to observe or discern from the daily activities and conversations of people living in Nqabara. The structure they attempted to impose on observations, and the way they led to selective observations necessitated their relinquishment. I therefore attempted to concentrate on individuals, their individual actions and the contexts in which they acted. Later on I realised that such an approach was more congruent with actor-oriented approaches that emphasised human agency, and interpretative approaches that conceptualise power relations and the struggle to construct meaning as salient. This led to a greater sensitivity on my part to historical contingencies and constructions of the landscape and of landscape change efected by people dwelling in the landscape.

This study failed to collect and analyse data in multiple concurrent and cyclical processes (cf. (Agar 1980). My relative inexperience in dealing with the different perspectives on even ordinary actions and objects in the landscape, the process of fieldwork was indeed ‘an intense epistemological trial by fire’ (Van Maanen 1995:1). In short, due to the reasons mentioned above, and the list could be extended, this study falls short of a true ethnography. Thus, in one of its original aims, the presentation of a cultural exegesis (Asad 1986), it has to stand back and present a more modest view. Rather than being a translation among the stories told by different cultures with varying epistemologies (Wolfcott 1995), this study is a telling of possible version of a story of the landscape and the actions of those who live in it. In this undertaking I aim to guide the senses of the reader through a set of clues, chronological events and causal relationships, while retaining the methodological self-consciousness of ethnography. In telling this story, it is necessary to contextualise my practices during the discovery process and so aim for a reasonable level of reflexivity (Van Maanen 1995).

During the first month of field visits, I was more or less dependent on Ndlovu, my research assistant and interpreter when talking with neighbours or residents of neighbouring villages. I use the clan name of my research assistant since he is well-known among most people of Nqabara, and the use of a pseudonym would serve no purpose in terms of preserving his anonymity when people of Nqabara read this text. However, the use of the clan name does however present some kind of anonymity vis-à-vis outsiders. Furthermore, the humility and reconciliation with which Ndlovu carries his personal history of sacrifice and service in South Africa’s painful past endows him with the honour inherent in the address as ‘Ndlovu!’ (one of the elephant).

Ndlovu was a senior man from a neighbouring homestead, widely known in most of the *iilali* and prominent in community development structures. During this period I spent some days walking with him to nearby villages,

having informal conversations with people we met along the way or with elderly people inside their homesteads. Since he was an instrumental role-player in local community development, I accompanied him in his day-to-day activities, attending meetings of the community development committee and sub-committees, an opening of a new local school building as well as meetings of the traditional authorities in the area. On days in which Ndlovu had personal obligations, I participated in the day-to-day activities of my neighbours or attended events such as pension pay days, funerals and ritual gatherings of various kinds and various families within the neighbouring villages. From the second and third visit to the field, as I gained conversational proficiency in Xhosa, I accompanied individuals and groups, some days with an assistant, some days without, on 'hunts' for medicinal plants, game or construction timber in the forest; I assisted with the transplanting, harvesting, processing and storing activities of produce from the fields and gardens, the tending of cattle and their kraal; or the building and maintaining structures within the homestead. On some days I explored footpaths into the surrounding landscape on my own.

Over the subsequent months, as crops were ripening and homesteads were harvesting daily from their gardens and preparing for the seasonal harvest of extensive fields, the daily activities and conversations of the individuals I accompanied, were revealing progressively more of the context of homestead production and the meanings different individuals attach to different aspects thereof. After the harvest, the many beer drink and ritual slaughtering ceremonies offered insights into people's own analyses of the landscape and people's actions in it (cf. plates 3 and 5). I started to play a more active role in the research process by guiding discussions and asking questions about previous actions in and previous appearances of different landscape patches. Eliciting the views of women in public gatherings was almost impossible but assisting them during tasks such as the processing of the harvest, cooking or gathering fuelwood provided opportunity for them to speak more freely. Likewise, it was hard to gain insight into the perspectives of men of middle age and younger at public events. Assisting individuals or *ilima* groups preparing poles, repairing kraals, treating sick or injured animals or accompanying them to the dip tank were more fruitful avenues of encouraging them to talk about their making a living and their experience of the landscape.

During the winter holidays, many migrant workers returned for the holiday and various rituals were organised to coincide with their visit. Likewise, various celebrations relating to the initiation of boys into manhood were held in the school holidays. The individuals with whom I attended these ceremonies often took the initiative in explaining aspects of these events to me. Such occasions afforded me opportunity to ask further questions and to test (and mostly reject) ideas that I had started to develop and which sought to relate broader social values and obligations to the emergence of patterns in peoples making of a living as well as patterns in the landscape.

People's own perspectives lead me to new considerations of causality in the history of a changing landscape and changing ways of making a living. In this period I started to develop ideas about issues which I would later return to in semi-structured interviews with a sample of homesteads.

In August 2004 an opportunity suddenly arose for me to attend an academic course from September 2004 to September 2005 in a location far from the study area, which would imply having to temporarily suspend fieldwork. I decided to follow up the opportunity and could only resume fieldwork in December 2005, fifteen

months later. Such a lengthy disruption in the fieldwork process necessarily affects relationships of rapport and the suddenness of my absence made it difficult to explain to all whom I had gotten to know in the course of that year. Nevertheless, upon my return I found my neighbours and the people from further villages with the same hospitality towards me and interest in my doings as they had been before although with some curiosity as to the reason for my prolonged absence. From January up to March 2006 I completed a set of semi-structured interviews while continuing the process of participant observation.

Semi-structured interviews

The topics I had become interested in during the course of participant observation shared a concern for local agency in the face of change. I was interested in the ways in which various changes in economic opportunities, in local social relations, in the physical appearance of the landscape, entered the life-world of local social actors, and through their active cognitive and practical engagement with these, emerged as new structures, either embedded in the physical landscape or in local social institutions. I realised that, what was missing from my interaction with a range of respondents, was discussions that were more historically systematic. I thus decided to embark on an approach of eliciting information from a range of homesteads of various ages, in a way that facilitated the historical contextualisation of information. I also decided that the nature of the topics I was interested in necessitated a more flexible and open-ended approach than would be possible through standardised and quantitative questionnaires.

The decision to hold semi-structured interviews holds some consequences for data analysis. Since the range of topics discussed varied for each homestead, the composition and size of the sample will vary for each topic discussed and also for each indicator produced from the discussions. Furthermore, since the order of questions will differ, the degree to which a respondent's statements were influenced by previous topics, will be impossible to determine. The only way around this, is to make explicit the context of statements uttered, to a satisfactory degree. Similarly, the phrasing of the introduction of each new topic will be unique for each interview, since it will respond to statements already made by the respondent.

Constitution of the sample

Homesteads were sampled by walking through a village and greeting whoever was visible outside. Most of the homesteads that were excluded from the sample were excluded because of the complete absence of people on the days which we visited. After mutual greetings, an introduction of myself and my assistant if we were not known to the other person, enquiries about health and some small talk, I enquired whether the homestead head, or any other member of the homestead was present, and interested in sitting down in discussion with us. In this way an interview was held at approximately every fourth homestead where we stopped to greet. Pressing tasks, suspicion as to the goals of the research, and nervousness as a result of the presence of a white stranger, were most often the stated or implied reasons for not being able to have an interview.

I conducted semi-structured interviews in Xhosa, with the assistance of a home-language Xhosa speaking research assistant, with individuals from a non-random sample of 99 homesteads. Respondents were selected non-randomly by moving from homestead to homestead, making informal conversation with whomever was present and establishing whether the head of the household or any other member of the household was willing to share their time by participating in a semi-structured interview. The respondents

included 73 females and 26 males, with an average age of 61,6 (n = 99; SD= 13,6). The distribution of the sample in terms of age and gender compared with that of the population in 2001 (Statistics South Africa 2001) is given in figures 3.2 and 3.3.

The absence of respondents aged between twenty and thirty reflects several aspects of the community. Firstly, a large proportion of this age-group are absent from the Nqabara as they are either working, searching for work, or assisting a family member who is working, in one of South Africa's urban centres. Furthermore, female members of this age group, when present locally, are assigned high levels of responsibility for completing domestic tasks and do not often have time to spare to outsiders. Members of this age group were also more likely than those form other age groups, to decline an interview if no older member of the household was present.

The relative dominance of females in the sample can be ascribed to the higher proportion of male absentees due to labour migration, whether this is working or searching for work (for pre-retirement aged respondents), and to the longer life-expectancy of females relative to males (for post-retirement aged respondents)

Figure 3.2: Age distribution of respondents in semi-structured interview sample (n=99) relative to that of the population of Nqabara in 2001 (Statistics South Africa 2001).

Twenty of the male and 41 of the female interviewees (37 of which were widows) were the heads of their households. The remainder were sons, daughters or daughters-in-law. Ten of the 11 sub-wards of Nqabara were included in the sample. The average proportion of homesteads sampled relative to 2001 census household numbers is 12%, but the different sub-wards were not proportionally sampled (Table 3.1). The proportion of each village sampled ranges from 5% to 33%. On average the homestead in which the respondent resided had been in existence for 32 years (n = 87; SD= 15,5) (Figure 3.4). Sixty five percent of respondents were born within Nqabara, twenty five percent in villages neighbouring Nqabara and 10% further afield.

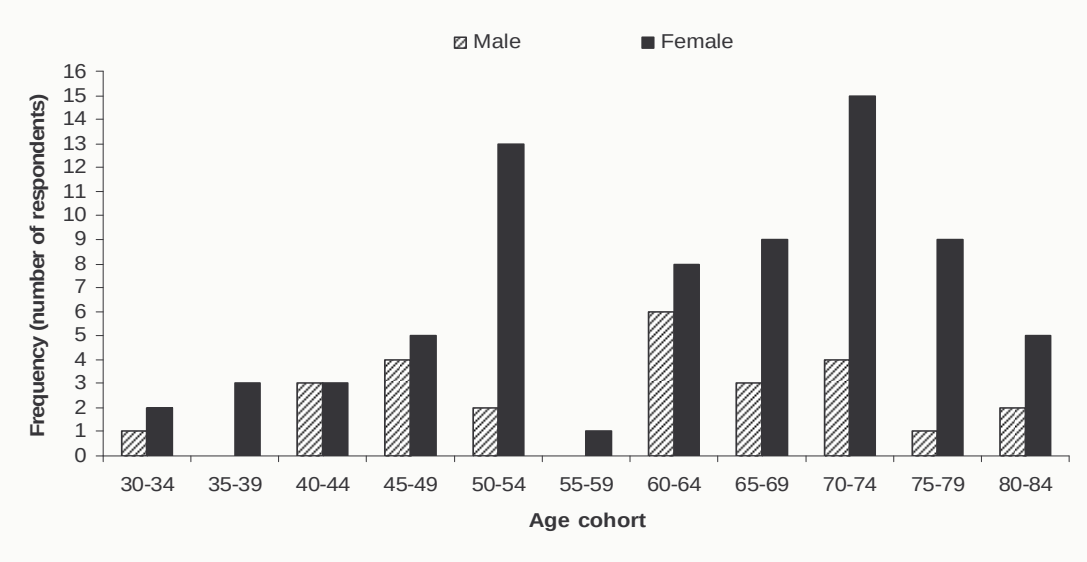

Figure 3.3: Age distribution of respondents interviewed in semi-structured interviews (n=99).

Respondents varied greatly with regard to the number of homesteads they had occupied (x=2,7; SD=0,8; n=99) in their lives and the reasons for having moved among homesteads. Most female respondents in the sample had moved homesteads after marriage, in concurrence with the typical pattern for a female in a patrilocal society. Only eight per cent of female respondents had moved into their own homesteads without having been married. Similarly, most males followed the typical male pattern of patrilocal societies, where half of the male respondents had acquired and moved into their own homestead and approximately 27% of males had either stayed in their parents' homestead all their lives or had returned to it and still lived there at the time of the research.

Table 3.1: Homesteads sampled in semi-structured interviews in the different *iilali*, with respect to gender and population of homesteads as in 2001 census (StatsSA 2001).

Ilali	Sample size (homesteads)	Sample size as percentage of population in 2001	Percentage of females in sample
Fubesi	8	10	100
Komkulu	0	0	-
Luphaphasi	15	17	60
Mayiji	17	24	65
Mthokwane eZantsi	3	9	67
Mtokwane	13	17	92
Ngqeza	17	33	82
Ngwane	14	8	71
Nocwane	4	5	75
Nondobo	4	10	50
Nqabarana	4	7	50
Total/ Average	**99**	**12**	**74**

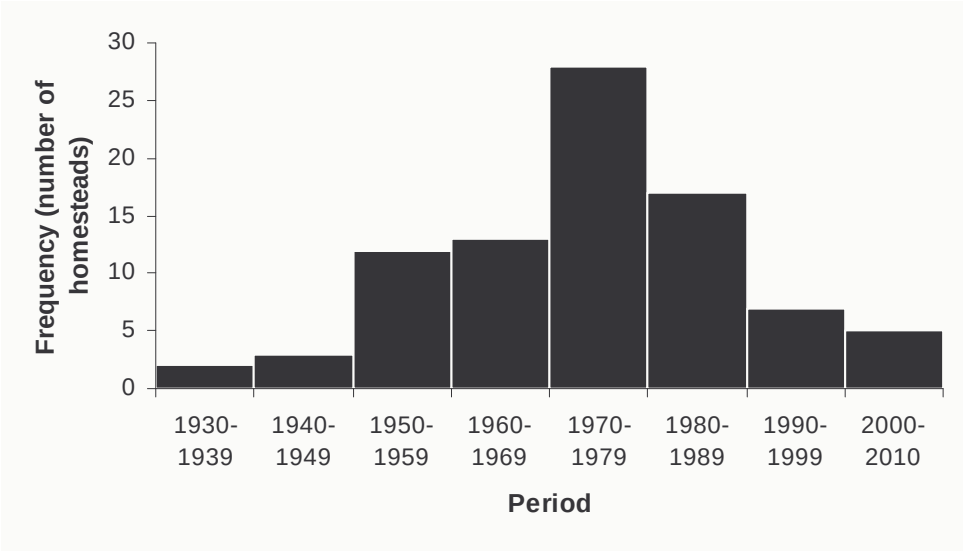

Figure 3.4: Year in which homestead in which respondent lived, was established (n=87).

The interviews were conducted around a list of topics, each of which could be expanded upon if the conversation happened to proceed in the direction of a particular topic. A conversation was started regarding the life history of a respondent. The conversation then variously developed to include aspects of habitation and movements between homesteads, labour migration, cultivation practices, and aspects related to animal husbandry.

Data manipulation

In all cases I attempted to relate the information elicited to the local geography by asking about place names or asking respondents to indicate the places they had been referring to on maps or fine-scale aerial photographs of their immediate environment. Interviews were often conducted with a view on the surrounding landscape which aided the elicitation of spatially explicit information. Here place names and land uses and people and events all gained a spatial component along with the temporal one already elicited. This information was tabulated in a geographic information system.

In 96 interviews it was established whether a homestead had ever had access to a cultivated field. Out of the homesteads that had had access to a cultivated field, but who had since abandoned its cultivation, the year in which they had cultivated it for the last time was established for 54 homesteads. For all of these 54 homesteads, the reasons why they had abandoned the cultivation of their field was discussed and categorised.

The total number of years that a respondent or his or her spouse had been absent during spells of long-distance labour migration (not necessarily consecutive years) was elicited for males in 63 of the interviews and for females in 9 interviews, by taking into account the year in which the labour migrant first started working, the year in which he or she had last worked, as well as the number of years in between that he or she had not been away as labour migrant. The total years of absence was noted, irrespective of whether the migrant was employed or unemployed during his or her absence. Using the ages of the above male labour migrants, it was possible to calculate for each one, a time-window in which he could theoretically have been involved in labour migration, i.e. the time window in which he was aged between 15 and 64. Amalgamating

the data from all male labour migrants involved, I calculated the maximum number of males (for the sample) that could have been involved in labour migration at any point in time. Combining this with the actual number of males that had been involved in labour migration at the various stages in history, I calculated the probability of a male from a homestead within the interview sample being involved in labour migration at any point in time.

Descriptions, explanations and quotes on a variety of issues particular to individual respondents, but relevant to the list of topics used in the semi-structured interviews, arose from the interviews and these, together with a brief outline of the context of their production will be introduced throughout chapters four and five.

Spatial analysis of land cover change

Apart from human action, this study is equally interested in ecological actions, or praxis, in the landscape (i.e. the ways in which the landscape responds to anthropogenic and other events and processes as well as how people make-sense of these responses). For this reason it was sought to combine elements of the ethnographic method with selected methods used in historical, geographical and landscape ecological studies.

Theoretical considerations in the use of geographic information systems in human-landscape interactions

In the application of remotely-sensed (RS) data (which includes data sourced from historical aerial photographs) that are analysed with the aid of technologies that employ Geographic Information Systems (GIS), there is a concern that analyses will lead to data-driven, positivist analyses that emphasises spatial relationships at the cost of social and historical contexts (Turner and Taylor 2003). This concern arises from the realisation that RS images are not impartial tools for the settlement of debates about land cover. They cannot be used to settle disputes over the interpretation of landscape, and only reinforce existing interpretation (Robbins 2003a) The reasons for the emergence of such a concern, is not inherent to the technologies used in RS and GIS applications, but lies in those aspects that are left implicit and unacknowledged in their application. This is as a result of the way in which, through their use, certain aspects of the landscape are emphasised at the cost of others while creating a persuasive, but nevertheless misleading, impression of neutrality. In order to harness the full potential of the contribution that RS and GIS technologies can make to the study of human-environment interactions, it is necessary to make explicit the partialities that are implicit in their perspectives.

Looking at the landscape through the lenses of historic aerial photographs and spatial analysis thereof, like any analysis, is an act of exercising power in which certain perspectives and characteristics are emphasised at the cost of others. It is not a detached point of view, in which the observer is able to see everything from everywhere (cf. Ingold 1993a). The bundle of technologies that constitute RS and GIS rely heavily on visual patterns in vegetative cover to infer ecological change. These patterns are often embedded in data sets that are highly aggregated, and in which the data that have been filtered out, are not recognised as missing data (Turner 2003). Digital images of orthorectified aerial photographs are furthermore bounded by grain and extent, the dimensions of scale. Patterns which are only visible at scales smaller or greater than the grain and extent that aerial photographs allow are consistently but subtly overlooked in such spatial analyses of the landscape.

It must be kept in mind that the 'landscape' of aerial photographs bears more resemblance to the detached and indifferent landscapes of paintings, than it does to the lived-in landscapes perceived by situated actors. The landscape seen in aerial photographs invites the observer to displace and decontextualise, to disengage from the landscape by engaging in the illusion of having stepped out of it (Smith 1993). In the current study, where the very definition of landscape aims to overcome such voyeuristic conceptualisations, it is therefore critical to remain attentive to the biases built into the view-from-everywhere, presented by aerial photographs. It is necessary to translate what is seen in aerial photographs into what is known by movement through the landscape and seeing the traces of other actors' movement through it (Gow 1995). It is necessary to consciously remind oneself that the patterns visible in an aerial photograph should be understood as emergent from the movement and actions of bodies in the landscape (Hirsch 1995). Furthermore, what is visible in the landscape, is the emergences from a diversity of pasts, since the durability of certain patterns in the landscape causes objects to pile up in front of the history of the landscape. But landscape is not only the done, the said and the enduring, but also the doing, the saying and the evanescent (Smith 1993). This interplay between that which emerges anew and that whose traces slowly become less perceptible over time, is often hidden from view by the totalising perspective made possible by aerial photographs.

Spatial analysis of remotely sensed data almost always privileges a static view over the dynamic nature of landscape change. Even when presented as a diachronic series, they remain as individual frames of an animation film, and if the duration, whether in terms of configuration or time lapse, among frames are too great, the representation will fail to capture a true sense of dynamism. Actors and their actions are conveniently erased from them and can at best be inferred from visible patterns. This comprises one of the most important covert ways in which the representations of aerial photographs exert power over alternative meanings. The inherent danger in using these technologies, is that the analysis will remain pre-occupied by structure, or if analysis proceeds to process and causality, that the importance of social and historical context will be ignored.

The technical underpinnings of spatial analysis through RS and GIS rely on fixed and bounded arcs and polygons. However, interpretative traditions that study human-environment relations emphasise that the actions of people (e.g. land access and use rights) and the meaning people construct in the landscape (e.g. conceptualisations of place) are often organised along the notion of centres in the landscape (Turner 2003). Such centres may overlap and have diffuse interfaces with other centres, but need not necessarily be bounded. Such typologies are difficult to accommodate in geographic information science.

Furthermore, the socially constructed nature of land cover categories is often left unproblematic. Categories are always based upon the decision rules of analysts, which on their part, are embedded in the epistemological framework of the analyst (Robbins 2003b). They are representations that serve certain practical, social and political goals, in a way identical to the representations of landscape by people who live in them. They are often successful in depicting a mosaic of overlapping and disjointed concepts that mean different things to different people in different contexts, as a continuous cover of unproblematic land cover classes (Turner and Taylor 2003). The likely biases inherent in certain conceptualisations of land cover categories must be made explicit and their overlap and discontinuities with other conceptualisations of landscape, e.g. ecological, floristic and emic perspectives, demonstrated. Undeconstructed land cover

categories that are equated with land use in an uncritical manner, can easily lead to teleological arguments regarding the causal relationships in land cover change.

Only through making the subjective perspective of RS and GIS technologies explicit, can their use be of facility to the exploration, in controlled and quantitative terms, of the convergence and divergence of various knowledges and perceptions of landscape as well as the epistemologies in which they are produced (Robbins 2003a). When used self-critically and reflexive, as epistemologically deconstructed, spatial analytical tools, they do hold significant potential to be integrated with actor-oriented studies of human-environment relationships (Jiang 2003).

Methods used in the spatial analysis

Digital images of aerial photographs of the study area were obtained from the Chief Directorate of Surveys and Mapping, Department of Land Affairs, South Africa, for the years 1961, 1972, 1995 and 2001. The 1961 image was taken at a resolution of 1:36 000 and the remaining images at 1:50 000. The images were taken in April (1995 and 2001 image), May and June (1961 image) and July (1972 image). Climate data from the South African Weather services (Weather South Africa 2006) was available only since 1972. The data shows that, although the annual rainfall for the whole of 1972 was below average, up to July when the aerial photograph was taken, it had been average (481mm measured from January to July). The seasonal rainfall measured for 1994/1995 and 2000/2001 was average (1007mm and 959mm respectively). The variation in monthly rainfall for the period 1972 to 2005 is given in figure 3.5.

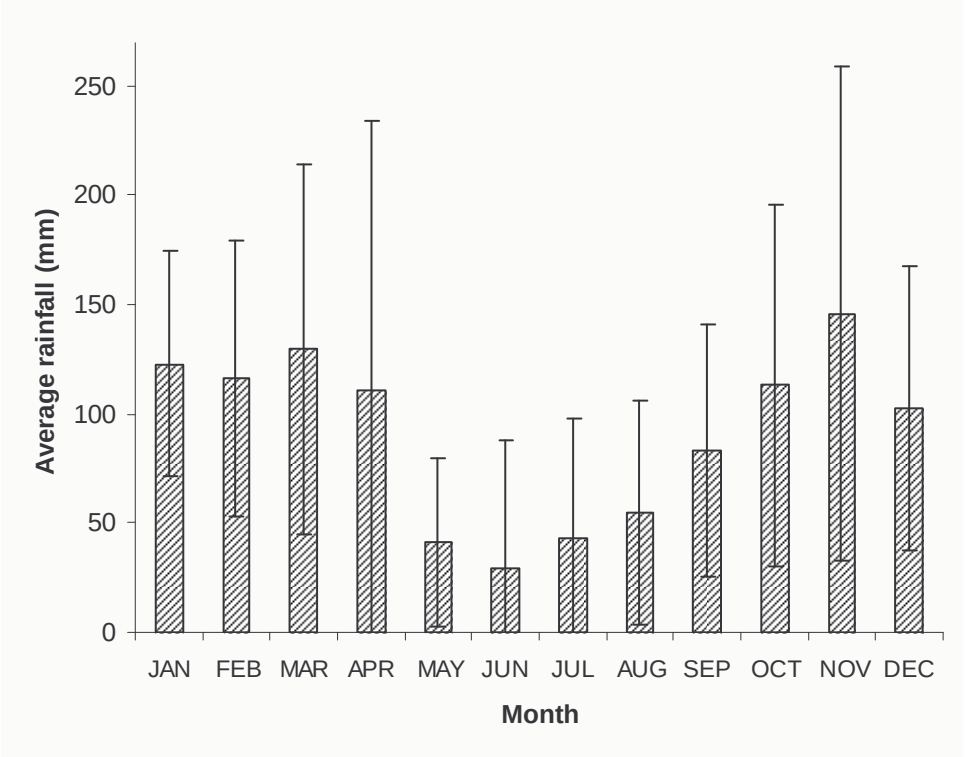

Figure 3.5: Monthly variation in rainfall for Dwesa weather station (Data from 1972 to 2005 (n=34) for weather station 0104497 2; supplied by SA weather services). Whiskers represent a single standard deviation from the average.

The images were orthorectified by an independent consultant and projected to Transverse Mercator, WGS 84, central meridian 29. The process of orthorectification led to minor shifts in some sections of the images resulting in divergences of up to 70m between chronologically subsequent images.

Using a combination of colour, texture and shape, it was possible to identify six different land cover categories with ease and consistency on all four orthorectified images, according to user defined criteria (see figure 3.6). These categories were forest, woodland, wooded grassland, grassland, extensive cultivated fields and homesteads. The first five of these were digitised by creating contiguous, non-overlapping polygon themes in a geographic information systems software programme (ArcView3.1) at the same projection as the images. This was done at a scale of 1:10 000.

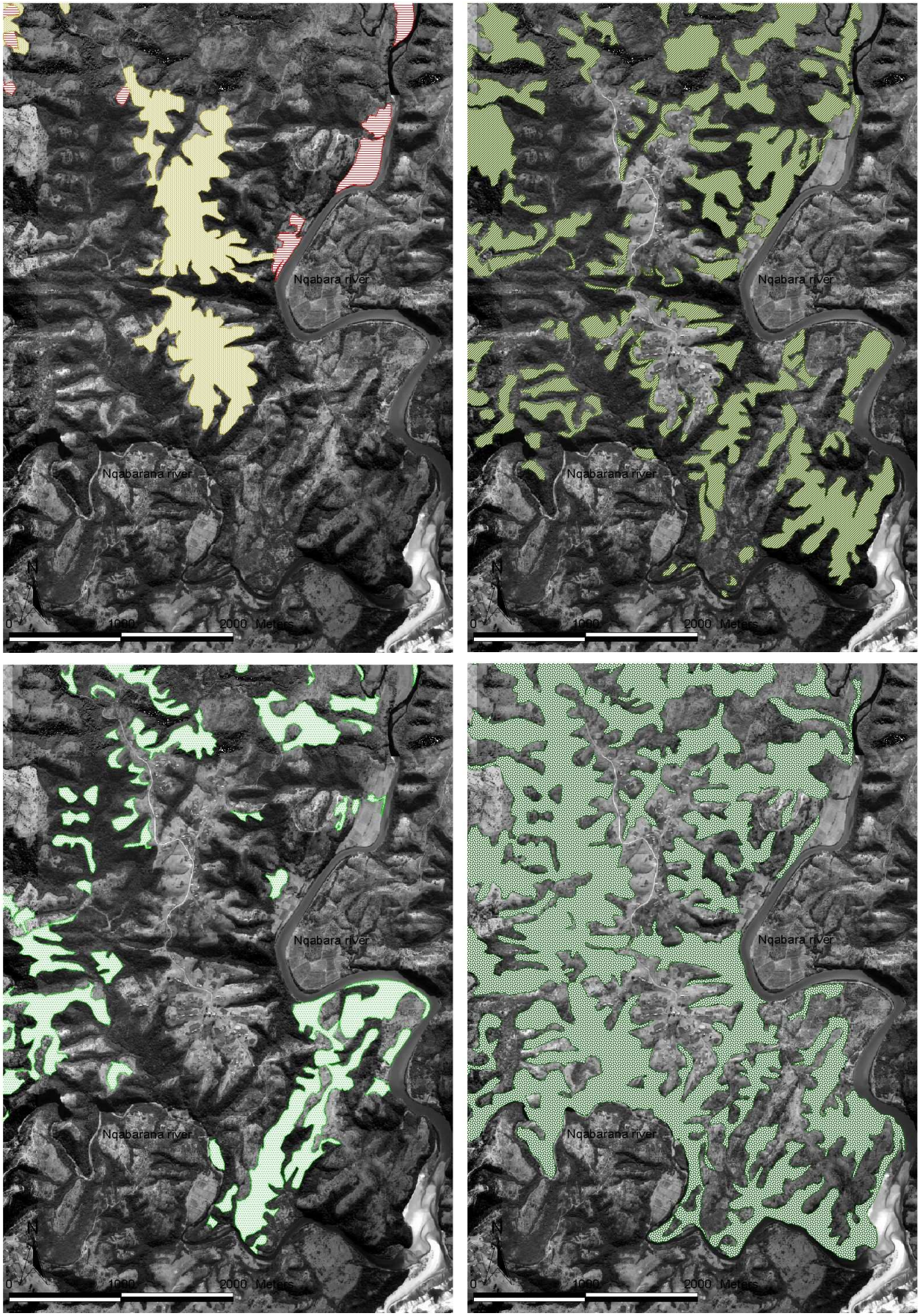

Figure 3.6: Example of orthorectified aerial photograph with polygons representing the land cover categories used in the study. The top left image shows grasslands (clear) and cultivated fields (striped), top right wooded grassland, bottom left woodland and bottom right forest. All four images shows the south eastern corner of the study area, bounded by the Nqabara and Nqabarana rivers, as visible in the 2001 orthophoto of the study area. The scale bar represents 2 000m.

Pragmatic considerations dominated both the definition of land cover categories and the criteria used to facilitate their identification on orthorectified historic aerial photograph images. They do not necessarily exist as homogeneous and discrete patches of vegetation cover in the landscape and care should be taken to distinguish these simplified land cover categories from ecological, floristic or physionomic associations that may bear similar names. Likewise, the land cover categories should be distinguished from the conceptualisations of landscape elements that people living within the landscape use to describe the landscape. In general, landscape patches are described by people in Nqabara with reference to their present or past land uses, as well as with reference to the people associated with these uses. The landscape is experienced in terms of social relationships, marked by social action and tenure organisation. It is therefore important to deconstruct the landscape categories used in the spatial analysis and relate them to concepts of landscape employed in the epistemes of other actors in the landscape.

Deconstructing land cover categories

Land cover categories were first identified on the 2001 remotely sensed image, as the land cover patterns on this image corresponded most closely to the landscape through which I moved during the course of fieldwork. Uncertainties arising from shadows or ambiguous hues or grains in the images were ground-truthed, taking into account that land cover is likely to have undergone further change over the last five years. Ambiguities in hue and grain in the images of 1961, 1972 and 1995 were categorised using the 2001 image as a frame of reference.

On the projected orthorectified images, forests were identified from their dark colour, mottled appearance as a result of heterogeneity in tree size and species as well as their position in valleys. Forests are likely to be slightly overestimated as a result of shadows on the images. The forest category used in the spatial analysis largely corresponds to subtropical forest of the Tongaland-Pondoland phytogeographical region (Cowling and Hilton-Taylor 1997). No distinction is made in the present study between the ecological subtypes of moist, medium-moist, dry and dune forest types (Midgley *et al.* 1997) or between large patches of forest and small isolated pockets of forest in valleys and along streams (Moll 1974, McKenzie and Cowling 1979). Thus pocket forests and largher forest patches were both categorised as forest (cf. plate 2). The use of the word *ihlati* (pl. *amahlati*) in Nqabara, when applied to forests in a literal sense (several figurative meanings of *ihlati* will be discussed in the chapter five), also excludes small pockets of forest from the definition. Small and isolated pockets are referred to as *utyole* (pl. *amatyole* Eng. bushes) and would not constitute named 'places' in themselves. *Ihlati* on the other hand, always constituted a named 'place', although this name was often shared with the stream running in the forest. It is possible that this distinction is one that rests upon conceptions of land use, rather than upon physical appearance. Wetland and marine vegetation were excluded in the spatial analysis.

Patches of grassland were identified by their light colour and smooth texture. They exhibited no ploughing lines and usually show smooth and rounded edges with the surrounding patches of forest, wooded grassland or cultivated areas. Some grassland patches on steep shaded slopes may have been misclassified as forests and therefore grassland is likely to be slightly underestimated. Grassland in the spatial analysis corresponds to the ecological category of mesic coastal grassland (Cowling *et al.* 1997). No distinction is made between the different grassland communities identified by McKenzie and Cowling (1979). Various words are used locally to describe different types of grassland. Open grassland on

hillcrests and ridges are referred to as *itafa* (pl. *amatafa*), but it equally describes the hill as it does the grassland (cf. plates 2 and 4). *Idlelo* (pl., *amadlelo* Eng. grazing lands) refers to any area used for grazing purposes. It is a description of land use, rather than land cover. *Induli* (pl. *iinduli,* Eng. hill) and *intili* (pl. *iintili*, Eng. valley) are used to refer to grasslands of specific topographical locations.

Patches of woodland were distinguished from forest by their smoother texture and lighter shade. These patches were often of a slim configuration along small streams or bordering forests. Wooded grassland appears lighter than woodland and with a coarser, mottled texture of dark spots and patches of wood clumps on a lighter background of the grass. The lines of old ploughing fields are often still visible through the woody vegetation. Wooded grasslands occur on and next to unploughed cultivation fields, on hillside slopes and in valleys. Wooded grassland and woodland as used in the spatial analysis, make up patches of savanna biome which together with patches of grassland and forest biomes make up the Tongaland-Pondoland regional mosaic (Cowling and Hilton-Taylor 1997). It is likely that woodland as used in this study corresponds to what Cawe and McKenzie (1989) termed scrub forest. People in Nqabara refer to areas I identified as wooded grassland, as areas that have become closed (*ivaliwe*), or that have become full (*igcwaliwe*). Reference is almost always made to *Acacia karroo* (*umnga* pl.*iminga*) as the main source of this 'filling up'. Wooded grassland is regarded as a type of grassland by McKenzie and Cowling (1979) whereas woodland is referred to as 'scrub' by Moll (1974). Woodland does not correspond to a specific word in descriptions of the landscape by people in Nqabara. They may refer to both recently and well established areas of woodland as *utyole* (bush).

Extensive cultivated fields (variously referred to as 'fields' or 'cultivated fields' in the rests of this study) can be any of a variety of light shades, with bands of parallel light and dark lines. They usually occur in clusters of which the individual blocks differ in the direction of the ploughing lines. The have relatively sharp edges and corners where they border with forest, woodland or wooded grassland. Fields that had been fallow at the time of the photograph, but on which woody vegetation had not yet established would have been identified as extensive cultivated fields. This is likely to have lead to a slight overestimation of cultivated fields.

In the spatial analysis, extensive cultivated fields refer to land cover units, as opposed to the land use units that the local notion of *intsimi* (pl. *amasimi,* Eng. ploughing field) refers to (cf. plates 9 and 12). A single patch of land cover identified as an extensive field in the spatial analysis, and distinguished from neighbouring patches through the presence of hedges and grassy verges or the direction of ploughing lines, does not necessarily correspond to a single *intsimi*. The cultivation of a single field (*intsimi* pl. *amasimi*) may be undertaken as separate units, with different parts of the field ploughed at different periods and varying directions of the ploughing lines. Topographic, climatic and homestead labour considerations may necessitate the division of a single field into such units. In the archival literature and those of other analyses, *intsimi* is variously referred to as arable allotments, arable land holdings, cultivated field site or extensive fields

Intsimi is distinguished from another type of cultivated area, *igadi* (pl. *iigadi*, Eng. homestead garden). *Igadi* is a patch of cultivated soil within the homestead site whereas *intsimi* is a removed in space from the

homestead. Extensive fields had mainly been cultivated with maize and a variety of pumpkins and squashes but wild greens also formed part of the harvest. Homestead gardens also consisted of maize and pumpkins but included a range of vegetables, most importantly various types of beans and fruit trees such as guava, banana and peach. Over the years the types of crops cultivated in homestead gardens diversified to include potatoes, sweet potatoes, cabbage, spinach, tomatoes, onions, and various types of indigenous and non-indigenous medicinal plants. The tenure of both these types of land use are linked to a homestead. The access to and use of an *igadi* or *intsimi* rests upon the condition that a homestead holds tenure over a homestead site, or *umzi* (pl. *imizi*).

Data manipulation

For the digitised polygons of the five land cover categories of forest, grassland, woodland, wooded grassland and fields, the total area occupied by each patch were calculated for each of the years 1961, 1972, 1995 and 2001. In the respective images, these five categories form mutually exclusive, contiguous units. Statistically significant differences between the patch sizes from different dates were tested using independent t-tests, and the distribution of these sizes was represented through frequency graphs or box-whisker diagrams. For each year, the total area covered by each category and the percentage of the total study area it constituted was computed, as well as the average size and size variation among patch sizes (standard deviation and frequency distribution graphs). Maps were produced for all land covers during all years, to reveal the spatial extent of land cover change.

All homesteads visible on the various images were digitised as points. Annual percentage change in the number of homesteads was calculated from this data. Comparing the number of homesteads visible in the 2001 image with the number of households enumerated in the 2001 national census (Statistics South Africa 2001) revealed a discrepancy where the number of households in the census represented only 89% of the homesteads in visible in the aerial photograph. The discrepancy could be a result of various factors:

i. conceptual divergence between the census' working definition of a household and my working definition of a homestead,
ii. an under-enumeration on the part of the census
iii. a result of some homesteads that were unoccupied during the implementation of the census, but still visible through aerial photographs.

Most likely some combination of these factors has been responsible for the discrepancy between the census data and that from the spatial analysis. It was assumed that at least some homesteads identified in the spatial analysis had been unoccupied. The number of homesteads occupied in 2001 was taken to be the median between the number of homesteads in the census and that identified in the spatial analysis. This number represented 94,5% of homesteads identified in the spatial analysis. Since no national census data were available for any other years, it was assumed that this proportion was constant in all years for which remotely sensed images were available. It is recognised that this assumption might not be flawless since it ignores the structural changes to labour migration due to changes in mine policy that have occurred during the 1970s and due to continuing declining employment opportunities for migrant labourers since the mid-1980s, that may have influenced occupancy rates. However, since no quantitative data are available on the influence of these factors on the proportion of unoccupied homesteads in Nqabara, a quantitative consideration of their influence cannot be included in this study.

Since not all homesteads and homestead gardens had clearly defined boundaries, average patch size and variation among patch sizes for these two land covers were computed from a random sample of digitised polygons of homesteads and their gardens of at least ten per cent of all digitised homestead points. The total area covered by homesteads and homestead gardens are thus based upon the average of a sample of homesteads, multiplied by the total number of homesteads visible in the respective images for each date. Therefore, unlike the five land cover categories mentioned earlier, homestead and homestead gardens are not treated as mutually exclusive or contiguous units.

To gain a measure of the change in spatial density of homesteads, a working definition of 'residential space' was employed. Residential space was defined as the minimum area that encompassed all homesteads, which may consist of multiple clusters of residential space but so that all clusters consists of more than one homestead. The definition was operationalised by generating buffers around all digitised homestead points to a radius of 190m (which was half the maximum distance between tow homesteads in any year). The total area thus generated was computed for each of the four dates, and using the unadjusted number of homesteads (from the spatial analysis), an average density of homesteads in residential space was computed for each date.

To gain an impression of the change in distance between a homestead and its cultivated field, the length of the footpaths from the centre of a village to the centre of its associated cluster(s) of cultivated fields was calculated from aerial images for 1972 (pre-Betterment) and for 1995 (post-Betterment). The averages were statistically compared using an independent t-test.

Since most homesteads were located in grassland, the area covered by effective grassland was defined as the difference between the area covered by grassland, and the area covered by the proportion of homesteads that occur in grassland. Effective grassland was computed as

$$A_{eg} = A_g - A_{hg}$$

where
A_{eg} = Effective area covered by grassland (excluding homesteads in grassland)
A_g = Total area covered by grassland (including homesteads in grassland)
A_{hg} = Area covered by homesteads in grassland

where the total area covered by occupied homesteads in grassland was calculated as follows:

$$A_{hg} = A_{avg} \times P_{hg} \times P_{hu}$$

where
A_{hg} = Area covered by homesteads in grassland
A_{avg} = Average size of a homestead in specified year
P_{hg} = Proportion of total homesteads that occur in grassland (variable for each year)
P_{hu} = Proportion of total homesteads that are unoccupied (0,945 in all years)

Land cover transformation data

Data relating only to the change in total area occupied by a given land cover type between two moments of observation, overlooks the fact that different patches in the landscape can undergo transformations in opposite directions in a given period. In any period, some landscape patches will undergo transformations from land cover type A to land cover B, while simultaneously other patches may undergo reverse

transformations from land cover B to land cover A. To be sensitive to such landscape patches in flux, spatially explicit measurements of land cover change is necessary. A patch of a specific land cover type can either remain constant or transform into any of the four remaining land cover types in any period. For each of these spatial land cover transformations in each of the three periods, a theme of polygons were created by 'clipping' the land cover category at the beginning of the period using the land cover category at the end of that period. This was done using the 'Clip' function of the Geoprocessing wizard in ArcView 3.2.

In the present case, minor errors arising form the orthorectification process, has lead to shifts of varying sizes up to 70m, from any one orthophoto to the one chronologically subsequent to it. Such shifts have a disproportionate effect on the individual transformations leading to the identification of artefactual transformations as a result of projection errors. This is aggravated by the highly irregular shape and scalloped margins of the land cover patches of Nqabara and the relatively small total size of the study area (6446ha). These artefacts can be identified by their slim shape and a shift of constant magnitude and direction of all 'clipped' polygons relative to that of the polygons from which they where produced. The artefacts are relatively more important in small patches with high circumference to area ratios, and it is impossible to quantitatively correct these. Visual inspection of the land cover transformations is necessary to account for the proportional role that artefacts played in each transformation. In some cases the artefacts were of such significance that the data they represent were judged unreliable and therefore discarded.

A qualitative way around the errors in projection and the artefacts they cause, is to examine the patches of land cover that have remained unchanged, i.e. undergone 'null-transformations', during each period. For 'null-transformations' we know that the 'clipped' polygon showing the area that did not undergo any change in land-cover over a specified period, cannot overestimate the area in which no transformation has occurred. This is because the minor shifts in projection will always result in a slight mismatch between the patches of two successive images, and therefore in a slight underestimation of the area that has remained unchanged. The total area of patches that had undergone null-transformations as well as the proportion of the specified land cover category this constituted at the end of each period was calculated. The other transformations were visually inspected and described regarding their configuration, shape of their margins, relative position regarding other land cover patches and topographical position.

Rate of change

Since the periods in between the available images were of unequal duration, the annual percentage change was calculated for a number of indicators from the spatial analysis as well as for indicators from other data sources. Annual rate of change for an indicator x was calculated using the standard expression:

$$r = 1/(T_f - T_i) * ln(x_f / x_i) * 100$$

where
r = Percentage annual change in indicator
T_f = Date in years at the end of the period
T_i = Date in years at the start of the period
x_f = Value of indicator at the end of the period

x_i = Value of indicator at the start of the period

Secondary data sources

Drawing upon data from secondary sources requires sensitivity to the context of production and the wider discourse of which these sources form a part of. The production of the sources used in this study span a number of decades and their origins vary widely, including studies commissioned by governments, in-depth academic studies by anthropologists to archival communications between inhabitants of Nqabara and Native Commissioners or magistrates. The secondary sources used in this study relate to six broad fields of interests. They are data sources relating to:

i. Historical climate data
ii. Historical and current agricultural data
iii. Historical and current data relating to labour migration and the macro-economic conditions that influence it
iv. Historical and current demographic data
v. The various historical insights provided by archival documents and files
vi. Studies of a variety of themes carried out in areas in close proximity to Nqabara in the recent history.

The South African Weather services supplied precipitation data for the rainfall station at the nearby Dwesa Nature Reserve, approximately 15km by road from Nqabara, for the dates 1972 through to the beginning of 2006 (Weather SA 2006). The average annual precipitation from this data (Figure 3.5) was consistent with averages reported by Palmer *et al.* 2002b), in historical reports on the Dwesa Nature reserve by Moll (1974, 1976), by Hammond-Tooke (1956) for that of the district of Willowvale, and in statements by foresters in documents in the files on South African Native Trust Forests in the Cape Archives Depot (CADc Undated).

The limitations and inaccuracies of historical agricultural data in the former Transkei during colonial and post-colonial times have been extensively discussed by Beinart (1991). A series of statistical reports have been compiled by Muller and Mpela (1994a, 1994b, 1994c) and published under the auspices of the Bureau for African Research and Documentation (BARD). These reports covered the topics of population, agricultural census data, educational statistics and livestock census data per magisterial district of the Transkei.

McAllister (2001) expounds the complications of measuring agricultural output among rural homesteads that cultivate arable plots of varying sizes. Complications include: a range of crops are intercropped; inter-annual variation in yields are high; people harvest on a day-to-day basis as well as on specific harvest days at the end of a season; the quality of harvest differs and crops are accordingly used for a variety of purposes including feeding domestic livestock. He proceeds to show that, as a result of insensitivities of surveys and censuses to these particulars of rural homestead production, most censuses have greatly underestimated overall rural agricultural output, in particular per hectare yields. Since the sources of agricultural output data in Muller and Mpela's (1994c) report diverge widely in their use of definitions and methods (cf. Beinart 1984 and McAllister 2001 for detailed critiques of these data sources), their data were deemed unreliable and not used in any quantitative way in the present study.

The series on livestock numbers (Muller and Mpela 1994b), and in particular on cattle numbers, is regarded as the most reliable source of agricultural data in the former Transkei (Ainslie 2002), and was used extensively in the present study. It is based on records completed by extension officers during weekly or bi-weekly dipping that took place in most villages in the Transkei since the second decade of the twentieth century (cf. plate 15). In this sense it represents a data set elicited in a relatively continuous and consistent way for an extended period. Nevertheless Ainslie (2002) showed that the act of eliciting the data was never perceived as politically neutral and herd owners in a number of magisterial districts did invent a variety ways (such as lending herds to people in neighbouring areas, or not sending the whole herd to the dipping tanks at any one occasion) to influence the number of cattle that was visible to the official gaze.

Hammond-Tooke (1956), in a report for the Natives Affairs Department, collected information and made estimations on livestock numbers for the district of Willowvale based on the 1951 census (which also formed the basis for many of the Tomlinson's report's assertions on the agricultural state of the Transkei). His estimations are in general slightly higher than those of the Bureau for African Research and Documentation (BARD) data series. Beinart (1991) and Bembridge (1987) estimations of oxen ratios for the whole of Transkei were used to estimate the composition of herds in Nqabara with that of the whole of Transkei, since no local ox ratios were available.

Lastly, small sheds at the local dipping tanks still contain a fragmented (and decaying) collection of the original dip records completed by extension workers. For Nqabara no records were available prior to 1966 and after 1994. Approximately equal amounts of missing and available data fill the period in between. Three such dip tanks serve the herds of people from Nqabara. One dip tank is used by people from villages within Nqabara only. Another one is shared between villages from Nqabara and those from neighbouring Mevana, but the two areas dip on separate days so records have been kept separate. The third dip tank is approximately equally shared by villages from Nqabara and those from neighbouring Mpume. This had to be taken into account when estimating total cattle numbers from Nqabara. Monthly dipping numbers, or average monthly dipping numbers (in the case of more entries per month) were copied from the registers. No data on the composition of herds in terms of age and sex were copied.

The record from one of the dip tanks is more complete than the other two. The fragmented trends that were visible in the data from the other two tanks correspond with trends in the first. The limited occasions on which data for all three tanks were available was used as benchmarks upon which the stylised trend in numbers (established from the records of the first dip tank) was projected. From this stylised graph, estimated numbers were read for the different years of interest. Estimates of total cattle numbers of Nqabara were used in calculating cattle density, average homestead cattle holdings, and average number of cattle per person in different years.

No specific historical data were available on the number of labour migrants from Nqabara, their labour destinations or the type of work they were doing. Contextual data were drawn from published reports (Southall 1994) unpublished accounts such as conference presentations (Donaldson 1991, Southall

1991), the Institute for the Management of Development Studies (IMDS) statistical series (Wakelin 1983) and the observations and personal comments of scholars who have worked in areas neighbouring Nqabara (cf. McAllister 1979, 2001, 2005, Heron 1990, Andrew 1992, Fay 2003a, Timmermans 2004).

Historical population data for Transkei and Willowvale were collected from the Hammond-Tooke's (1956) report to the Native Affairs Department, from the IMDS survey (Cragg 1984), and from the BARD data series (Muller and Mpela 1994a). All sources reported on *de facto* population sizes, excluding absentees due to labour migration or other reasons. These sources were used to calculate annual percentage changes in population in Transkei and in Willowvale. Census data from Statistics South Africa for Mbhashe district municipality (Statistics South Africa 1996) and Gatyana local municipality (Statistics South Africa 1996, 2001) were then used to back-cast an estimation of population numbers of Nqabara, based on the trends for Willowvale and the Transkei. The recent censuses included a range of other demographic and socio-economic indicators that were used in the interpretation of results. Census data for Nqabara on sub-place level were supplied by Statistics South Africa (2006) on request.

Population data was used in conjunction with data from other sources to compute the average number of people per homestead and the average cattle holdings per homestead for different periods.

Archival collections relating to Nqabara and Willowvale from the colonial period up to 1963 were scanned in the Cape Archive Depositories. Useful contextualising information was found in the files on Rural locations: Location 31 Nqabara (Boxes 1/WVE39, 1/WVE5/1/13 and1/WVE63), on Native Land Matters: Location 31 Nqabara (Box 1WVE/18), on South African Native Trust Forests: Location 31 Nqabara (Box 1WVE/20), Trading and other licences: Location 31 Nqabara (Box CMT509) and on Schools and Education (skooldiensstaatsleêr): Location 31 Nqabara (Boxes ERD282, ERD283, ERD285, ERD426, ERD44 and ERD45).

A number of in-depth anthropological, historical and geographical studies have been undertaken in areas surrounding Nqabara over the last three decades. Pat McAllister had worked in the village of Shixini (see figure 2.1) about 20km west of Nqabara, since the mid-1970s and has extensively explored the labour organisation in the livelihoods of homesteads, and its articulations with labour migration, with ceremonies and feasts, and with homestead agriculture (McAllister 1979, 1986, 2001). He has also paid attention to the issues concerning the impacts of the implementation on local livelihoods (De Wet and McAllister 1983, McAllister 1989). Gavin Heron (1990), a student of McAllister, worked in Shixini in 1987 and 1988 and investigated the patterns of labour organisation, specifically with regard to homestead agriculture, and the various roles of working parties and ploughing companies in the mobilisation and organisation of labour. Maura Andrew (1992) undertook a detailed historiography of homestead agriculture in Shixini, drawing on historical and archival sources, on a spatial analysis of aerial photographs and on a questionnaire survey of homesteads, undertaken in 1988/1989 in one of the villages in Shixini (Andrew and Fox 2004). Derick Fay (2003a, 2003b), worked in Cwebe, approximately 25km east of Nqabara, in the village of Hobeni, doing his fieldwork from 1999 to 2002. He focused on tenurial institutions, their role in structuring local liveliihoods and the active role that people play in shaping tenurial outcomes despite the various state attempts at intervention. Palmer *et al.'s* (2002b) study in Dwesa-Cwebe, approximately 10km southeast of

Nqabara, is a collection based upon the in-depth fieldwork, questionnaire surveys and work experience of the contributors in the area since the early 1990s. It covers a wide range of topics including historical aspects, livelihood and natural resource use and recent political struggle to regain access to, use of and possession over mainly the forests associated with Dwesa-Cwebe nature reserve. Many other studies have been conducted in the vicinity of Nqabara, but their themes are only marginal to the present study. Reference will be made to these studies where appropriate throughout the current essay.

Chapter 4: The embodiment of homestead agricultural production in the landscape

Introduction

This chapter and the next present and discuss the main research results. Both chapters follow the history of the landscape, from 1960 onwards, with sensitivity to context and local actions, in order to facilitate the study's broader goal of understanding the unfolding of the intersecting patterns of action involved in the continuous production and reproduction of landscape. As discussed in the introductory chapter, the landscape whose history I trace here, is the emergent interface or arena, where actors actively create and recreate social as well as physical structure in their environment and thereby have the potential to divert the course of pattern changes in these structures (cf. Ingold 1993b, Giddens 1984). In the present chapter I limit the discussion to the historical context associated with homestead agricultural production, and the ways in which they are embodied in the landscape. Emerging from this history I highlight patterns of repeated human practices that brings into being landscape and landscape processes at particular temporal and spatial scales. It is these patterns of repeated practices, together with the affordances they provide for subsequent action, which I discuss in chapter 6 as patterns of resonance/dissonance. In chapter five I will broaden the scope to include actions and actors involved in the embodiment of the wider grassland-woodland-forest landscape mosaic. The decision here to split the discussion of actions associated with homestead agricultural production from those occurring in the wider landscape into separate chapters, rests upon the need to commence the introduction of results with a detailed historical contextualisation. The two chapters should thus be read in conjunction with one another. In both, illuminating the interplay between local agency and macro-structural factors is integral to the process of opening-up of this history.

Although I set out from an historical emphasis in the present chapter, I will progressively attempt to bring issues of agency into sharper focus by tracing the ways in which people's actions, are central to the embodiment of local social and ecological 'structures', as well as the particular pattern that the emergence of wider political-economic 'structures' takes on in local life. In chapter five the emphasis will have shift further to include the various ways in which people have been involved in the production of meaning of their own actions as well as those of others, which importantly also includes actions associated with the landscape itself. The emphasis is thus on history, but in such a way that progress is made toward the uncovering of the focal point where social action and the construction of meaning emerge co-constitutively with landscape and social institutions, which will be the task of chapter six.

Bringing the history of actors and their actions under close scrutiny so as to relive the moments of emergence of both landscape and social institutions cannot escape partiality and positionality on the part of the storyteller. In its asking of questions regarding causality and consequence, this chapter represents one of a range of possible historiographies of the emergence of homestead agricultural production in the landscape. Like any historiography, it is a deliberate act of representation which exercises power over the meanings and interpretations that are to unfold in the course of its telling. In presenting the history of extensive cultivated fields and homestead gardens in Nqabara, I attempt to keep in the spotlight, the social actors and the agency with which they perceive, interpret and respond to structural factors, as well as simultaneously recreate certain social structures. The task is complicated in its aim to interpret a set of data -incomplete and partial in themselves- from diverse epistemic origins such as spatial analysis, analyses of other scholars, reports,

censuses, archival documents and the memories of those who live in the landscape. I hope to show however that, the story I present forms a coherent and compelling version of the agents and their agency that have been central to the bringing to life of the landscape and of social institutions, throughout the period covered in the study.

Several in-depth anthropological studies have paid attention to homestead agricultural production in the communal rural areas of the former Transkei and Ciskei with regard to historic trends in production (Andrew 1992, Beinart 1982, 1989, 1991, Bundy 1979,), to the ways in which the labour requirements of agricultural production are met (Heron 1990, McAllister 2001), to the interrelationship of agricultural production with long-distance labour migration (McAllister 1979, 1986, 1989), to its articulation with rituals, feasts and ceremonies as well as to its interaction with state intervention projects and practices (Fay 2003a, 2003b). A number of fundamental insights built around the notion of 'building the homestead' (cf. McAllister 1979, 2001) should serve as guideline for the present discussion.

For homestead agricultural production to be properly understood, it should be seen as a set of related actions within the broader act of 'building the homestead'. The pattern of agriculture which a homestead engages in depends on its articulation with a range of other social actions which also play a role in the building of the homestead. The notion of building the homestead shows parallels with Ingold's (1993b) description of the taskscape. The complex of the building of the homestead is constituted by the practices of situated actors, as well as the conditions and consequences of these practices. For this reason, the bodies of actors, as well as the landscape, can be seen as the emergent patterns of the taskscape of building the homestead. These actions include various sets of material productive actions as well as symbolic or social relational actions, such as i) expanding the number of descendents of the homesteads, ii) building infrastructure in the homestead, iii) fulfilling social and ceremonial obligations within the *ilali* (cf. plates 3 and 5), and iv) expanding the livestock herds of a homestead amongst others (McAllister 1986, 2001).

The material aspects of 'building the homestead' links homestead agricultural production closely with an enduring institution which ties local livelihoods to the urban-industrial sector through long-distance labour migration. The tenurial foundations of accessing and using land in the process of building the homestead, requires attention to formal and informal tenure arrangements. The several normative social institutions involved in the 'building of the homestead' structure the patterns of investment and consumption wherein a homestead engages. However pragmatic these material aspects of building the homestead may be, the actions that constitute them represent the outlining, and re-outlining of meaning in the landscape. It is for this reason that what we categorise as material, is never devoid of symbolic meaning, and what we regard as symbolic aspects of 'building the homestead' always involve some material or pragmatic considerations (see figure 4.1).

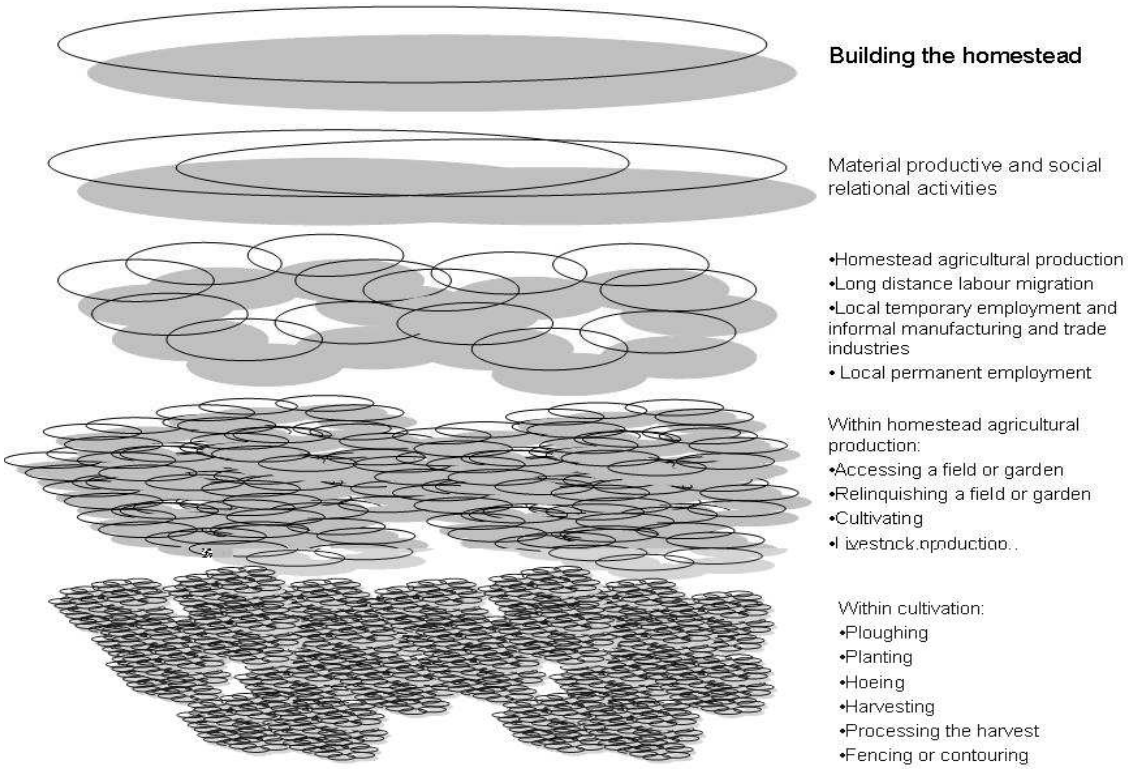

Figure 4.1: Diagrammatic representation of the position of homestead agricultural production within the complex of social institutions that constitute 'building the homestead' (cf. McAllister 1979, 2001). The interplay between shapes (actions) and shadows (meaning) represents the inseparability of actions from meanings. The overlap between shapes aims to illustrate how analytical separation of actions may not be supported by such separation in practice. Similarly, the hierarchical representation in the figure represents an analytical abstraction. In practice, the overlap between actions from various scales, blur the hierarchical distinction visible in this figure.

Homestead agricultural production in 1961

The distant perspective of remotely sensed data

Looking at the agricultural landscape from the perspective of a spatial analysis of an orthorectified aerial photograph taken in 1961, the area covered by extensive cultivated fields was 1616ha, or 25,1% of the study area (table 4.1). According to regulations in the 1940s the maximum permissable size of a field site in Willowvale was 5 morgen (4,28ha) (CADb Undated) but it is likely that only a few families managed to cultivate an area of such an extent. The 1951 census estimated the average field size of homesteads in Willowvale to be 8-10 acres (3,24ha to 4,05ha) (Hammond-Tooke 1956). Bembridge (1987, quoted in Heron 1990) estimated that a viable size for an arable allotment of an average homestead in rural Transkei in the 1980s was approximately 4ha. The average size of a cultivated patch in Nqabara, as identifiable on the 1961 orthorectified aerial photograph is however only 2,11ha (SD=1,31ha). 763 such cultivated patches could be identified on the aerial photographs (figure 4.2).

Table 4.1: Area covered by extensive fields and average field patch size in Nqabara, 1961 to 2001.

Year	Number of occupied homesteads[a]	Total area covered by extensive fields (ha)	Average patch size (ha)	p-value[b] for average patch size	Number of patches	Number of patches per homestead
1961	478	1616	2.11		766	1.60
1972	687	1457	2.79	<0.01	522	0.76
1995	802	347	1.58	<0.01	220	0.27
2001	885	294	0.91	<0.01	322	0.36

[a] Occupied homesteads refer to homesteads that are being dwelt in at a particular point in time. The median of the reported number of homesteads in Nqabara by the 2001 census (836) and the number of homesteads visible on remotely sensed images in 2001 (936) was assumed to be the best available representation of occupied homesteads. This represented an occupancy rate of 94,5% of all homesteads that are visible on the 2001 aerial photograph. Since no other data on occupancy rate was available, this rate was assumed to have stayed constant across all years.

[b] p here refers to the level of significance in a single sided Student's t-test among two variables of independent samples, and should be interpreted as the probability that the reduction/increase in average size can be attributed to chance.

The average size of cultivated patches is an indicator based on land cover and caution must be applied before relating it to the average size of the total area over which a homestead holds tenure for cultivation purposes, which is an indicator of land use. This is because the total area over which a homestead may hold tenure for cultivation purposes (ignoring for a while the contribution of homestead gardens) may be divided into separate units. Firstly, the cultivation of a single field (*intsimi* pl. *amasimi*) is often undertaken as separate units, with different parts of the field ploughed at different periods and varying directions of the ploughing lines (McAllister 2001). Topographic, climatic and homestead labour considerations may necessitate the division of a single field into such units, which on their part are likely to be identified as separate 'cultivated patches' in a spatial analysis. Secondly, some homesteads may have access to more than one *intsimi*, as a result of different homestead members holding tenure over their own *intsimi.* Although formal local tenurial arrangements specified that only a homestead head may hold tenure over an *intsimi*, in practice wives and sons of homestead owners sometimes did hold tenure over their own *intsimi*, in addition to the *intsimi* of the homestead head.

For this reason it seems safer to assume that the average size of the total area of cultivation sites over which a homestead had access to in 1961 was somewhere between 2,11ha (from the spatial analysis) and 4,28ha (maximum permissable size according to historical documents). The individual fields were clustered in roughly 10 loose aggregates of between 40ha and 260ha. These clusters were located in open valleys, in flood-plains along river ox-bows and sometimes on open hill-tops and slopes. Each aggregate was associated with one or two villages and some villages had two such aggregates (figure 4.3).

Not all homestead gardens had clearly visible boundaries. From a random sample of those homesteads of which the boundaries of homestead gardens are clearly visible, the average size of homestead garden in 1961 was 4105m^2 (SD=3072m^2) (figure 4.4). This is considerably larger than the 1948m^2 that Andrew (1992) documented for Shixini in 1962.

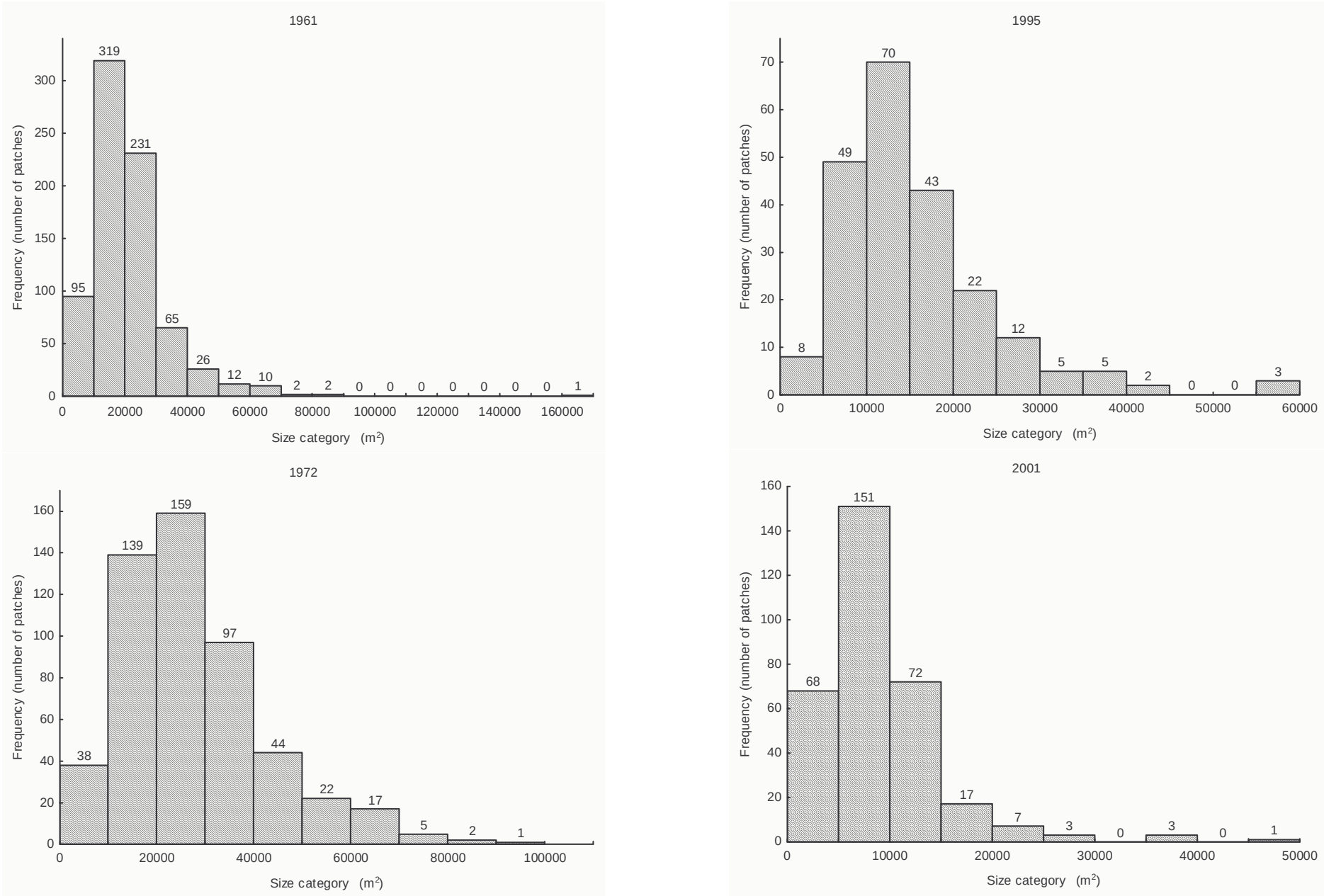

Figure 4.2: Frequency distribution of patch sizes of extensive cultivated fields in Nqabara, 1961 to 2001.

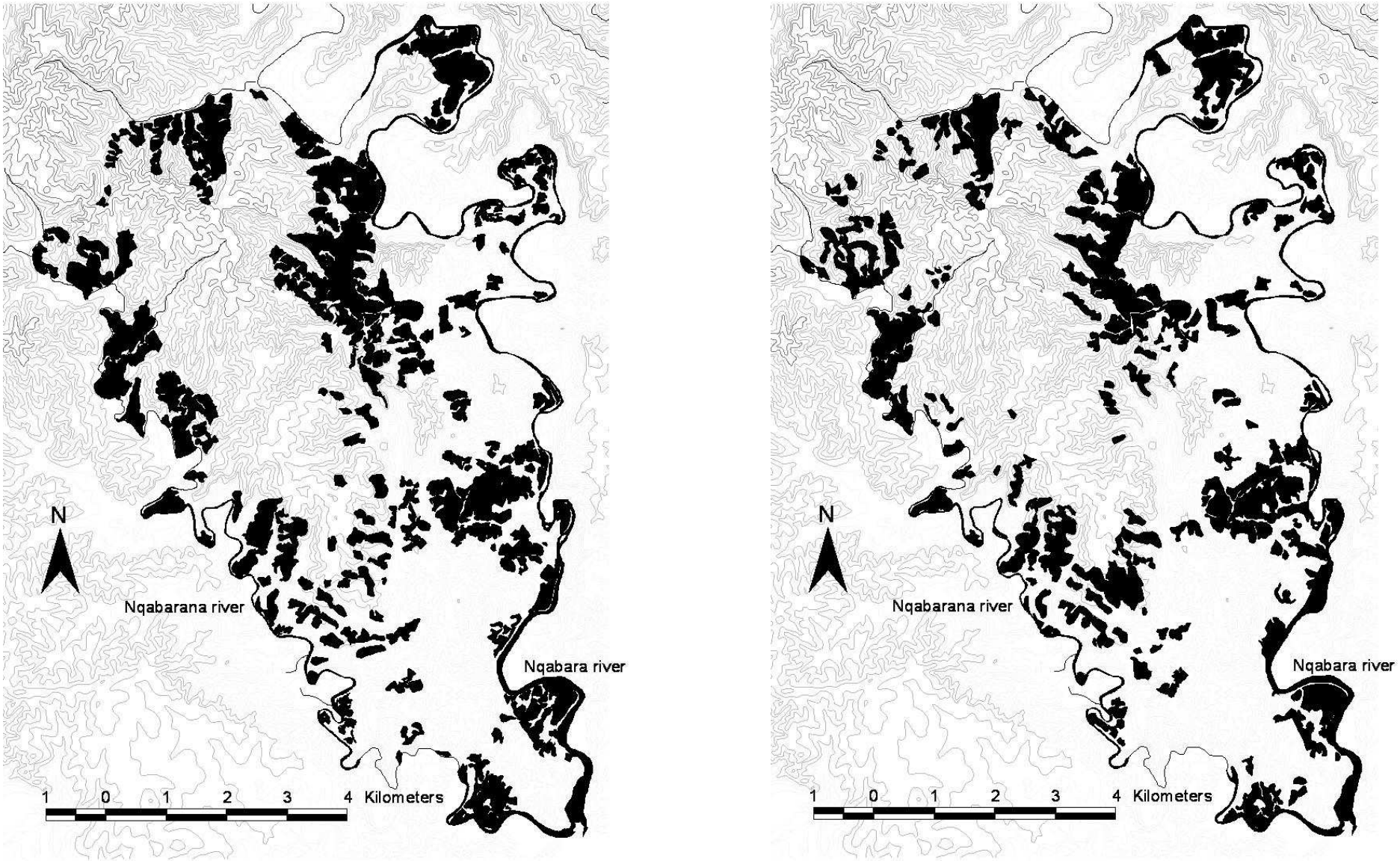

Figure 4.3a: Map showing cultivated fields in Nqabara 1961 (left) and 1972 (right). Relief lines represent 20metre intervals. Figure continued on overleaf.

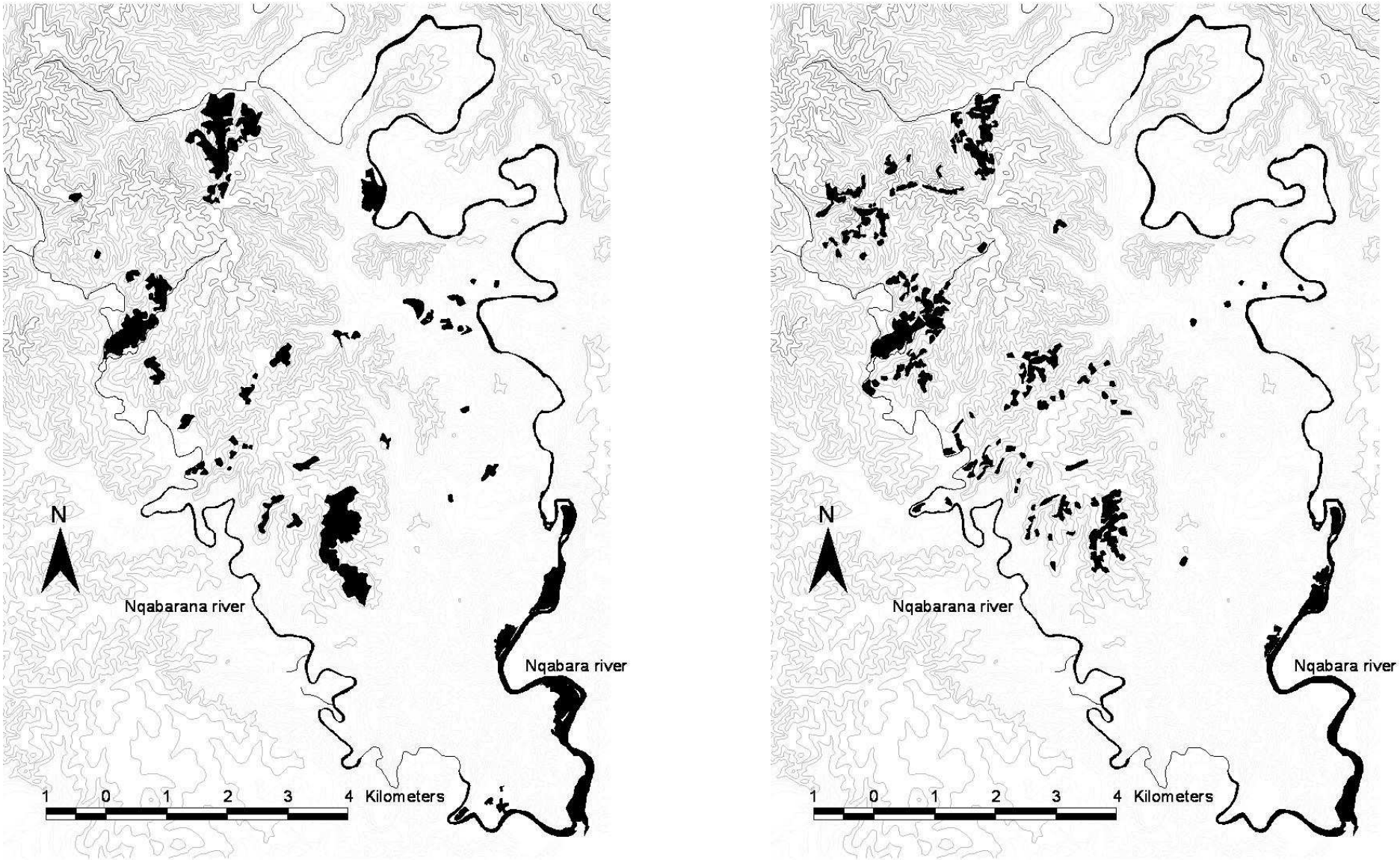

Figure 4.3b: Map showing cultivated fields in Nqabara 1995 (left) and 2001 (right). Relief lines represent 20metre intervals.

Out of eighty interviews in which the topic of garden cultivation discussed, only five homesteads (6% of the sample) did not cultivate a homestead garden in 2005. Since no information regarding the percentage of homesteads cultivating gardens was available for other periods, an estimate of 94% was applied to other eras as well. Given a total of 478 occupied homesteads, homesteads gardens contributed a further 185ha or 2,86% of the study area to homestead agricultural production (table 4.2). Combined, homestead gardens and extensive cultivated fields covered 1800ha or 27,9% of the study area in 1961 (table 4.3).

Table 4.2: Area covered by homestead gardens and average sizes of gardens and homestead sites in Nqabara, 1961 to 2001.

Year	Number of occupied homesteads	Number of homesteads in sample	Average size of garden (m^2)	Average size of homestead (m^2)	Total Area covered by homestead gardens (ha)[a]	Garden as percentage of homestead (%)
1961	478	92	4105	6472	185	63.4
1972	687	80	5706	6678	368	85.4
1995	802	107	3081	4450	232	69.2
2001	885	136	2581	4003	215	64.5

[a] Assuming that in all years, 94% of occupied homesteads cultivate a garden

Table 4.3: Combined area under cultivation, homestead gardens and extensive cultivated fields in Nqabara, 1961-2001.

Year	Area covered by homestead gardens (ha)	Area covered by extensive fields (ha)	Combined area of homestead gardens and extensive fields (ha)	Combined area of homestead gardens and extensive fields (%)
1961	185	1616	1800	27.9
1972	368	1457	1825	28.3
1995	232	347	579	9.0
2001	215	294	509	7.9

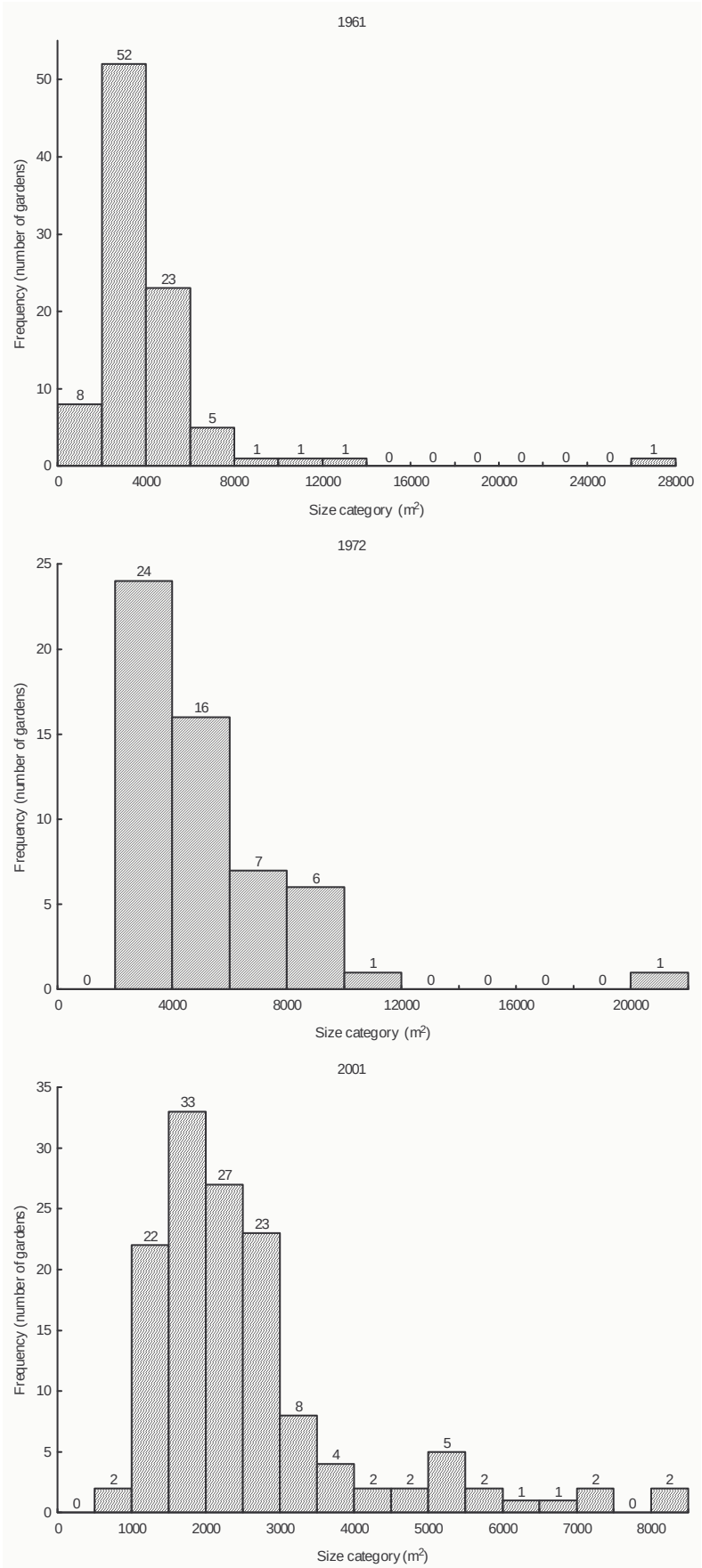

Figure 4.4: Frequency distribution of homestead garden sizes in Nqabara, 1961 to 2001. Figures represent a sample of total homesteads in each year. The sample size and percentage of all homesteads it represents is 92 (19%) for 1961, 80 (12%) for 1972 and 136 (15%) for 2001.

Articulations with labour migration

The perspective provided by a spatial analysis of remote sensed-data provides relatively few means to establish which actors and patterns of actions had been at play in the emergence of the spatial extent and configuration of cultivated fields. In order to do this, it is necessary to pay attention to the context of homestead production within the complex of 'building the homestead', and to follow its articulation with the other aspects of building the homestead, such as long distance labour migration, land tenure and homestead investment and consumption patterns.

The interlocking of homestead agricultural production and long-distance labour migration represents a combined strategy of the homestead to reduce its vulnerability and retain a degree of autonomy in the face of continuous and variegated attempts by authorities to intervene in the nature of rural life (Beinart 1982). By 1961, long-distance labour migration had been thoroughly institutionalised for several decades (Beinart and Bundy 1987, Bundy 1979, Mayer 1980). The wages earned by migrant labourers had over the course of the twentieth century been necessary to enable homesteads to render tax to colonial authorities, to purchase domestic and agricultural implements, to invest in children's education as well as in livestock through cash purchases. But increasingly wages also provided means for the homestead to invest in homestead infrastructure through purchased materials such as wire-fencing, corrugated iron roof-plates, storage tanks for rain-water and harvested produce (McAllister 2001). Apart from providing access to cash for investments into agriculture, long-distance labour migration has important consequences for the pool of labour that is available to homestead to perform agricultural activities. In the absence of key individuals, both within the homestead and within the neighbourhood, each homestead is presented with a diminished pool of labour to draw upon during the periods of the agricultural season when labour requirements peak. Various flexible ways of mobilising labour for agricultural purposes have arisen and evolved in this context (cf. Heron 1990, Kuckertz 1984, 1985, McAllister 2001). Long-distance labour migration also articulates with local tenure arrangements in complex ways. There are various ways in which a homestead head can, in his absence, retain access and tenure holding over firstly his homestead site, and secondly arable allotments.

These three aspects of homestead agricultural production: its interrelationship with the urban-industrial economy, the local organisation of homestead productive labour and the tenurial arrangements that underlie a homestead's access to and use of sites for cultivation, will guide the search for historical indicators while at the same time providing some means to their contextual interpretation.

The 1960s, and the emergence of the South African economy from a decade of depression, marked the gradual beginnings of an upswing in employment opportunities for long-distance rural migrants in the urban industrial and mining sectors over the next two decades. Records from the chamber of mines suggest that between around 45% of African males and 2% of females between the ages of 15 and 64 from the Transkei had been actively involved in labour migration in 1960 (cf. Muller and Mpela 1994a). Southall (1994) estimates that between 1963 and 1968 the annual number of migrants recruited from Transkei for work in South Africa rose from 115 777 to 425 230. It is also important to remember that the district of Willowvale in general, and in particular its so-called Fingo locations, had been preferred areas from which labour agents sourced labour for South African mines and industries. In Nqabara, only one respondent out of 84 homesteads that were asked during semi-structured interviews, stated that no member of the homestead had ever worked as a labour migrant during the homestead's existence. The average number of years that a male

migrant spent away from home on labour migration is relatively high 28,3 years (SD=10,5 years) and suggest that labour migrants from Nqabara had relatively stable access to wage income. Apart from wage income, homesteads had access to cash through old age pensions of retired labour migrants, and gradually, commencing from the proclamation of legislation in 1965, also through old age pensions for rural Africans (De Wet 1995).

Oral accounts of this period suggest that it had been one in which infrastructural improvements by means of purchased materials started to spread more widely among homesteads. These purchased infrastructural investments in homesteads included tin roofs, tanks for storing water and produce, wire fencing and fence poles. Expenditure on non-infrastructural investments, through the purchase of livestock medicine, fertiliser, insecticide for vegetables or through the payment for local services such as building, thatching and fencing probably also increased. The greater access to more secure and higher wages seem to have emerged in the relatively rapid growth in the number of homesteads in Nqabara.

From the aerial photographs, and assuming a 94,5% occupancy rate of visible homesteads (cf. chapter three for discussion of occupancy rates), the number of homestead grew from 478 in 1961 to 687 in 1972 at an annual rate of 3,29% (table 4.4). The estimated *de facto* rural population grew from 2492 to 2722 during this period of just over a decade (figure 4.5), which resulted in the average *de facto* homestead size (excluding absentees on labour migration) for Nqabara (see methods for discussion of calculations) declining from 5,2 to 4,0 people per homestead (table 4.4). Consequently, one can assume that homestead labour available for domestic tasks decreased from 1961 to 1972.

Table 4.4: Population and homestead growth in Nqabara from 1961 to 2001.

Year	Estimated *de facto* population[a]	Homestead numbers[b]	Average *de facto* homestead size	Annual % growth of population	Annual % growth of homestead numbers
1961	2492	478	5.2	-	-
1972	2722	687	4.0	0.80	3.29
1995	3203	802	4.0	0.71	0.67
2001	3329	885	3.8	0.64	1.63
Overall	-	-	-	0.75	1.54

[a] Based upon linear population growth (y= 20.917x – 38 526) (see figure 7) calculated by extrapolating from the 2001 census data for Nqabara (Statistics SA), using the average annual population growth of the district of Willowvale from 1961 to 1980 (Muller an Mpela 1994a), and the average annual population growth of Mbashe municipality from 1996 to 2001 (Statistics SA).

[b] Calculated from aerial photographs assuming that the proportion of occupied homesteads for 2001 (89%) have been constant since 1961.

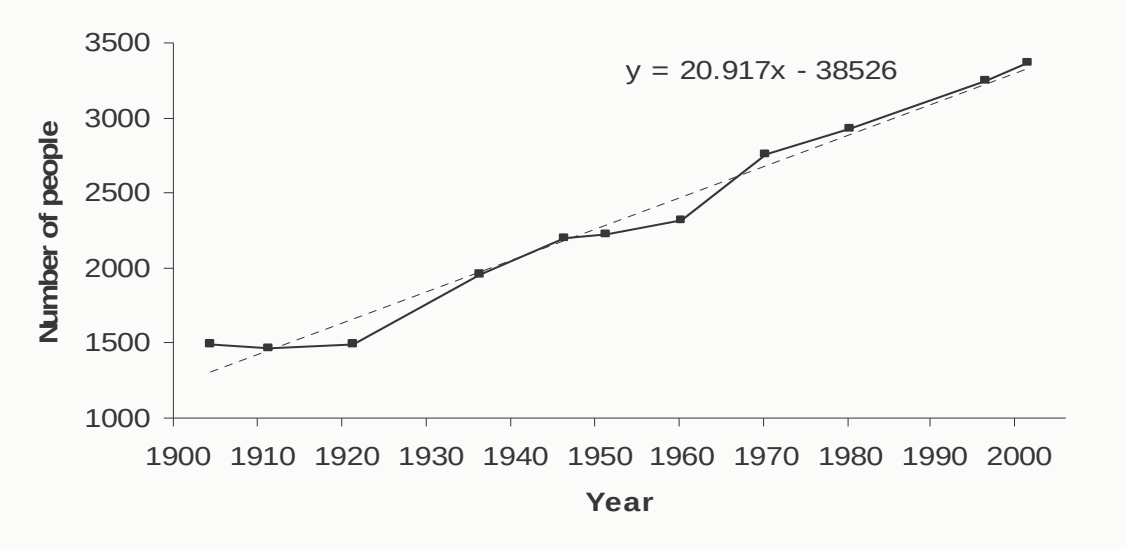

Figure 4.5: Estimated population growth of Nqabara from 1904 to 2001 (based on extrapolations from data by Muller and Mpela 1994a, from 1904 to 1980 for Willowvale, and by Statistics SA 1996 and 2001 for Mbashe municipality and Nqabara ward).

Relatively few official sources exist on the extent of inter-household cooperation and labour sharing arrangements that had existed in Nqabara at the time. The best one can do is to assume that the situation in Nqabara were largely similar to that in nearby Shixini, in which labour sharing arrangements was widely documented by Heron (1990) and McAllister (1979). In contrast to the situation described by McAllister (2001) in Shixini during the mid-1970s, in most interviews in Nqabara, the male labour migrant of a homestead did not specifically plan his return during holidays to coincide with ploughing. Instead the main purpose of his visit was to re-engage in local social life through various activities which make out the complex of 'building the homestead', including investment in livestock and infrastructural improvements in the homestead, holding ceremonies and feasts to 'make known' to the neighbourhood, the homestead, its inhabitants (whether physically or spiritually alive) and their social statuses in life. Discussions in semi-structured interviews, regarding the ability of a homestead to continue its tasks of cultivation in the face of absentees on labour migrants, suggest that during the periods of intense demand for agricultural labour (i.e. during the initial ploughing by oxen, when especially male labour is in high demand as well during the height of the growing season when both male and female labour for hoeing is in great demand), homesteads of various social and economic statuses had been successful in organising and mobilising agricultural labour, in most cases without the assistance of the absent labour migrant.

Respondent's accounts of the labour organising process concurred with the more in-depth analyses of Heron (1990), Kuckertz (1984, 1985), and McAllister (1979, 1986, 2001). Various formal and *ad hoc* forms of mutual assistance existed. Homesteads that were endowed favourably with oxen would mobilise labour for agricultural activities on the basis of a subsequent reciprocal lending out of their oxen to those homesteads that had assisted them with manual labour. This occurred in the form of long-standing kin-based ploughing companies (*inkampani*) or on more *ad hoc* neighbourhood based work parties. Homesteads that were not greatly endowed with either oxen for draught labour or persons for manual labour, mobilised labour in the form of *ilima,* whereby traditional beer was brewed and/ or a meal cooked (sometimes purchased alcohol and tobacco were also included as compensation) and provided to those who had provided labour for a day's work (generally from morning until mid-day).

Access to tractable labour

With regard to tractable labour, overall cattle numbers for the whole of Willowvale district experienced an increase over the first half of the 1960s from 62 492 (45,5 cattle per km^2 or 0,94 cattle per person) in 1959/60 to 69 485 (50,5 cattle per km^2) in 1962/63 (annual increase of 3,5%) (Muller and Mpela 1994b) (figure 4.6). Dip records from the three dip tanks in Nqabara are available from 1966 onwards but they are fragmented and require the computation of estimated totals. Such an estimation suggests that Nqabara had around 3 800 cattle (59,0 cattle per km^2 or 1,46 cattle per person) in 1966 (table 4.5). This corresponds to a general pattern that coastal wards of the former Transkei, with their higher average levels of precipitation, have a slightly higher average density of cattle, and agricultural output, than inland wards (Beinart 1991). The number of cattle fell marginally (to 85% of pre-drought totals) after a drought in the latter half of 1968 and 1969 but had recovered again by 1972.

The average number of cattle per homestead, assuming all homesteads owned some cattle, was 6,6 in 1966 and reduced to 5,1 in 1972, as a result of increases in the number of homesteads (table 4.5). Beinart (1991) estimates that the percentage of homesteads without cattle (for the whole of rural Transkei) increased from between 25% and 35% in the 1940s, to 45% in the 1970s and probably more than 50% in the late 80s. Andrew's (1992) data for Shixini, based upon percentage of homesteads without cattle kraals (from aerial photographs) contradicts this trend and shows that the percentage of homesteads without cattle remained relatively stable between 20% and 30% from 1942 to 1982. One can assume that at least some homesteads that had a kraal at the time may not have had any livestock and kept the kraal in the hope of rebuilding their herds at some point in the future, which would mean that Andrew's (1992) estimation of percentage cattle ownership may be a slight overestimation. McAllister (2001) speculates that Shixini was probably relatively unique in the high proportion of homesteads that were cattle-owning, possibly due to the conservative ideology and practice of homesteads in the area. Timmermans (2004) estimation for Ntubeni in 1999, that as many as 62% of households still owned some cattle lies somewhere between that of Beinart (1991) and Andrew (1992)

The divergences between different scholars' estimations of oxen ratios, and the general paucity of data on herd composition in the former homelands (Ainslie 2002) complicate the interpretation of overall cattle numbers with regard to their significance for household cultivation. Bembridge (1987) found in three different samples in the Transkei that on average oxen constituted no more than 14 percent of household herds. In contrast, Hammond-Tooke (1956) estimated in the 1951 livestock census in Willowvale that 47% of the total herd in Willowvale consisted of oxen. Although data from the 1951 census are believed by some authors to be overestimations to suit specific political interests (Ellis-Jones 1991) I will use this latter estimation as a maximum estimate of oxen ratio and therefore a proxy for hometead access to tractable labour. Furthermore I will use Beinart's (1991) estimations of the percentage of homesteads owning some cattle (percentage of homesteads without cattle increased from 35% in 1966 to 45% in 1972 and 50% or more in 1995 and 2001 (table 4.5)), in this study as a minimum assumption. This leads to an estimated average herd size among those homesteads that do own cattle, of between 10 and 12 cattle per homestead in 1966. If we assume that ploughing companies consisted of two to three homesteads, each with five to six oxen per cattle-owning homestead, oxen numbers would have been fairly adequate and such ploughing companies therefore also relatively stable. Ploughing companies involving four or more homesteads were relatively unstable in composition due to the high workload on oxen and humans alike, during the limited days available for

ploughing from October through to January (cf. McAllister 2001). The homesteads who could only make relative small labour (manual or tractable) contributions to the ploughing company, and therefore had their fields ploughed last, faced many disincentives to staying in the ploughing company and often sought other mechanisms to secure labour for the ploughing of their fields (Heron 1990). Some scholars have suggested that cattle ownership patterns became further concentrated through the 1970s (Beinart 1991) and 1980s (Andrew 1992) which would have lead to a marginal reduction in oxen per cattle-owning homestead.

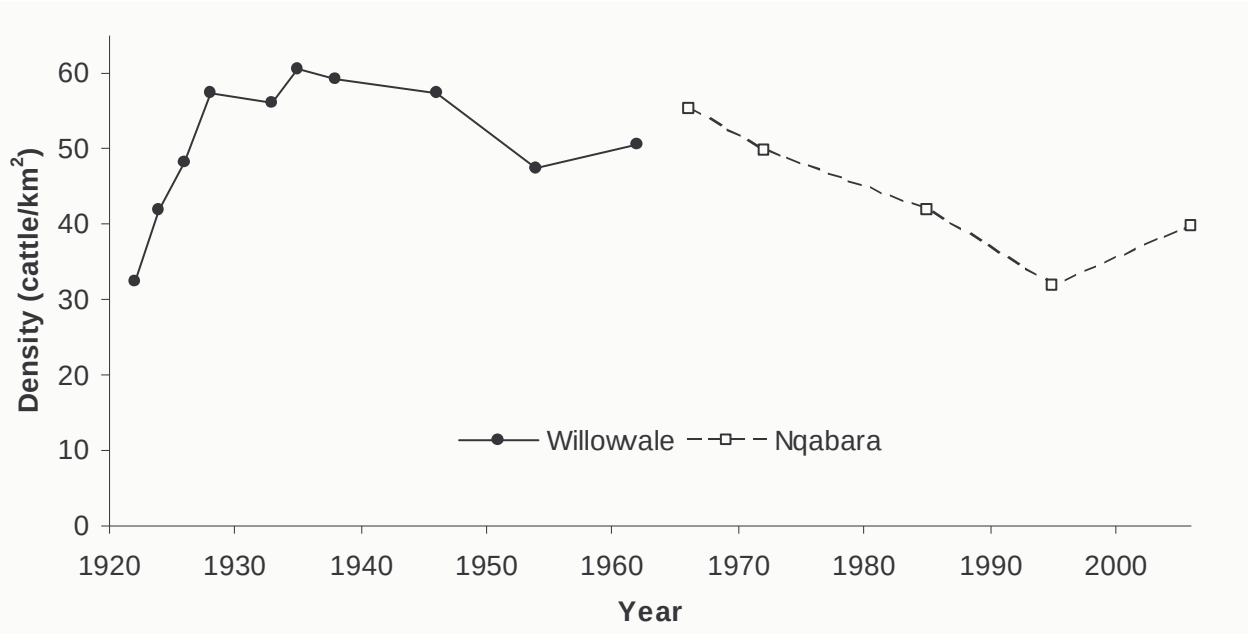

Figure 4.6: Estimated cattle densities for Willowvale (1922 to 1962) and Nqabara (1966 to 2006). Data for the whole of the district of Willowvale is taken from the report by Muller and Mpela (1994b) while data for Nqabara is taken from local dip records located in the small sheds at each dip tank. Since the two data sources provide information over diverging dates, direct synchronic comparison is not possible. However, converting the data to stocking densities facilitates comparison.

Thus far I have demonstrated that during the 1960s, homestead access to cash resources, through the wages earned by labour migrants as well as through government old-age pensions, grew in real terms per homestead as well as in terms of the total number of homesteads having access to such cash resources. Furthermore I have shown that a sharp growth in the number of homesteads and the concurrent reduction in the number of people per homestead, have placed increased pressure on homestead labour resources, both in terms of manual and tractable labour. What then has been the influence of these factors in the emergence of homestead agricultural production in the landscape?

Table 4.5: Cattle numbers, homestead numbers and population size in Nqabara 1966 to 2006.

	Estimated total number of cattle[a]	Estimated *de facto* population[b]	Number of homesteads[c]	Cattle per person (using *de facto* population)	Cattle per homestead (all homesteads)	Oxen per homestead (all homesteads)[d]	Estimated proportion of homesteads owning cattle	Cattle per cattle-owning homestead	Oxen per cattle-owning homestead	Cattle density (cattle/km^2)
1966	3800	2597	573	1.5	6.6	3.1	0.65	10.2	4.8	59
1972	3500	2722	687	1.3	5.1	2.4	0.55	9.3	4.4	54
1995	2000	3203	802	0.6	2.5	1.2	0.50	5.0	2.3	31
2006	2800	3434	953	0.8	2.9	1.4	<0.50	<5.9	<2.8	43

[a] Based on an estimation which applies an extrapolation of the main trends in cattle numbers for Nqabara dip tank to the those of Nqabarana and Ngwane, and combines the data for all three into a stylised graph for total cattle numbers of the study area (Figure ?).

[b] Based upon linear population growth (y= 20,917x – 38 526) (see figure 7) calculated by extrapolating from the 2001 census data for Nqabara (Statistics SA), using the the average annual population growth of the district of Willowvale from 1961 to 1980 (Muller an Mpela 1994a), and the average annual population growth of Mbashe municipality from 1996 to 2001 (Statistics SA)

[c] calculated from aerial photographs assuming that the proportion of occupied homesteads for 2001 (89%) have been constant since 1961.

[d] Assuming that oxen constitutes 47% (Hammond-Tooke 1956) of the herd throughout the period covered.

Rising inequality in homestead agricultural production, the period from 1961-to 1973

Spatial trends in homestead production

From the 1972 aerial photograph, it is apparent that extensive cultivated fields constituted 1457ha (22,6% of the study area), a reduction of 159 ha from what was the case in 1961 (0,94% annual reduction) (table 4.1 and 4.6, figure 4.2). Surprisingly however, the average size of an identifiable cultivated patch increased from 2,11ha to 2,79ha during this period. Using a one-sided, Student's t-test for independent samples, this increase in average size is statistically significant at a confidence level of 99%. Thus, while some homesteads may have shifted their resources towards more intensive homestead garden-based agricultural production, it is possible that during the same period, other homesteads may have expanded their extensive agricultural productivities. The number of identifiable fields decreased from 763 to 524, despite some isolated new cultivated fields that were established on what was wooded grassland and grassland in 1961.

Table 4.6: Percentage annual change in key indicators of homestead agricultural production in Nqabara, 1961-2001.

Period	Annual change in homestead garden size (%)	Annual change in area covered by homestead gardens (%)	Annual change in extensive field patch size (%)	Annual change in area covered by extensive fields (%)	Annual change in combined area under cultivation (%)
1961-1972	3.0	6.3	2.5	-0.9	0.1
1972-1995	-2.7	-2.0	-2.5	-6.2	-5.0
1995-2001	-3.0	-1.3	-9.1	-2.7	-2.2
Overall	-1.2	0.4	-2.1	-4.3	-3.2

During the same period, the average size of a homestead garden increased from 4105m^2 to 5706m^2 (SD=3124m^2) (table 4.2), an increase that is statistically significant at a confidence level of 90%. The number of occupied homesteads increased to 687 which means that the total area covered by homestead gardens increased to 368ha (5,72% of study area) (assuming that 94% of homesteads had cultivated a garden) in 2001. This doubling of the area occupied by homestead gardens means that homestead agricultural production output in terms of the total area cultivated (homestead gardens and extensive fields combined) remained almost unchanged (from 1800ha in 1961 to 1825ha or 28,3% of the study area in 1972) despite the reduction in the area under extensive field cultivation. Given the increase in homestead numbers over this period however, the average per homestead area under cultivation did decline during this period. Homestead gardens as percentage of homestead size grew from 63% in 1961 to 85% in 1972 (Figure 4.7). Overall one can deduce that during this period, homesteads had undertaken a shift in labour and capital investment patterns from the cultivation of extensive fields to that of intensive homestead gardens. This shift has been well documented by Andrew (1992) and Andrew and Fox (2004).

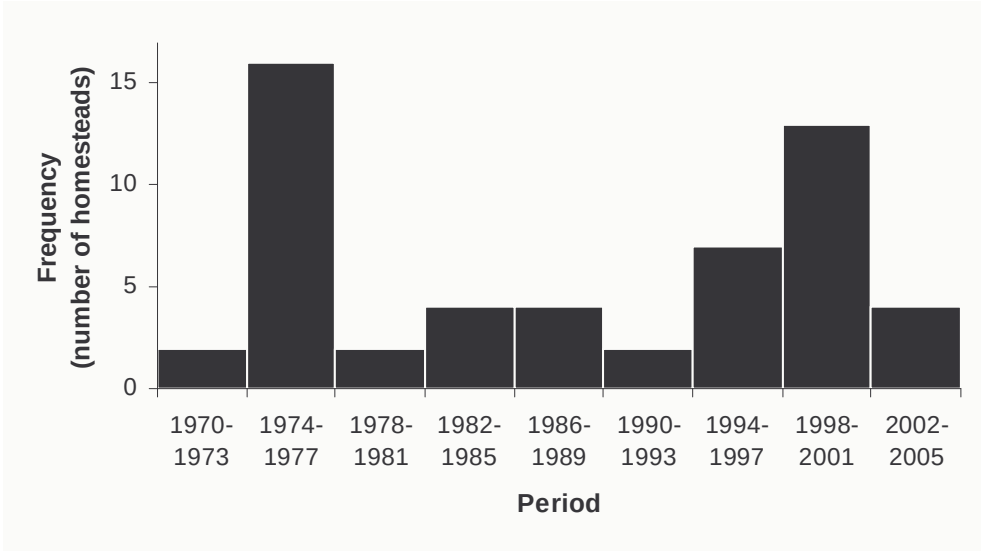

Figure 4.7: Date in which respondents from a sample of homesteads from Nqabara reported to have cultivated their extensive cultivated field for the final timed (n=54).

The implementation of Betterment: 1974-1977

The acquisition and use of homestead sites continued to become progressively more difficult as population numbers rose and the perception of a land scarcity grew (cf. Andrew 1992). Formal communications between the local magistrate at Willowvale and the Chief Magistrate of the Transkeian Territories, as well as letters of complaints by land applicants directed to the Willowvale magistrate attested to this (CADa Undated). The growing land shortage may have been one of the reasons why, towards the end of the 1960s, indications emerged that the time of the implementation of Betterment was growing near (CADa Undated, CADb Undated). A number of respondents (both male and female) who had been recently married in the early 1970s, but had still resided within the homesteads of the male partner, explained that when at that time, rumours of the implementation of Betterment Planning in Nqabara had started to surface, they used the opportunity to voluntarily apply for sites within the areas that planners had indicated to the headman would be the new residential areas.

It is uncertain when exactly Nqabara had been declared a Betterment area. Andrew (1992) refers to documentation in which it appears that Nqabara had been declared a Betterment area early in the 1960s. Communications in 1958 between the magistrate at Willowvale, the chief magistrate in Umtata as well as the Minister of Native Affairs (*sic*, by now the Department was actually known as the Bantu Affairs Department) in Cape Town, however suggest that authorities were reluctant to implement this policy in a location where resistance was likely to be pronounced (CADa Undated). The two main reasons for this was firstly, the continuing complaints and dissatisfaction among people of Nqabara regarding the headman Shoshankana (appointed by the government from a different location in 1942, to replace the third headman in the lineage of the Mazamisa family, who had been in headmanship since 1877), and secondly, the perception among colonial officials that Nqabara secondary school was a 'hot-bed for anti-White, anti-Government agitation' (letter from the Magistrate at Willowvale to the Minister of Native Affairs, Cape Town, 30 October 1958) (CADe Undated). Some time after this letter the headmanship was restored back to the original family. It is unclear

whether this act had been in any way involved in the decision of the Bantu Affairs Department to swing the process back into action.

Nevertheless, from local accounts it is evident that the implementation of Betterment (or '*itrasti*' as it was locally known) in Nqabara only gathered pace around 1973/74 when officials (locally referred to as policemen) first visited the area and information was distributed via the headman of Nqabara and the sub-headmen of each *ilali*. Precisely how the information was spread and how it was received is not known. The subheadman (*usibonda*) from one *ilali* described that

> 'During *itrasti* (as Betterment is locally referred to), extension officers from the department of agriculture demarcated certain sites that were to be the only ones used for residential sites. They said that fencing would be brought and villages would be divided according to beacons. But that never happened.'

The information also entailed what the sizes of the eventual residential sites should be. Initial isolated relocations were undergone voluntarily by some individuals but the majority of people that were told to move did not immediately do so. To those inhabiting homestead sites outside of the specified areas, it was told that moving was inevitable and an unwillingness to cooperate would result in the assistance of the 'police' being called. To those who already lived in the specified new areas of residence, it was told that the size of their homestead sites had to comply with regulations, and in cases where it did not, officials would visit these sites and indicate where their new boundaries had to be. In this way the first families that moved their homesteads as a result of forced resettlement in Nqabara, started to do so some time in 1975.

Theoretically, the Betterment process entailed the proclamation of a location as a betterment area; the division of the land into discrete arable and residential areas as well as grazing camps and in some cases the introduction of contour ploughing, rotational grazing, reservoirs, boreholes, irrigation schemes, agricultural extension services, livestock improvements, erosion projects and so on (De Wet and McAllister 1983, McAllister 1989). Many of these 'extras' were however never implemented in the Transkei (Fay *et al.* 2002). Loose planning and low budgets meant that the consolidation of arable, grazing and residential areas were emphasised more often than resource conservation and agricultural improvement (Ellis-Jones 1991).

The manifestation of betterment in Nqabara consisted of a large-scale forced resettlement of approximately a third of all homesteads in the area at the time. In 1975 through to 1977 more than 230 homesteads were forced to relocate into the 11 named *ilali* which still exists currently in Nqabara. Out of 93 homesteads with which it was discussed, 32 (34%) stated that the homestead they belonged to had been forced to move during Betterment. In the existing villages, homesteads that were deemed to be too far down hillsides or near the perimeter of the *ilali* were forced to relocate into more dense clusters near the centre of the area (figure 4.8). Thus Betterment resulted in a dramatic change in the spatial distribution of homesteads in two main ways: firstly the depopulation of certain clusters of homesteads in areas furthest from access roads and nearer to perennial streams and rivers and secondly the more than doubling of the homestead density in the remaining areas designated for residential use. In two of the *iilali* it resulted in homesteads being laid out more or less in a grid but in most villages the local topography prevented this (cf. plate 7).

Betterment style homestead sites in the nearby ward of Shixini was reported to be between 1600m^2 (McAllister 2001) and 2116m^2 (Heron 1990), but data from spatial analysis suggest that for Nqabara the average size of a homestead after betterment (first data available only for 1995) was considerably higher (x=4450m^2, SD=1885m^2). This nevertheless represented a statistically significant reduction (at a 99% confidence level) in average homestead size from what it was in 1972 prior to villagisation (x=6678m^2, SD=3190m^2). The frequency distribution of homestead sizes are slightly skewed to the upper end, with a quarter of homesteads having been able to retain homestead sizes upwards of 6000m^2 (figure 4.9). Thus a number of homesteads seems to have been able to evade the size restrictions that Betterment planning attempted to impose on homesteads. It is evident that these homesteads, which successfully resisted the restrictions imposed by Betterment, were not equally distributed among all *iilali*. Of the homesteads that were relocated to the *iilali* of Ngwane and Mtokwane, the two largest post-Betterment *iilali*, and the only ones in which homesteads were reorganised into rectangular grids, very few homesteads were able to resist significant size restrictions.

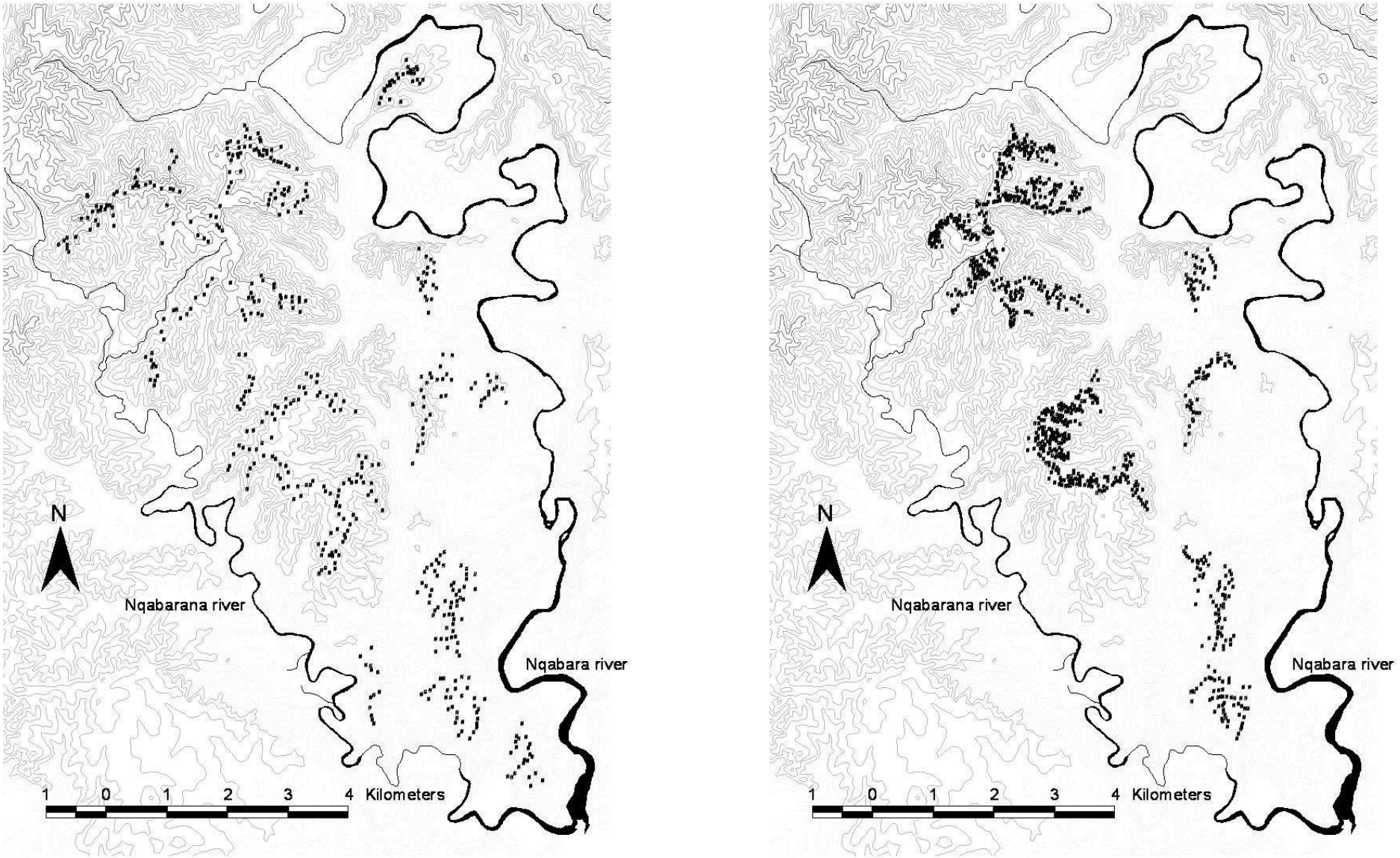

Figure 4.8: Distribution of homesteads (occupied and unoccupied) in Nqabara in 1972 (n=727), prior to the implementation of Betterment (left) and 1995 (n=849), after Betterment (right). Each dot represents one homestead. Relief lines represent 20 metre intervals.

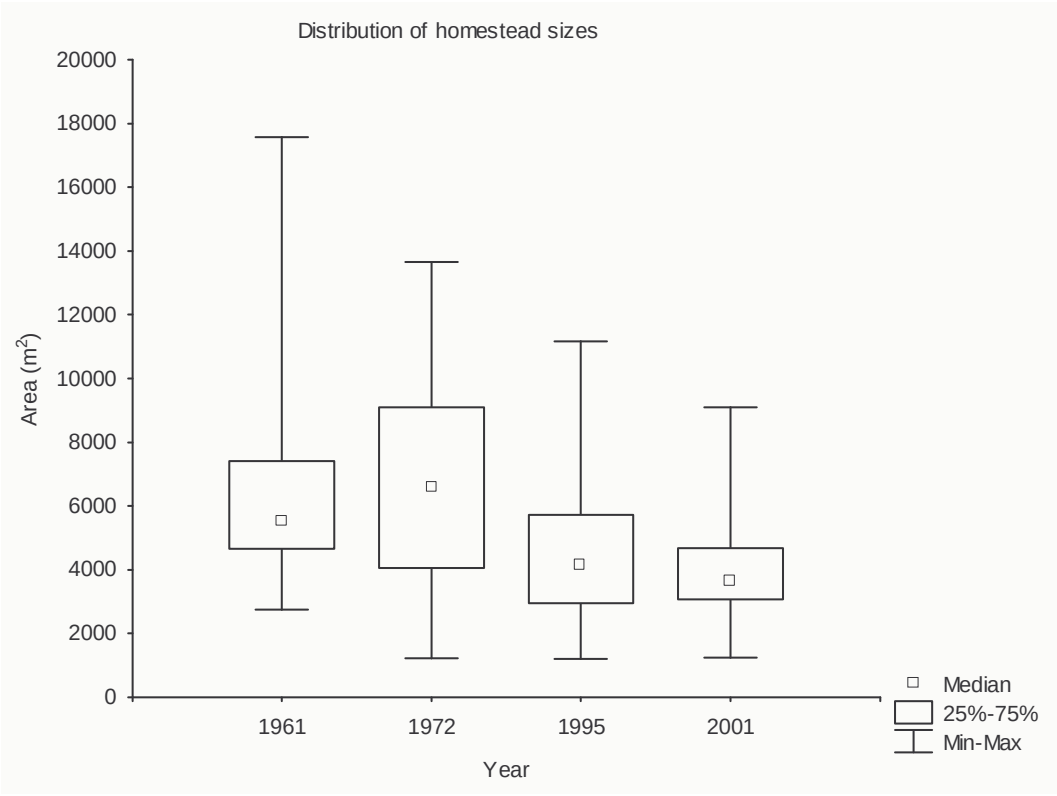

Figure 4.9: Box-whisker diagram showing variation among the sizes of homestead sites in Nqabara, from 1961 to 2001. Figures represent a sample of total homesteads in each year. The sample size and percentage of all homesteads it represents is 92 (19%) for 1961, 80 (12%) for 1972 and 136 (15%) for 2001.

The opportunity was also used by government to re-delimit fields where these were deemed to exceed maximum regulations. This is evident in the difference of average field sizes between 1972, when average field size was 2,79ha (SD=1,50ha) and 1995, when it was 1,58ha (SD=0,91ha). This is a statistically significant reduction at a confidence level of 99% and represents an annual reduction of 2,5% in average field size (table 4.4 and figure 4.10). Since field cultivation however did not require the same investment as relocating a homestead, and monitoring of the subdivision of fields was more difficult than monitoring resettlement, the implementation of forced subdivision of fields provided more room for manoeuvre to circumvent official policy than was possible with forced relocation. Respondents state that many homesteads which had been granted pieces of the subdivided fields of other homesteads, subsequently refused to cultivate these and allowed the original homesteads to return to cultivate them in subsequent years.

The limitation of livestock as part of the implementation of Betterment, was not enforced with much vigour in the Transkei after being granted self-government in 1963 (McAllister 1989). It is likely that in Nqabara, only a few homesteads owned more than 20 cattle, which respondents' remember to be the maximum herd size specified by officials. Regardless of this stock limitation turned out to be unnecessary as red water disease (Xh. *amanzi abomvu,* or bovine babesiosis) swept through the herds between 1975 and 1978. The disease wrecked particular havoc on herds as grazing resources were still in low supply after two successive droughts in 1972/73 and 1974/75 (figure 4.11). In both the cattle dip tanks for which data is available, cattle numbers fell to below 60% of their pre-disease numbers. This constituted an unrivalled fall in cattle numbers (figure 4.12). Per homestead cattle holdings would have dropped to 3,2 cattle per homestead, assuming that all homesteads owned some cattle, or 6 cattle per homestead, assuming that

45% of the population owned no cattle. The subsequent shortage of healthy oxen that homesteads would have experienced is likely to have amplified the impacts of Betterment that will be discussed in the next section.

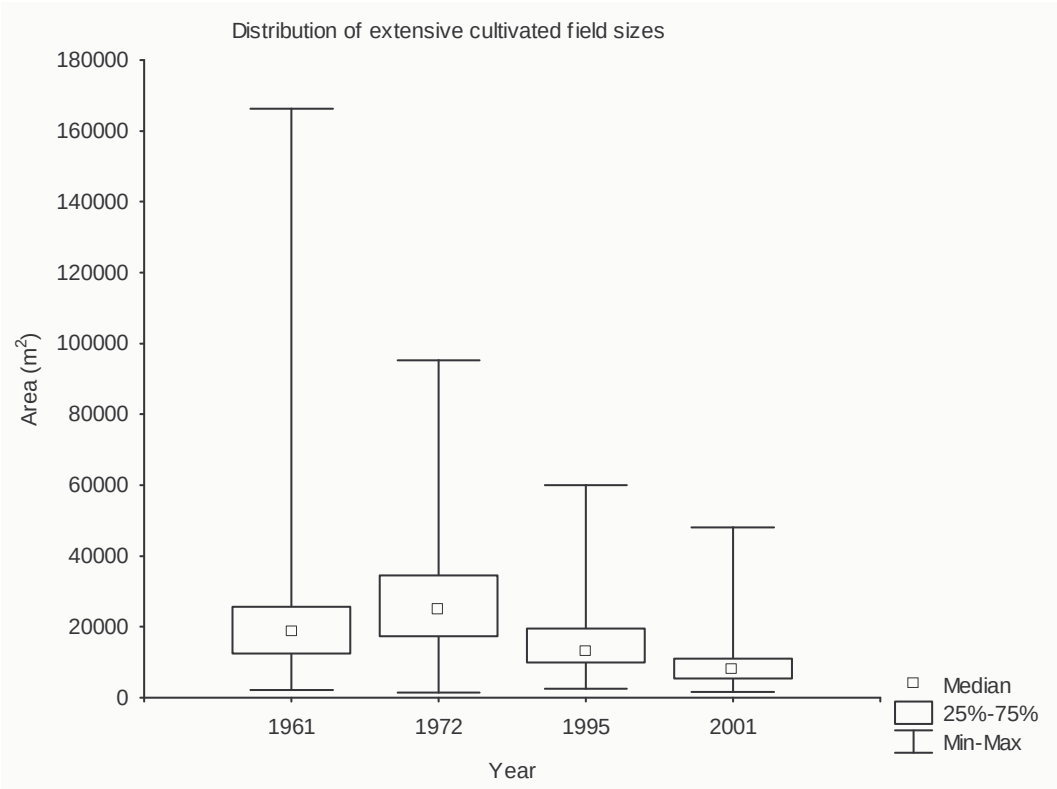

Figure 4.10: Box-whisker diagram showing variation among cultivated field patches in Nqabara (1961 to 2001).

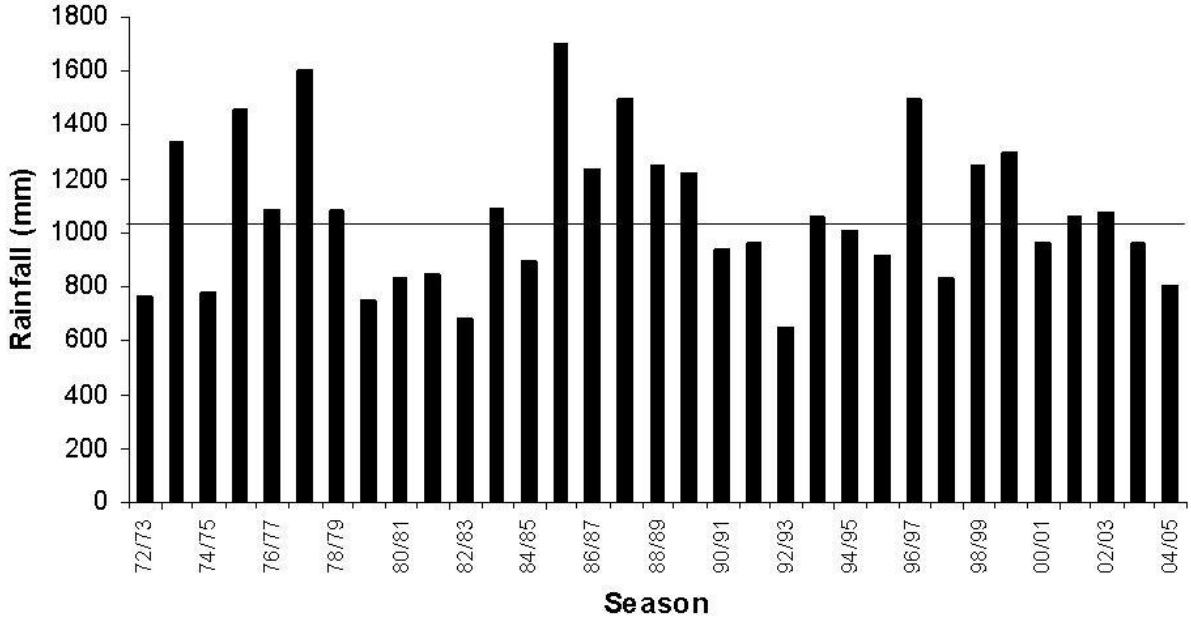

Figure 4.11: Seasonal rainfall measured at Dwesa Nature Reserve, station [0104497 2], 1972 to 2005. Data supplied by South African Weather Services 17 May 2006. Horizontal line shows median rainfall over the period.

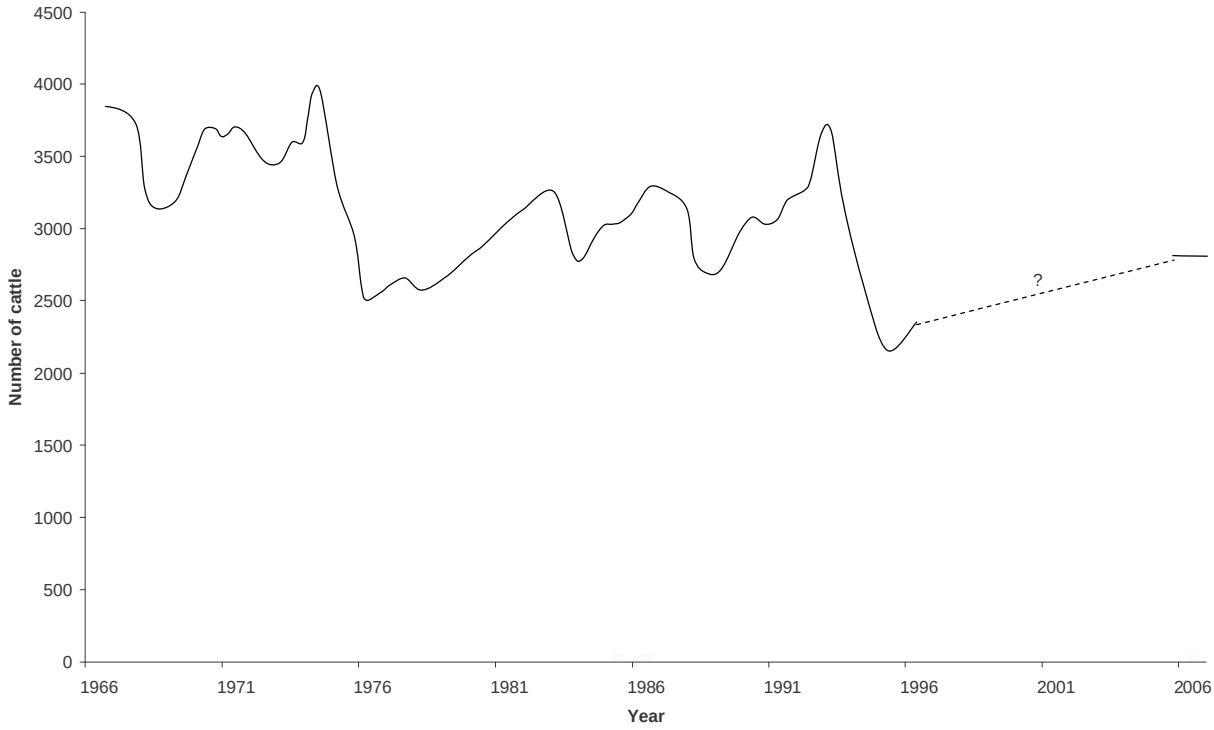

Figure 4.12: Stylised total cattle numbers of Nqabara from 1966 to 2006 (Based on an estimation which applies an extrapolation of the main trends in cattle numbers for Nqabara dip tank to those of Nqabarana and Ngwane, and combines the data for all three into a stylised graph for total cattle numbers of the study area).

The immediate and lingering social, psychological and economic consequences of forced resettlement warrant, almost demand, a thorough and in-depth study of Betterment Planning and its particular manifestation in Nqabara as a process on its own (cf. De Wet 1995). Experiences were often quoted by respondents and the memory of the resettlement experience remained vivid.

> "We didn't like to come here, we were forced. If I had the opportunity, I would like to go back there. Many things made me unhappy as we arrived here: We suddenly experienced sicknesses that we didn't experience back there, especially in our eyes and upperlegs; the soil here was not as fertile as back there, there we just ploughed the soil and it was sufficient; all our childhood games such as *umtshotsho* stopped after the move here; back then even the diseases of cattle and goats were less." - Man (born 1938), Ngwane.

In the current study I will however aim to restrict the inquiry to the ways in which Betterment, as a process emerging from the contestation between the aims of authorities to implemented a specific policy and the active interpretation and response of local social actors to these aims, have become embodied in the landscape.

Active homestead responses in the unfolding of Betterment

One avenue to pursue this task is to bring into sharper focus the spatial component of the impacts of Betterment (cf. De Wet 1995). Prior to villagisation, homesteads were distributed in a scattered pattern, along the crests and higher slopes of ridges and hills. The relative scatteredness or clusteredness of homesteads, can be described as homestead density for a minimum residential area as defined in the chapter three. In 1972 the average density of homesteads in such residential areas was 30,6 homesteads per square kilometre. This more than doubled to 64,3 homesteads per square kilometre in 1995. The

scattered pattern of homestead distribution prior to villagisation enabled homesteads to be in relatively close proximity to grazing, forest and water resources as well as to arable allotments (table 4.7). The post-resettlement clustered settlement pattern increased competition to access of the resources closest to new settlements while impeding access to the water, grazing and forest resources of areas now distant to settlements. Furthermore it put stress upon neighbour relations as a result of the increased probability of livestock entering and damaging a neighbours garden crops or property (cf. McAllister 1989).

Table 4.7: The area occupied by 'residential space', the density of homesteads in 'residential space' and characteristics of the clusters of residential space in Nqabara, 1961 to 2001.

	Area of residential space[a] (km^2)	Total number of unadjusted homesteads[b]	Density of residential space (homesteads per km^2)	Number of clusters of residential space	Average number of homesteads in cluster	Standard deviation of number of homesteads in cluster	Number of homesteads in largest cluster
1961	19.1	506	26.5	9	56.2	44.1	124
1972	23.8	727	30.6	8	90.9	110.6	322
1995	13.2	849	64.3	5	169.8	152.2	394
2001	13.4	936	69.7	6	156.0	162.2	409

[a] Residential space is defined as the minimum area across all periods that is inclusive of all homesteads so that the clusters of residential space consists of at least two homesteads. This definition was operationalised by generating buffers around each homestead point, to a radius of half the maximum distance between two homesteads across all years (r = 90m), and calculating the area of the union of all these circles for each year.

[b] Here the influence of unoccupied homesteads is ignored since no data is available on the relative contribution of unoccupied homesteads in the various clusters of residential space.

An important spatial impact of the relocation is the increase in distance between homesteads and their cultivation fields. Before 'betterment' the average shortest route by existing path or road from the centre of an aggregate of cultivated fields to the centre of the *ilali* or sections of the *ilali* with which it was associated had been 1831m (n=38; SD=710m). After betterment the figure was 2664m (n=16; SD=768m) (table 4.8), representing a statistically significant decrease at a confidence level of 99%. For homesteads originally from the six villages that had been completely depopulated, the resettlement process resulted in an *increase* in distance to their fields that in all cases exceeded 1500m.

Table 4.8: Distance between homesteads and cultivation fields, prior to and after the forced resettlement associated with Betterment Planning in Nqabara.

	n	Average distance[b] (m)	Standard deviation (m)	p value[c]
Pre-villagisation	38	1831	710	-
Post-villagisation	16	2664	768	<0.01

[a] n here denotes the number of routes used in calculating the average and standard deviation. No attempt was made to weight the average with regard to the number of homesteads using a particular route

[b] Average distance refers to the average distance along the shortest possible footpath from the centre of an *ilali* to the centre of the cluster(s) of cultivated fields with which it is associated. The post-villagisation distances reflect the potential distance from the centre of the *ilali* where a homestead was moved to, the destination *ilali*, to the centre of the cluster of fields where the field over which a homestead held tenure is situated. It does not take into account the fact that several homesteads subsequently used their old homestead sites as cultivation fields

[c] p here refers to a single sided probability for Student's t-test among two variables of independent samples

The main impact of the increase in distance lies in the fact that it multiplies the labour and time costs of each trip to the field, during ploughing, planting, hoeing, guarding ripening produce against wild animals, harvesting and maintaining fences. Spending an hour longer on transportation and preparation makes a difference on a hot summer's day when most people aim to have the day's work done before midday. The

increased labour costs on their part influence a homestead's decision regarding the timing and frequency of organising work parties or ploughing companies for ploughing and hoeing (Heron 1990). Homesteads that are already labour-strapped will therefore minimise day-to-day inputs in the field. The extra energy and time spent in transit to the field, both by humans and oxen, combined with the shortages in both homestead manual and tractable labour, are likely to result in more time and labour being deflected into homestead gardens than into distant extensive fields. And during the first few seasons of cultivation after relocation, the new homestead gardens which families had to establish after resettlement, required a greater input of labour than usual as it was necessary to deep-plough the grass cover, to weed more frequently than normal and to chop and fetch poles from the forest for fencing (cf. McAllister 1979, 2001, Heron 1990). Furthermore, if one is forced to plough with a smaller span of oxen because of a reduction in cattle numbers, the energy of the oxen is of prime importance, and energy wasted upon transportation and because of working into the hottest hours of the day can lead to disproportionate effects in agricultural productive outcomes.

It is uncertain how the spatial reorganisation of social life as a result of forced resettlement has impacted upon inter-homestead labour cooperation. In general, homesteads still lived in relative close proximity to their pre-Betterment neighbours, and structures of mutual cooperation based upon kin relations or pre-Betterment spatial distribution patterns can be expected to have largely endured (cf. De Wet 1995). Few sources of information exist to test this contention. No information was encountered during participant observation or semi-structured interviews that suggested an erosion or collapse of mutual cooperative institutions during or immediately after the implementation of Betterment.

Table 4.9: Reasons for abandoning the cultivation of an extensive field, mentioned by respondents from homesteads in Nqabara that stopped cultivating their fields at different points in time.

	Number of responses					
	pre-1974	**1974-1977**	**1978-1993**	**1994-2001**	**post-2001**	**Total**
Number of homesteads	**1**	**17**	**14**	**19**	**3**	**54**
Reason for stopping cultivation						
Crop damage by wild animals	1	9	12	8	1	**31**
Limited access to oxen	0	2	4	6	1	**13**
Individuals in homesteads aging and losing strength	1	4	1	3	1	**10**
Drought and soil changes facilitating increased desiccation	0	6	0	0	0	**6**
Distance of field from homestead	0	3	1	1	1	**6**
Betterment planning - general	0	4	0	3	0	**7**
Encroachment by woody vegetation in and alongside field	0	0	2	2	0	**4**
Change in composition of labour sharing arrangement	0	1	0	2	0	**3**
Loss of interest in cultivation	0	0	0	2	0	**2**
Death of key individual in homestead	0	0	0	2	0	**2**
Less fertile soil or reduction in quantity of produce	0	1	0	1	0	**2**
Homestead member gaining access to pensions	0	1	0	1	0	**2**
Crop damage by domestic livestock	0	1	0	1	0	**2**
Reduction in field size	0	0	0	2	1	**3**
Lack of fencing	0	1	0	2	0	**3**
General homestead poverty	0	2	0	0	0	**2**
Total	**2**	**35**	**20**	**36**	**5**	**98**

Interview data where respondents discussed the reasons that were involved in their homestead abandoning the cultivation of their field site shows that 16 of the 54 respondents who could recall the date in which they cultivated their field for the final time, did so between 1974 and 1977. Among these 16 respondents, 29 motivations of ten different types described the homestead's decision (table 4.9).

The reason with the highest incidence, by quite a large margin, among respondents that stopped cultivating their fields from 1974 to 1977 is damage to crops by wild animals (9 responses or 31% of responses). In some cases respondents proceeded to explain which animals they were referring to. Bush pigs (Xh. *ingulube,* pl. *iingulube* L. *Potamochoerus porcus*) and vervet monkeys (Xh. *inkau* pl. *iinkau* L. *Cercopithecus aethiops*) were mentioned most often and in some cases cane rats (Xh. *ivondo* pl. *iivondo* L. *Thryonomys swinderianus*). All these homesteads had their fields located close to the Nqabara river, or along the southern parts of the Nqabarana river. One should note that 'crop damage by wild animals' was also the most prevalent reason given by homesteads that stopped cultivating during all other periods. It is however interesting to note that the descriptions given by homesteads that stopped during this period differ from those having stopped in other periods.

Those that have stopped cultivation during and soon after the implementation of Betterment recount the rapid spread of bush pigs from Dwesa nature reserve across the Nqabara river into the study area. The damage to fields appears to have gradually spread over the subsequent years from those fields in closer proximity to the Nqabara river where it enters the estuary, to those higher upstream or further from the river. The phenomenon of bush pig 'encroachment' is dressed in a narrative that describes the animals as fleeing from Dwesa, from the introduction of a fierce animal foreign to local people. This may refer to the introduction of crocodiles, leopard, white rhinoceros or warthog into Dwesa, but few respondents could or wanted to name the animal. Timmermans (2004) found that respondents in Ntubeni similarly quoted an explosion in the bush pig population in the early 1980s, and that the introduction of warthog to Dwesa caused bush pigs to be outcompeted. Dwesa was being restocked with various animals indigenous and non-indigenous to the area from 1975 to 1978 (Fay *et al.* 2002). What is more probable is that Dwesa nature reserve, where hunting was restricted, acted as a source population for bush pigs spreading to neighbouring areas. However, scientific knowledge on bush pig behavioural ecology is insufficient to test the local notion that levels of interspecific interactions, whether predation or competition, strongly influenced bush pig distribution after the establishment of Dwesa Nature reserve. In chapter five this '*ingulube* narrative' will be revisited.

Three reasons stated for stopping ploughing during this period, directly or indirectly can be attributed to the effects of the implementation of betterment planning in Nqabara. Six responses (21% of responses) directly referred to the activities of 'itrasti' as a reason to abandon the cultivation of extensive fields. In the semi-structured interview surveys, respondents were not probed further to establish precisely what they meant by this statement, as to avoid influencing the frequency with which other reasons for stopping cultivation would be mentioned. Four responses (14% of responses) averred that the increase in distance from the homestead to its field eventually contributed to their cease of field cultivation. The reduction of field size was mentioned by one respondent as a reason stated for the decision to stop cultivation.

An important reason mentioned (four responses or 14% of responses), which on first inspection does not seem to have anything to do with the implementation of betterment, is that people within the homestead were aging and losing strength to cultivate. Considering that betterment facilitated the fission of many homesteads into two entities, one with predominantly older people and the other with a young couple (some of whom may be migrant absentees) with mostly smaller children, one can understand that even here, by altering homestead composition and therefore homestead labour availability, the footprint of betterment can be distinguished. Limited access to oxen to cultivate with (mentioned in a single instance) contributed to these labour shortages.

Other motivations for abandoning the homestead's cultivation sites that were mentioned by respondents, were ones dealing with changes in the composition of the ploughing company or other labour sharing organisation of which the homesteads was part of (one instance), crop damage by domestic livestock (one instance), the encroachment of woody vegetation on cultivated fields (one instance), and a homestead member who gained access to a pension (one instance).

Homesteads aimed to cling to the knowns of the past in the face of the imposed changes brought about by the implementation of Betterment, including amongst others i) the practicalities of living at increased distances from one's field, ii) rebuilding daily life in homestead sites where tenure security was perceived to be low, and iii) reorganising livelihoods in a situation where homestead labour resources were stretched to the limit (cf. De Wet 1995). One strategy of clinging to the past, was to use the old, now abandoned homestead site as an arable allotment by fencing it and ploughing the old garden as well as old kraal site and *inkundla* (space between the houses and the kraal) (cf. plate 1). The simultaneous material and political logic of such an act is apparent. By cultivating an old homestead site situated in closer proximity than the homestead's extensive field, the newly moved homestead were overcoming the labour costs that the spatial rearrangement of villagisation implied, while at the same time laying a continuing claim of access and use to old lands with the hope that conditions may soon arise to return to resettle original homestead sites (Fay 2003a).

Reorganisation of homestead agricultural production in the first decade after Betterment (1978 to 1984)

Employment opportunities and real wages were rising significantly during the 1970s and early 1980s as a result of an industrial boom facilitated by changes in world commodity prices and general inflation, by the elimination of the international gold standard and by the loss of migrant labour from Malawi and Mozambique on South African mines in 1974 and 1977 (Beinart 1991, Donaldson 1991, Fay *et al.* 2002, McAllister and Deliwe 1994). McAllister (2005) explains that the co-incidence of Betterment schemes with favourable conditions for long-distance labour migration, caused an entrenchment of migratory wage labour.

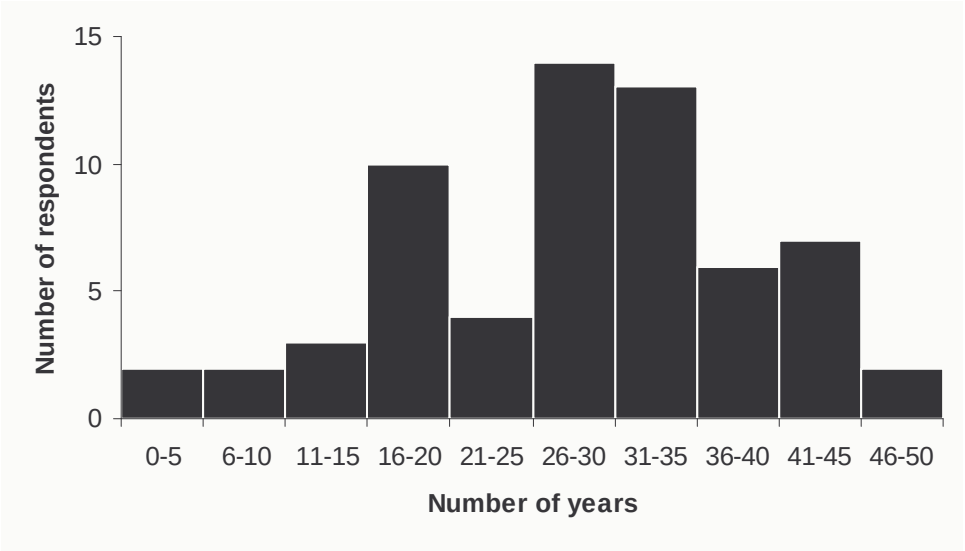

Figure 4.13: Frequency distribution of the total number of years that males from homesteads that were sample for semi-structured interviews, spent on labour migration (n=63).

This period provided families who had access to the remittances of a labour migrant with some source of income for the strong demands that capital investments in new homesteads placed upon the cash resources of homesteads (Wakelin 1983). From the oral accounts of interview respondents, this demand was only gradually met over the next decade. Migrant labour earnings was saved slowly and used to purchase cattle, to acquire poles, bricks, thatch and build kraals, fences and houses. It is however important to remember that remittances were always irregular in timing and amount, not always made in the form of cash nor to the same individual in the rural homestead. Often, only upon the migrant's return would the rural homestead experience some of the benefits accruing from wage earnings, and then mostly in the form of homestead infrastructural improvements as well as cattle and implements bought (Fay and Palmer 2002). Furthermore, more conservative homesteads may have been reluctant to invest too much too soon in the new homestead site, since their hopes were still alive of some day being allowed to move back to their original sites (cf. Fay 2003a).

Despite a chronic dry period of 1979 to 1983 succeeding the red water epidemic, cattle numbers steadily recovered from their losses of the 1970s but not entirely to their pre-disease numbers. From the accounts of respondents, and considering the relatively optimistic economic conditions of labour migrants in the early 1980s, it is likely that at least some of the recovery can be attributed to cattle purchased by migrant labourers (Figure 3.12).

The average *de facto* homestead size of Nqabara remained relatively stable over the period from 1972 to 1995 (table 4.4). This is mainly as a result of a decelerated growth in the number of homesteads, from 687 in 1972 to 802 in 1995 (average annual growth of 0,67%). However the longer and more frwequent absences of labour migrants as a result of changes in labour migrant contracts, further exacerbated labour shortages in the rural home. McAllister and Deliwe (1994) document for Shixini, that the growth in employment opportunities during the 1970s and early 1980s changed the nature of migrant labour. Short-term contracts on mines were being steadily phased out and incentives were provided to make workers stay for longer and return to work sooner after holidays. The activities of labour agents, that had enabled

migrants in the past to secure labour contracts prior to departure for urban centres, also underwent a gradual decline (Andrew 1992). This necessitated longer absences because of migrants having to spend an initial period job searching. Homesteads experienced labour shortages for a prolonged period subsequent to Betterment, not as a result of a smaller number of persons in the homestead, but because of a change in homestead composition.

'Betterment' reorganised the costs and constraints of establishing a new homestead in such a way that young families who still lived in the homestead of the husband's parents, better educated families or families better endowed with cash resources, used the process of Betterment to facilitate acquisition of homestead sites of choice (cf. De Wet 1995). The process of relocation was thus also opportunity for young families to assert their independence. These homesteads soon grew in number as a result of children added to the homestead, but the contribution of children to homestead labour would have begun to be been felt only a decade or so after betterment. These families used the restructuring of homestead distribution as an opportunity to apply for sites in the new demarcated areas. It is also probable that the spatial relocation of *ilali* into closer settlements, consisting of homesteads from various *iilali*, weakened the socio-political influence of the *usibonda* and the *ibandla* in organising tenurial affairs and managing conflict resolution (cf. Heron 1990).

On the other hand, the homestead fission process left a proportion of homesteads with mainly older people no longer involved in migrant labour. These older homesteads were left with substantially less labour, as a result of the same process that produced many young families. The labour shortages of these homesteads would have grown worse in the decade after Betterment as individuals aged and lost strength and health.

Thus the strategies of on the one hand the group constituted of homesteads with younger, wealthier, and more educated individuals, and on the other hand older, more conservative and poorer homesteads, when combined, resulted in homesteads whose altered composition, rather than a reduction in size, emphasised existing homestead labour shortages. The fission process left a proportion of homesteads with mainly older people no longer involved in migrant labour, and the remaining homesteads with young couples and their children, often with one of the couples being away on migrant labour. The labour shortages of rural homesteads were amplified as neighbours who used to plough in cooperative associations or groups with each other, now found themselves living in different neighbourhoods with many homesteads geographically separating them. Cooperative labour arrangements are likely to have become more varied as homestead labour shortages increased (Beinart 1991).

Declining employment opportunities and local responses (1985 to 1995)

In the mid-1980s however, the economic upswing of the 1970s suddenly ebbed out and labour opportunities for migrants in the urban areas of South Africa entered a phase of sudden decline (Southall 1991, Wakelin 1983). The value of the rand collapsed against that of the major international currencies in 1984 and inflation rose as a result of the mounting domestic political crisis and international economic sanctions (Fay and Palmer 2002). In 1986 influx control was lifted for the 'self-governing' homelands though not for the 'independent' homelands, which made available a much larger pool of non-migrant labour to South African employers, competing with migrants from the Transkei (National Land Committee

1990). In 1987 the international value of gold fell sharply concurrently with a shift in the mining industry's employment strategy toward less use of unskilled workers (Southall 1994). Remittances from labour migrants became increasingly inconsistent in frequency and amount (Fay *et al.* 2002) and combined with the periods that migrants had to spend searching for jobs, staying in rented accommodation in townships, the proportion of wage earnings saved by migrants shrunk as they were drawn into urban economies and expenditures. Homesteads experienced varying levels of vulnerability as a result of divergences in access to income, labour and capital (Sharp and Spiegel 1985).

The 'deep rural' areas on the Wild Coast (the districts of Flagstaff, Lusikisiki, Bizana, Elliotdale, Willowvale) bore the brunt of declining employment opportunities in the mining and urban manufacturing sectors. Furthermore the declining opportunities for long-distance oscillating labour migrancy coincided with significant industrial job losses within the regional centres of Dimbaza, Ezebellini and Butterworth in the Transkei, mainly as a result of the textile industry and the deindustrialisation of the Eastern Cape (Bank and Minkley 2005).

Female labour migration continued to increase in importance, but still accounted not more than 5% of all rural females between the ages of 15 and 64 by the end of the 1980s (Muller and Mpela 1994a). This exacerbated both the increase in homestead labour shortages as well as tenure insecurity of homestead sites. The number of newly established homesteads, unoccupied with unfinished infrastructure on them, probably increased under these conditions of high levels of absentees but reduced access to wage income. It most likely also postponed applications for field cultivation sites by new homestead owners.

The situation was experienced first-hand by several respondents in Nqabara who found themselves part of mass dismissals of mine workers following stay away in the mid to late 1980s. In the absence of trade unions in the Transkei until 1989 (Southall 1994), these retrenched workers had little choice but to return home or search for other opportunities in a weakening labour market.

The trend in decreasing employment opportunities for Transkeians continued into the early 1990s as a global recession and the domestic political crisis steadily strangled the South African economy. Concurrently, the labour market within Transkei continued its long-term, intractable decline until reincorporation into South Africa (Southall 1994). Eighty one percent of the economically active population of Willowvale was unemployed by 1991 (Fay and Palmer 2002). Any investments in agriculture were now not only hindered by a still relatively insecure land tenure situation after the implementation of betterment but by the insecurity and shortage of wage labour income as well.

Turning again to the motivations provided by respondents who recalled that the homestead they belonged to stopped cultivating in the years from 1978 to 1993, for their abandonment of the cultivated fields of the homesteads they belonged to, it can be seen that there was a smaller diversity of reasons (7 different reason types) given for stopping cultivation than by those homesteads who stopped cultivation in the periods from 1974-1977 or from 1994 to 2001 (table 4.9). By far the most important reason (48% of responses) was the damage caused to crops by wild animals. The fields of the homesteads that were now experiencing bush pigs and the destruction they cause to crops as impediments to extensive field

cultivation, extended further upstream along both the Nqabara and Nqabarana rivers, than was the case for homesteads who had experienced this during 1974-1977. It makes intuitive sense to assume, that in the period immediately subsequent to the implementation of Betterment, with the spread of woody vegetation on old *ilali*-areas and abandoned homesteads at the edges of *iilali*, bush pigs experienced an expansion of potential habitat and thus their populations spread to areas where they came into more regular contact with people and the remaining extensive fields.

However, as will be discussed in the next chapter, the increased perception of bush pigs as an obstacle to extensive field cultivation should not be isolated from broader perceptions of landscape change during this period (the response of 'drought and soil changes that speed up desiccation' were mentioned four times and 'encroachment by woody vegetation in and alongside field' in a single instance), and especially how these changes are related to the changes imposed by the co-occurrence of the implementation of Betterment and the stocking of Dwesa nature reserve with wild animals. In that chapter special attention will be given to the social narratives that have developed as a result of these factors and how it has influenced subsequent decision-making and the making of a living in the landscape.

Homestead labour shortages were an ongoing important reason mentioned by those who stopped cultivation of extensive fields during this period, as seen in the responses of 'inadequate access to cattle' (four instances) and 'individuals in the homestead aging or losing strength' (three instances).

Two reasons that are related to the homestead investment economy made up the rest of reasons stated by respondents who stopped cultivating during these various periods, the first is lack of fences (two responses) and general homestead poverty (two responses). These responses were made by homesteads that stopped cultivating after the economic downturn of the mid-1980s.

The military coup that the Transkei experienced in 1987, and the politically turbulent period of reintegration into South Africa up to 1994 (cf. Peires 1992), seems to have bypassed the immediate experience of most homesteads in Nqabara. If anything, it was a period of 'respite of autonomy' (cf. Scott 1998) with low levels of implementation of taxes and state surveillance. State involvement in land tenure collapsed (Fay 2003a) and local agency articulated more directly with macro-economic and local environmental factors.

In 1992/93 another devastating drought struck the area and cattle numbers fell to their lowest numbers since the 1912/1913 East Coast Fever epizootic. Total cattle numbers for Nqabara was around 2000 (31,0 cattle per square kilometre) at the end of the drought which amounted to approximately 2,5 cattle, or 1,2 oxen per homestead at the time (table 4.5). Similarly, in Cwebe the numbers during the 1993-94 drought fell to 68% of their pre-drought numbers (Timmermans 2004). Such low levels of livestock ownership would have necessitated cooperation among upwards of four homesteads in ploughing companies and thus would have increased the internal instability of cooperation agreements (cf. Heron 1990).

> 'Everybody shorts cattle so we do not form *ilima* (relatively stable form of work party for agricultural labour) nowadays. I ploughed my field with two oxen, one my own and one borrowed (from my neighbour)' – Man (1947), Nocwane.

The combined effects of these two decades, the first marked by state intervention in homestead distribution, and the second marked by declining economic opportunities, coupled with the large cattle losses through drought and/or disease in both, resulted in a more rapid decline in the extent of the area covered by extensive fields than in any of the other period covered in the study. In 1995 extensive cultivated fields constituted only 347ha (5,4% of the study area), representing a reduction of 1110ha in the total area under plough at an annual rate of 6,2% (tables 3.1 and 3.4). Only small relicts of the aggregate clusters of cultivated fields of 1972 remained in 1995. Simultaneously, in four areas that had been grassland and homesteads of residential areas in 1972, isolated fields had been established.

Similarly, recalling the reduction in average homestead garden size, from 5076m^2 in 1972 to 3081m^2 in 1995, concurrently with an increase in homesteads from 687 to 802, the total area under homestead garden cultivation dropped from 368ha (5,7% of the study area) to 232ha (3,6% of the study area) over the same period, an annual reduction of 2,0% (tables 3.2 and 3.4). Combined, the area covered by homestead gardens and extensive fields had dropped from 1825ha (28,3% of the study area) to 579ha (9,0% of the study area), annual reduction of 5% (table 4.3).

Thus by 1995 homestead agricultural production had undergone a significant transformation from its manifestation prior to 1972. Almost all homesteads were to some extent involved in the cultivation of a homestead garden, but the proportion still actively involved in the cultivation of extensive fields had dropped markedly. The shift of homestead labour and cash resources from extensive fields to homestead gardens represented two important changes. Firstly, homestead members were involving themselves in activities that had lower entry costs in terms of male labour and tractable labour requirements, and secondly, they were involving themselves in activities in which the predictability of production were greater (cf. Andrew 1992).

The last decade in Nqabara: Livelihood diversification and the re-invention of homestead agriculture (1996 to 2006)

The conditions that necessitated and/ or allowed this shift, endured into the first decade of South Africa's new democracy. The last decade has been one in which the securing of wage labour for migrants from Nqabara and other rural areas from the communal areas of the Eastern Cape continued to decline as competition in the urban-industrial sector rose together with national employment (Ntshona and Lahiff 2003, Timmermans 2004). Studies by McAllister (2001) in Shixini and Palmer *et al.* (2002a) in Ntubeni demonstrated a marked economic differentiation among rural homesteads with regards to their access to wage labour and cash resources. Their attention to individual homesteads reveals that a homestead's economic disposition is likely to evolve and change frequently throughout its growth and as new shocks and opportunities arise. In contrast to access to cash earned through wage labour, old age and other social welfare grants were extended to a much larger proportion of inhabitants and the real value of these increased significantly following the transition form Transkei 'independence' to South African democracy..

The average number of persons per homestead dropped marginally from 4,0 to 3,8 between 1995 and 2001 as a result of a slightly higher rate in the growth of homesteads, from 802 in 1995 to 885 in 2001 (annual growth of 1,63%) (table 4.4). However, in 2001 43% of the *de facto* population was under the age of 15 (despite a growing trend by more wealthy homesteads to send children to schools with perceived

higher standards in urban areas), which means that effective homestead labour resources were even lower (figure 2.6).

Despite a chronic scarcity of data, it appears that cattle numbers have recovered relatively well in the decade following the 1992/1993 drought, to approximately 2800 (43,4 cattle per square kilometre) in 2006 (no data is available for 2001, but it could be assumed that the total herd size for Nqabara was somewhere between 2000 and 2800) (table 4.5) (cf. plates 13 and 15). This equates to between 2,5 and 2,9 cattle per homesteads, assuming all homesteads to have some cattle. However it is likely that the ownership of cattle grew even more concentrated in the recovery after the 1992/1993 drought (see Ainslie 2002), which would mean that those homesteads that did own cattle in 2006, would have had an average herd size of up to 6 animals per homestead.

The increase in the proportion of absentees that are non-remitting labour migrants, migrants that work only part-time or are workseekers, together with increased access to pensions, have both forced and enabled local members of homesteads to search for other ways to augment their making of a living (Hajdu 2003, Ntshona and Lahiff 2003). The increasingly risky access to the relatively large but irregular savings of migrant labour, is likely to have deterred homesteads from investing only in traditional homestead agricultural activities. The gradual spread of increased government welfare grants on the other hand, including old-age pensions, child-care grants and disability grants represents a significant capacity enhancing factor for homestead members who previously had little control over homestead cash resources. The periodic small but predictable cash bundles that monthly pensions represent to rural homesteads, significantly shaped the investment patterns of rural homesteads in a number of important ways (Ntshona and Lahiff 2003).

Firstly, the relatively small sums of monthly pensions are used mostly for subsistence commodities and do not have great potential for saving and investing in greater homestead infrastructural improvements, investment in livestock or other agricultural improvements. Secondly, female homestead members have been empowered significantly by having access to monthly pensions, to influence homestead decision-making regarding the use of cash investment. Thirdly, monthly pensions have significantly boosted the circulation of cash in rural areas, resulting in a number of transformations in rural social life and the rural economy. Furthermore, the inequality in income suggests that wealthier households are able to stimulate the diversifying local economy (Timmermans 2004).

Despite the proportion of pensions that are drained out of Nqabara as expenditure on ‘imported’ purchased goods, the capital that is left rurally has had a considerable impact by enabling a diversification of economic activities in rural livelihoods. Small tuck shops (*isiroxo* pl. *iziroxo*) selling essentials are increasingly run from inside people’s homes. These businesses diversify among each other with some specialising in home grown products such as vegetables and tobacco, some in petrol and paraffin, some in goods bought at the regional centres of Willowvale and Idutywa and sold locally and others in charging cellular phone batteries. The relatively well-established transport system (two bus services augmented by more than half dozen pick-up truck taxis or *izitalyon*) that connect Nqabara with the urban centres of

Gatyana and Idutywa on a daily basis have been essential in this growing integration between urban and rural economies.

The growing internal labour market represents an essentially unrecorded portion of the rural economy (Palmer et al. 2002b). In Nqabara, specialist individuals are contracted to cut and make poles from the forest, construct sledges (*isileyi* pl. *izileyi*), yokes (*ijokwe*, pl. *amajokwe*), yokepins (*isikeyi*, pl. *izikeyi*) as well as smoking pipes (*inqawa* pl. *iinqawa*), various types of walking (*intonga* pl. *iintonga*) and fighting sticks (*isigweba*, pl *izigweba*), baskets (*ingobozi* pl. *iingobozi*), sleeping mats (*inkhukho* pl. *amakhukho*) and place mats. Local transport and the sale of poultry or meat from slaughtered pigs represent further means of earning occasional cash locally. In Nqabara, government initiated poverty relief programmes that employ people in the short term to repair roads or clear alien plants have aimed to employ individuals with particularly insecure livelihoods. It is unlikely that a full-time living can be made out of any of these activities, but they are important supplements to other livelihood strategies. These attempts at livelihood diversification have developed alongside the persistence of homestead agricultural production in predominantly homestead gardens (cf. Hajdu 2003, Lahiff 2003). The shift towards homestead garden cultivation combined with small cash businesses are practical innovations of peasant homesteads that have experienced sustained dwindling of homestead labour resources and that aim to manage the risks involved in homestead agricultural production (Andrew 1992, Andrew and Fox 2004, Fay and Palmer 2003).

Homesteads and the changing spheres of decision-making

Access to pensions has shifted the power relations within homesteads by improving the standing of women, post-retirement age men and mothers, in terms of their influence on decision-making with regard to the use of homestead cash resources (cf. Mokgope 2001). Similarly, a slow process of democratisation in institutions that specify the processes of access to and tenure of land, are increasingly enabling new social actors within homesteads to play a larger role in decision-making in terms of land use (Timmermans 2004). Unmarried women with necessary cash resources are increasingly successful in their applications for homestead sites and increasingly independent in their decisions as to land use of such sites and economic activities of their homesteads. The process of reorganising local government structures in terms sub-wards and sub-ward committees in Nqabara have been particularly influential in democratising, or in some cases circumventing, traditional patriarchal land-use decision-making bodies such as the *ilali*-level *ibandla* headed by the local *usibonda* (sub-headman). These processes are perceived by many residents as factors that increase the tenure security of the homestead sites they hold tenure over. Investments in relatively expensive homestead infrastructure, such as cement-brick houses, tile roofs, fences, water tanks and others attest to this increased trust in the tenancy of homestead sites. Similarly, the Nqabara Development Trust (established 2002) and its committees have been playing a pivotal role in enhancing tenure security through reorganising development along democratic lines that are inclusive of all community members, irrespective of age and gender.

One of the central thrusts of the Nqabara Development Trust has been to divulge important information regarding land tenure legislation to the tenure holders of homestead sites. Several workshops have been held in the last two to three years, along with the department of Land Affairs, specifically with regard to the implications of the Interim Protection of Informal Land Rights Act (No. 31 of 1996) and the Communal

Land Rights Act (No 11. of 2004). Despite the general uncertainty as to the specific implications these legal measures hold for local tenants of homestead sites, it appears that informal tenurial arrangements are generally stable and well-established. The increasing incidence of abandoned homestead sites with buildings and other infrastructure still standing in the landscape, where homestead members have passed away or emigrated to urban areas, attests to the enduring informal claims to access and use that may exist despite the absence of homestead members.

I have demonstrated that since 1995 homesteads have persisted with the shift in the application of their labour and cash resources toward diversified, lowered-risk and lowered cost activities. How has these factors emerged in the cultivation patterns evident in the landscape?

In the six years since 1995, homestead agricultural production in extensive fields continued to decrease to cover 294ha (4,6% of the study area) in 2001. It had done so at a slower rate (2,7% annual reduction) than during the previous 23 years (which was then 6,2%) but still faster than the period from 1961 to 1972 (then 0,9%) (tables 4.1 and 4.4). Surprisingly, the number of cultivated patches increased from 220 to 322 over this period, while the average cultivated patch size declined further (statistically significant at a 99%confidence level) from 1,58ha in 1995 to 0,91ha (SD=0,59) in 2001 (annual reduction of 9,1%). Almost half the fields of 2001 were newly established in this period, and mostly on previously grassland and wooded grassland patches closer to residential areas (figure 4.3). The average area of a homestead garden declined from 3081m^2 to 2581m^2 (3,0% annual decline) over the same period, and the number of homesteads increased from 802 to 885 (1,6% annual increase) (tables 4.2 and 4.4). This corresponds to a marginal reduction in total area under homestead garden cultivation from 232ha in 1995 to 215ha in 2001. Combined, homestead gardens and extensive fields covered 579ha (9,0% of the study area) in 1995 and 509ha (7,9% of the study area) in 2001 (tables 4.3 and 4.4).

The slower rate of reduction in combined area under cultivation, and the number of new cultivated fields established during this period, are indicative that many homesteads are still very much interested in augmenting their livelihood through homestead agricultural production. In doing so however, they do not restrict themselves to past practices regarding tenurial arrangements, labour organisation or the extensive or intensive nature of production. The increase in the number of patches of cultivated fields, alongside the reduction of the average patch size of a field, indicate that the intensification of agricultural practices, documented by Andrew (1992) and Andrew and Fox (2004) as shifts from extensive fields to homestead gardens, may not be an undifferentiated strategy across different field sites. In Nqabara, homesteads in nucleated villages have fewer opportunities to expand their gardens due to the proximity of neighbouring homestead sites. Instead it seems that homesteads have managed to convert past homestead sites into arable allotments or have succeeded in being assigned relatively small patches of fields, relatively close to the homestead compared with earlier fields which were located far from homesteads in river valleys. These more proximate fields have the same advantages that homestead gardens have over distant an extensive fields.

Of the 54 homesteads that recalled the year in which they cultivated their field for the final time, 24 (42%) did so since 1994 (figure 4.8). The response types given by homesteads that stopped cultivating

extensive fields during this period were more diverse than those given by homesteads stopping in the two previous periods, with 13 different response types given. The two reasons that were mentioned with equal highest frequency (21% of responses) are firstly, a homestead's lack of access to cattle, and secondly, damage to crops by wild animals.

Although overall cattle numbers did recover slightly during the period subsequent to the 1992/93 drought, average per homestead holdings changed relatively little due to a growth in homestead numbers. Cattle husbandry, although becoming an activity progressively more exclusive among homesteads, nevertheless remains an important component of the livelihoods of many homesteads.

> 'Our sons are working in Johannesburg like we used to work, but they are not buying cattle like we used to buy. But cattle are one of the weapons used to fight poverty because we are using oxen to plough the land for food, we use cows milk, we use meat, when you need money for a special occasion you sell cattle to get money. Because of the many diseases that cause the decrease of stock, some of the new generation are not anxious to buy stock since they don't see them as an investment.' – Man (1939), Fubhesi

During semi-structured interviews, the topic of how a homestead mobilises and organises manual and tractable labour for homestead agriculture, was discussed with respondents from 66 homesteads (table 4.10). Almost half of the homesteads were self-sufficient in terms of manual labour, while the other half engaged in various forms of inter-homestead cooperation. Half of the homesteads that were self-sufficient in manual labour, were also self-sufficient with regard to tractable labour (thus approximately a quarter of the total sample). Some homesteads that were self-sufficient in terms of manual labour, nevertheless experienced shortages of tractable labour, and a variety of ways were open for homesteads to secure tractable labour.

In comparison to studies by other scholars (Kuckertz 1985, Heron 1990, McAllister 1979, 2001), this organisation of labour in Nqabara appears relatively flexible and provides for homesteads to be self-sufficient in manual labour but still gain access to the oxen of other homesteads. The shift to homestead gardens, in favours day-to-day manual labour as opposed to the labour requirements of distant extensive fields, and therefore represents a reduction in the manual labour costs of agriculture. However it still requires some access to draught animals for initial ploughing. McAllister (2005) emphasises that cooperative labour arrangements should not be seen as static and persistent structures from the past, but as highly dynamic and innovative responses to the historically contingent conditions emerging from the type of agriculture, composition of homesteads and employment opportunities.

People that stopped cultivation in this period, who invoke crop damage by wild animals as a reason, explain that the expansion of forests and wooded areas in the landscape have afforded wild animals such as monkeys and bush pigs habitats closer to cultivated fields than they had been before. Furthermore, since people started to live further away from their fields after forced resettlement, these wild animals were less wary to venture near the fields. Some respondents also said that as individuals in the homestead started to age or lose health, cultivation fields were not guarded with the same amount of vigour during crop ripening as before.

Table 4.10: Intra-household cooperation in terms of homestead agricultural labour in Nqabara, 2006.

Form of cooperation in which homestead is involved		Frequency of response	Percentage
Self-sufficient in terms of manual labour	Uses only draught animals from own herd and does not lend out oxen	13	19.7
	Borrows/ hires/ assists manually in reciprocity for draught animals	11	16.7
	Lends/ hires out/ accepts manual assistance in reciprocity for draught animals	8	12.1
Access to labour resources (both manual and tractable) of ploughing company		19	28.8
Access to labour resources (both manual and tractable) through other means (work parties, hiring manual labour, etc.)		15	22.7
Total		66	100

The other important reasons stated by respondents reveal that the shortage of tractable labour was worsened by an accompanying shortage of manual labour. The responses that were given were that individuals in the homestead had aged and lost strength (mentioned in three instances), that a key individual in the homestead had passed away (two instances), that the composition of labour sharing arrangements had changed (two instances) and that the distance to the field had become an impediment to cultivation (two instances). All three of these indicate that average homestead size and homestead composition continued to place stress upon homestead labour resources.

The role that landscape changes have played in the abandonments of cultivation during this period, is reflected in such responses as encroachment of woody vegetation in and alongside cultivated fields (two instances), reduced fertility of field cultivation sites (two instances), and increasing droughts and soil changes that speed up desiccation (three instances). Several other commentators have alluded to the negative correlation between length of cultivation of a cultivated field and soil fertility (Andrew 1992, McAllister 2001). Timmermans (2004) explains that the soils in the area which are derived from Beaufort and Ecca shales, are mineral poor and fine textured, resulting in restricted infiltration and permeability and therefore being vulnerable to waterlogging and desiccation. They become leached and acidic easily and are deficient in potassium and phosphate. Soils from Doleritic outcrops are more fertile. The effect that an increase in woody species, especially *Acacia karroo*, uphill and on the boundaries of field sites, has on the rate of soil desiccation has however not received much attention in the literature.

Some respondents described their cessation of cultivation in terms of livelihood change based on a shift in identity and values. Three of the responses from people who stopped cultivating in this period were that they did so since they no longer had interest in cultivation and one respondent said it was because the homestead could survive from pensions.

The other two reasons each stated only a single instance were low field productivity because of small field sizes and crop damage by domestic livestock.

Conclusion

At this stage it is necessary to make a few summarising and comparative notes in order to make sense of the history of homestead agricultural production and its context in Nqabara, which up to now have been presented at a single time-scale and resolution of detail.

From 1960 onwards, the first relatively continuous period of homestead agricultural production in Nqabara, which can be distinguished from subsequent periods through relatively clear discontinuities, is the period up to the implementation of Betterment (see table 4.11). In this period the total output of homestead gardens increased at a relatively rapid rate, whereas the output of field cultivation decreased at a similarly rapid rate. Upon a revisit to the progression between the graphs in figures 3.2 and 3.4 and closer inspection of the variation among homesteads, it is evident that a great number of fields that were smaller than 4ha in 1961, had either disappeared or been integrated into other fields by 1972. Simultaneously the number of fields greater than 4ha almost doubled. The great proportion of homesteads that must have abandoned the cultivation of their fields during this period, is however not reflected in data from semi-structured interviews. The reasons for this are unclear. One can speculate that i) events in the far distant past may be remembered with less reference to specific dates, ii) many of the homestead owners who stopped cultivation may have passed away by the time the interviews was undertaken, or iii) that the spatial data for 1961 failed to pay attention to the fact that homesteads may have cultivated a number of fields and during the subsequent decade may have decided to cultivate them as single units.

Similar to extensive fields, in the sample of homestead gardens, the number of gardens smaller than $4000m^2$ declined substantially between 1961 and 1972, the number between $4000m^2$ and $8000m^2$ remained relatively constant while those above $8000m^2$ also increased. The conclusion is that, with regard to the size of fields and gardens, differentiation or inequality among homesteads increased sharply during this period.

Although I have shown that per homestead cattle holdings decreased during this period despite relatively stable total cattle numbers (table 4.4), it cannot be clearly proven that inequality in cattle holdings underlay the differential agricultural output between homesteads. Similarly, although we know that the average number of people in a *de facto* homestead decreased during the period, it cannot be shown without doubt that there was much differentiation among homestead.

The second period we can identify for analytical purposes regarding agricultural production in Nqabara, starts with the implementation of Betterment and the forced relocations associated with it (see table 4.12). The most significant impacts seem to have been the size restrictions on homestead sites (as well as the possibility for further expansion, because of immediately adjacent neighbours) and the increases in the distance between the homestead and its associated field. Here it is evident that the combination of impacts of Betterment resulted in the abandonment of more than half of the fields that were ploughed in 1972 in the period up to 1995. The number of fields smaller than 1ha actually increased, those between 1ha and 2ha remained relatively constant while those above 2ha reduced dramatically (figures 3.2 and 3.4). These characteristics are likely to be the outcome of subdivision of or size reductions in some fields, the creation of small new fields on old homestead sites, and the complete abandonment of others.

Similarly, the number of gardens, especially small gardens, increased greatly so that the average garden size grew smaller and the total area under cultivation were slightly smaller. The combined area under garden and field cultivation declined dramatically.

The dramatic decline in cattle numbers coupled with the higher labour costs of field cultivation (as a result of living further from fields) are likely to have been instrumental in convincing many homesteads to cultivate only a garden or cultivate their previous homestead site. Furthermore, in the decade after Betterment, encroachment of woody vegetation in the disturbed soils of old homesteads and abandoned cultivated fields, created habitats for wild animals which brought about damage to the crops of those continuing to plough, with increasing regularity, convincing other homesteads to follow suit and abandon their fields. Several narratives arose that aimed to justify the change in a fundamental social institution. This will be elaborated upon in chapter five.

Table 4.11: Summary of trends and contextual factors in homestead agricultural production, 1961 to 1973. The causal relationship between factors listed as structures and those listed as agency can be multidirectional, since it is assumed here that actions of one moment in time presents the structure for subsequent action, while being subject to the structure created by past actions.

Period		Structure	Agency
Prior to the implementation of Betterment (1961 to 1973)	Homesteads	• More homesteads (sharp growth) • Smaller number of persons per homestead	• Men deciding and being financially able to marry and leave their natal homes at younger ages
	Fields	• Less fields but larger	• Homesteads well endowed with labour, capital and animal resources able to expand while other homesteads abandon cultivation • Homesteads investing in garden cultivation at the cost of field cultivation • Resource scarcities overcome by poorer homesteads through inter-homestead assistance institutions • Diversification among homesteads and proportional intensification of production through shift to homestead gardens maintains overall output
	Gardens	• Overall more gardens • Small gardens less • Large gardens more	
	Combined cultivation	• Overall output unchanged	
	Cattle	• Overall numbers unchanged • Less cattle per homestead	• Involvement in agricultural types with lower tractable labour costs necessary for labour sharing arrangements to be functional • Homesteads with large cattle endowments likely to retain extensive production style
	Tenure	• Few changes • Increasing perception of land scarcity	• Possible that those homesteads with land, expanded their holdings while few homesteads were allocated to new applicants
	Employment/ livelihood	• Relatively good opportunities for long distance migrants • Few local opportunities	• Active participation in long distance labour economy
	Landscape/ vegetation	• Slight grassland reduction and forest expansion	• Woody vegetation actively claiming unused landscape patches

During the first decade after Betterment, increased access to wage income compensated somewhat for the costs involved in the move to new settlements, and probably fastened the pace at which homesteads invested in infrastructure in their new homesteads. It probably accelerated the reorganisation phase (cf. De Wet 1995) after relocation and aided the infrastructural investments in fences and wiring that garden cultivation required.

Table 4.12: Summary of trends and contextual factors in homestead agricultural production, 1974 to 1984. The causal relationship between factors listed as structures and those listed as agency can be multidirectional, since it is assumed here that actions of one moment in time presents the structure for subsequent action, while being subject to the structure created by past actions.

Period		Structure	Agency
The implementation of Betterment and the first decade thereafter (1974 to 1984)	Homesteads	• Growth in homesteads through Betterment facilitated fission • Spatial concentration of homesteads • Change in composition due to fission of homesteads	• Younger, richer, less traditional homesteads capitalising on new conditions brought about by Betterment
	Fields	• Overall number of fields less • Average size smaller • More smaller fields, less larger fields	• Enforced size and boundary regulations of Betterment restricts human agency • Homestead composition change results in lowered capacity to respond to labour requirements, i.e. need to change labour costs of cultivation • Wild animals and woody vegetation perceived as active agents impeding old patterns of cultivation • Active response to complex set of impacts of Betterment is to invest in intensive homestead gardens where labour costs can be spread over time and productive output can be increased through fencing, manure, intercropping and watering • Homestead decision-making leads to higher dependence on wage labour, macro-economic conditions facilitates this
	Gardens	• Overall number of gardens more • Total area covered by gardens less • Average size of gardens smaller • More smaller gardens, less larger gardens	
	Combined cultivation	• Marked reduction in area	
	Cattle	• Sharp reduction in total numbers followed by slow recovery • Per homestead cattle numbers lower • Access to grazing resources impacted through homestead distribution	• Purchase of cattle to rebuild herd represents long-term investment of wage earnings into agriculture • But not all homesteads with equal capacity to purchase and rebuild herds
	Tenure	• Increasing inflexibility in terms of size and position of homestead an garden • Reduced tenure security because of Betterment • Increasing perception of land scarcity	• Subdivision of tenure sites a means to overcome lack of available residential sites • Cultivation of old homestead sites a means to retain *de facto* tenure rights
	Employment/ livelihood	• Rising employment opportunities and wages for long distance migrants as well as in Transkei civil service	• Active participation in long distance labour economy
	Landscape/ vegetation	• Abandoned homestead sites and fields as well as grasslands invaded by woody vegetation	• Homesteads choose to concentrate livelihood activities closer to the homestead, accentuated by distribution of homesteads • Leads to ecological agents becoming dominant in production of wider landscape

Starting in the mid-1980s however, the beginnings of a third period become evident (table 4.13). Access to wage income declined rapidly and in a sustained manner due to national economic and political crises as well as international diplomatic pressures and market factors. As a result homesteads became increasingly vulnerable to shocks that influenced livestock ownership and homestead composition.

Further aggravating homestead vulnerability, was the change in homestead composition brought about firstly by the fission of homesteads facilitated through Betterment, and secondly by the increase in the proportion of young children who do not contribute significantly to homestead agricultural labour.

The fourth period identified here, in terms of homestead production in Nqabara, represents a continuation of the third with a slight shift in emphasis (table 4.14). In this period, following the growth in population and homestead numbers, both the number of fields and the number of gardens have increased, but the average sizes of both have declined. In both, this seems to have been the result of the subdivision of existing fields and gardens, as well as the establishment of many new, small homestead gardens and extensive fields, the latter often in areas where there had never before been ploughing fields. Tenure over and the use of such new fields seems to have been made possible by the slackening of state intervention in local land matters after reintegration with South Africa, as well as a general perception of increasing tenure security through the establishment of democratic community structures that nest within municipal structures.

Further aggravating homestead vulnerability, was the change in homestead composition brought about firstly by the fission of homesteads facilitated through Betterment, and secondly by the increase in the proportion of young children who do not contribute significantly to homestead agricultural labour. It is not clear in what way or if at all spatial redistribution of homesteads affected mutual help in the organising of work parties or ploughing companies.

The fourth period identified here, in terms of homestead production in Nqabara, represents a continuation of the third with a slight shift in emphasis (table 4.14). In this period, following the growth in population and homestead numbers, both the number of fields and the number of gardens have increased, but the average sizes of both have declined. In both, this seems to have been the result of the subdivision of existing fields and gardens, as well as the establishment of many new, small homestead gardens and extensive fields, the latter often in areas where never before there had been ploughing fields. Tenure over and the use of such new fields seems to have been made possible by the slackening of state intervention in local land matters after reintegration with South Africa, as well as a general perception of increasing tenure security through the establishment of democratic community structures that nest within municipal structures.

Employment opportunities for long-distance migrants declined further, but many homesteads, including vulnerable ones with no access to migrant wages, gained access to regular and predictable state welfare grants and pensions. The cash sums were small relative to wage income, and their administration is not the sole concern of the homestead head. This increasingly lead to pronounced changes in homestead decisionmaking with regards to spending and investment. The proliferation of diverse livelihood activities through local trade and service provision may be a direct result of the socio-political changes within homesteads, brought about by access to pensions.

Table 4.13: Summary of trends and contextual factors in homestead agricultural production, 1985 to 1994. The causal relationship between factors listed as structures and those listed as agency can be multidirectional, since it is assumed here that actions of one moment in time presents the structure for subsequent action, while being subject to the structure created by past actions.

Period		Structure	Agency
Decline in economic conditions and employment opportunities (1985-1994)	Homesteads	• Slower growth in homesteads because of altered composition of homesteads, land scarcity and reduced access to capital resources	• Homesteads with lowered capacities fail to successfully claim access to and exercise use of homestead sites • Homesteads rather investing in 'coping strategies'
	Fields	• Overall number of fields less • Average size smaller • More smaller fields, less larger fields	• Land and labour scarcity answered by reducing field and garden sizes • Increased vulnerability of homesteads renders them with less adaptive capacity to environmental shocks (reasons for stopping cultivation mostly crop damage by wild animals and drought) • Capacity to maintain overall agricultural output greatly reduced
	Gardens	• Overall number of gardens more • Total area covered by gardens less • Average size of gardens smaller • More smaller gardens, less larger gardens	
	Combined cultivation	• Marked reduction in area	
	Cattle	• Initial continuation of recovery in total numbers but radical drop in 1992/93 • Per homestead cattle holdings greatly reduced • Skewed distribution probably amplified	• Smaller gardens and fields represent response to tractable labour shortages • Probably necessary to greatly adapt existing institutions for mutual help and labour sharing by making institutions more flexible
	Tenure	• Perceived land scarcity in new residential areas	• Despite land scarcity, abandoned sites still respected and excluded from new applications
	Employment/ livelihood	• Sudden and sustained worsening of employment opportunities for migrants	• Some migrants return home and invest labour and time into intensive agricultural production • Some entrepreneurial opportunities opening up after military coup in 1987
	Landscape/ vegetation	• Intensified spread of woody vegetation in grassland, abandoned homestead sites and abandoned fields • Spread of bush pigs and monkeys because of new habitat patches	• Landscape agents perceived as increasingly powerful actors competing for land, and amplifying the alienation initiated by the Betterment experience

Table 4.14: Summary of trends and contextual factors in homestead agricultural production, 1995 to 2005. The causal relationship between factors listed as structures and those listed as agency can be multidirectional, since it is assumed here that actions of one moment in time presents the structure for subsequent action, while being subject to the structure created by past actions

Period		Structure	Agency
Increasing influence of pensions and livelihood diversification (1995 to 2005)	Homesteads	• Faster growth in number of homesteads • Small reduction in number of people per homestead	• Altered costs of new agricultural forms and diversifying livelihoods, as well as access to pensions possibly enables more homesteads to establish their own sites
	Fields	• Increase in number of fields, through addition of small fields and subdivision of existing ones • Sharp decline in average field size • Reduction in total area, but at slower rate than previously • Diversity of reasons for stopping cultivating fields	• Homesteads still invest in agriculture, but in different organisational patterns, intensified agriculture combined with a range of livelihood activities • In this way the risks of extensive agriculture, as well as the labour costs involved, are lowered • Overall capacity of homestead to produce agricultural output probably slightly increased as a result of enhancing tenure security, more opportunities for entrepreneurial expansion (as a result of less state intervention through trade regulations) and recovery of cattle numbers
	Gardens	• Increase in number of gardens, through addition of small gardens and subdivision of existing ones • Reduction in average garden size	
	Combined cultivation	• Reduction in total area under cultivation but at slower rate than previously	
	Cattle	• Recovery of total cattle numbers • Slight recovery of per homestead cattle numbers • Distribution probably more skewed	• Recovery of total cattle numbers enhances capacity of more homesteads than only cattle-owning homesteads, through the varied and flexible inter-homestead cooperative institutions evolving
	Tenure	• Tenure security improving because of democratisation of administrative structures and less state intervention • New residential areas available for settlement	• Homesteads that are better endowed with capital respond to this situation by investing in relatively expensive but durable infrastructural investments in homestead
	Employment/ livelihood	• Further worsening of long distance labour opportunities • Improvement of local entrepreneurial opportunities through less state intervention and improved rural-urban trade • Wider spread and increased value of state pensions facilitates diversification in livelihood activities	• Homesteads engage in an increasing number of different livelihood activities • The weakening potential of long distance labour migration necessitates this response, while • Increase in access to regular and predictable cash through state pensions, and more free and democratic local market conditions facilitate this
	Landscape/ vegetation	• Rapid transformation of areas into forest • Further reduction of grassland • Spread of exotics and invasives around homesteads and on abandoned sites • Further spread of wild animals associated with crop damage	• The active response of forests and invasive woody vegetation still experienced by many homesteads as an oppressive and alienating actor, especially with regard to livestock production and cultivation • But increasingly individuals recognise the potential forests offer for new entrepreneurial activities through the producing of local building materials, artefacts, as well as the potential for future tourism opportunities

It is also evident, in the stabilising of total agricultural output that homestead agricultural production is still a major part of diversifying livelihoods. The slight recovery in average homestead cattle holdings over this

period, and the manner in which it facilitates inter-homestead cooperation through what I perceive as increasingly flexible and diverse forms of work parties and ploughing companies (table 4.10), are likely to have facilitated this stabilisation.

In which way do trends in homestead agricultural production in Nqabara relate to that in other localities? Andrew's (1992) historiography of homestead agricultural production in the nearby ward of Shixini, from the period from 1942 to 1982, represents an important comparative case for Nqabara. She documents that the total area covered by extensive cultivated fields in Shixini had reduced from 1281ha in 1962 to 650ha in 1982, which equates to an annual reduction of 3,4%. The comparative annual rates of decrease for Nqabara from 1961 to 1995 (from 1616ha to 347ha) and from 1961 to 2001 (1616ha to 294ha) respectively are slightly higher at 4,5% and 4,3%. With regard to garden cultivation however the case in Nqabara differs substantially from that in Shixini. In Shixini in 1962 the average size of a homestead garden (1948m^2) was substantially smaller than that for Nqabara (4105m^2) in 1961. In Shixini this value *increased* at an annual rate of 3,8% to 4191m^2 in 1982, whereas in Nqabara it had *declined* at an annual rate of 0,8% to 3081m^2 in 1995 or 1,2% to 2581m^2 in 2001. The total area under garden cultivation (all homesteads combined) for Shixini increased from 1962 to 1982 from 68ha to 327ha (annual increase of 7,9%) whereas in Nqabara it had only marginally increased from 1961 to 1995 from 185ha to 232ha or from 1961 to 2001 from 185ha to 215ha. The number of homesteads involved in the two studies in the years 1961 and 1962 is very similar, 478 and 501 respectively for Nqabara and Shixini. However the annual rate of growth of homesteads in Shixini between 1962 and 1982, 1,79% is slightly higher than that for Nqabara, both for the periods 1961 to 1995 (1,52%) and 1961 to 2001 (1,54%). The more rapid growth in the total area covered by gardens is partially attributable to the faster growth in homesteads. The faster growth in the number of on its part, most likely should be sought in a differential rate of permanent emigration between the two areas. The combined area under plough for Shixini decreased between 1962 and 1982 from 1349ha to 977ha at an annual rate of 1,6% whereas in Nqabara the decline was much more dramatic at 3,3% between 1961 (from 180ha to 579ha) and 1995 or 3,2% between 1961 and 2001 (from 1800ha to 509ha).

Overall it seems that garden cultivation had been important to homesteads in Nqabara from an earlier period than homesteads from Shixini. Although homestead garden cultivation continued to become more important in Nqabara, it may be that the altered spatial distribution of homesteads impeded the ability of homesteads to expand their gardens to the same extent as homesteads in Shixini, where the implementation of Betterment hardly ever got off the ground (cf. McAllister 1989). Furthermore, it is evident that field cultivation in Nqabara declined more rapidly and to a greater extent than in Shixini. Other commentators (cf. Fay et al. 2002, Mcallister 2001) have noted that locations which had had a longer tradition and higher standard of education, had a higher proportion of labour migrants who occupied skilled jobs and therefore had greater access to remittances. Although this remains conjecture it may have facilitated more homesteads in Nqabara to invest in alternative means of making a living, at the cost of homestead agriculture in general and field cultivation in particular.

Nevertheless one should note, as does Timmermans (2004), that cultivation is not done for the sole purpose of subsistence or sale, but also to reinforce tenure rights, as supplementary animal feed, to brew

beer as well as part of a cultural identity. Fay's (2003a) observations that local cultivated maize is used for beer and seed for sowing, while maize for consumption is purchased, affirms the multiple roles of homestead cultivation. Similarly cattle is kept for a number of reasons, for cultivation, for manuring, as means to organise social relationships, as savings, part of cultural identity, for meat, milk, hides, transport, brideswealth, as a means to gain entry to ploughing. Cultivating the land and keeping livestock are not only a technical means of producing crops, but also fundamentally social and cultural activities (McAllister 2005).

The preceding comparison, like the one presented by Fay and Palmer (2002) with regard to socio-economic differentiation between Dwesa and Cwebe, shows that historically contingent differences in areas that are geographically in close proximity and share many contextual similarities, nevertheless results in the emergence of diverging patterns of livelihood. Nevertheless, the cases in Shixini, Dwesa, Cwebe and Nqabara all illustrate that homesteads within a single study site, even a single neighbourhood, engage to different degrees in a variety of livelihood strategies. Furthermore, the degree to which a homestead engages in a set of various livelihood strategies, changes over time as its own constitution and context changes. Due to this reason it is important to follow the actual practices of agriculture in which homesteads engage in, not only overall production. Variation among homesteads with regard to livelihood, and in particular with regard to the pattern of engagement in agriculture, reveals how agency is involved in responding to, manipulating and reinterpreting environmental, economic and socio-political changes that may arise at scales other than the local.

However, since the central task of this study is concerned with the interplay between agency and structure in the emergence of the landscape, it is necessary to at some point to sacrifice detail with regard to the particularities of homestead agricultural production, in the task to follow the role that homestead production and the activities associated with it, play in the wider landscape. Mention has been made once or twice with regard to landscape responses such as bush encroachment and the spread of wild animals. In the next chapter it is necessary to bring under closer scrutiny the 'actions' of such ecological landscape elements, and importantly also the meaning that emerges from the interpenetration of such ecological action with that of human action. The essential meanings and struggles over meaning can be brought into more clear focus in the next chapter, because its subject matter is the interpenetration of human action with landscape action, and the moment and point where landscape and meaning emerge, is also the point and moment where these two actions interpenetrate and in some cases become indistinguishable.

Chapter 5: The embodiment of the landscape beyond homestead agricultural production

Introduction

The present chapter represents a widening of the scope of attention, from the actors, actions, places and contextual factors associated with the landscapes of homestead agricultural production, towards those associated with the emergence of the wider landscape. Furthermore, this chapter represents a deliberate shift from the structural aspects of history that constrain or enable action, towards the elements of agency, both in social practices and in ecological processes that underlie and produce these structures. For this reason, social processes of meaning-making are afforded more direct attention in this chapter, and in particular, the meaning-making involved in interpreting, responding to or initialising change in landscape.

This chapter is also a progression from the writing of a history of landscape, towards an account of the experience(s) of landscape and its history(ies) by those people who inhabit the landscape. In chapter four I have begun to introduce the idea that the ensemble of activities that constitute people of Nqabara's living in (dwelling) and making a living (livelihood) in the landscape, what Ingold (1993) calls the 'taskscape', can be best understood through the notion of 'building the homestead' (cf. McAllister 1979, 2001 and figure 4.1), using an historical perspective.

In the previous chapter, ecological processes have been deliberately excluded from the centre of attention, to allow me to properly introduce, in a chronological manner, the details and contingencies of the history of dwelling and livelihood in Nqabara. Attention to the ecological processes, and the arenas where these interlock with social action and where the two become indistinguishable, however renders almost impossible a 'metronomic' account of history such as the one I have presented in the previous chapter. The reason for this lies therein that ecological processes interlock with social practices at a variety of concurrent temporal and spatial scales which would not be sufficiently captured in a purely chronological account. Ingold (1993) describes this interlocking as the resonating of many concurrent rhythmic cycles, each of them in some way its own measure of the passage of time.

In an attempt to present an account of the history of the landscape of Nqabara, that is sensitive to the interweaving of cycles at different scales, I will structure the presentation by drawing on Ingold's (1993) conceptualisation of temporality. In chapter one I drew attention to the centrality of action, or tasks, in the passage of time and the dynamism of history. In this chapter I will discuss three key arenas where ensembles of 'tasks', or patterns of social actions, interlock with ecological processes at various temporal and spatial scales, and thus present a means toward the ultimate dissolution of the dichotomy. These arenas arise from three aspects of the taskscape of building the homestead, and are:

i. Building the homestead's livestock herd. Here it is critical to consider the social institutions involved in ownership, caretaking, kraaling and providing shelter, managing forage resources through the temporal and spatial characteristics of herding, as well as the use of fire.
ii. Building the physical homestead in terms of the provision of construction material, fibre, fuel, food and water for its domestic requirements. Here it is necessary to consider factors that influence

the demand for resources, the labour requirements of harvesting, processing and using the resource, the ways open to a homestead to meet these labour requirements, as well as aspects that influence the spatial extent of resource harvest.

iii. Homestead activities that create altered microclimates during or after a homestead's life, by altering the chemical and physical composition of soils or creating physically sheltered spaces. These patches have the potential to act as pioneering sites from where a deflection in the vegetation succession can proceed into the wider landscape.

These ensembles of tasks extend outwards from the homestead into the wider landscape while at the same time drawing elements of the wider landscape into the homestead. In the way that it shapes people's movement through, their actions within and their experience of landscape as well as the spatial variation in the structures and processes of the ecosystems, the topography of Nqabara plays a fundamental role in the emergence of the landscape. Similar action-centred, historically explicit approaches to the study of landscape and livelihoods can be found in works such as that by Fairhead and Leach (1994, 1996) and Nyerges (1997).

The rest of this chapter is structured as a discussion of each of these arenas, first separately, but ultimately also of the links that bind these arenas into a single task- and landscape. When focusing only on the structures that are visible through the lens of a static snapshot in time, in the way that land cover categories are identified on historic aerial photographs, this arena effectively ceases to exist. The social actions of those who inhabit the landscape and the ecological processes at play in the emergence of the landscape form the focus of the investigation. In the discussion of each arena I investigate the ways in which human and ecological action co-structure each other by paying attention to the constraining and enabling effects on both types of actions, of amongst other things, the formal and informal social institutions (tenure arrangements, access and use rights, accepted, expected and precluded behaviour), labour, land, financial and livestock endowments of a homestead, spatial organisation of a homestead vis-à-vis its surrounding natural resources and threshold ecological effects. Since it is also the task of this chapter to bring into sharper focus the agency exercised by people in constituting the taskscape and ultimately the landscape, it is necessary to present an account that is sensitive to people's experience of the landscape as they live and make a living in it, as well as the social processes of meaning-making that arises from their dwelling and livelihood.

In the course of the description of each arena, I illustrate how the processes operant in an arena result in the continuous embodiment, or 'coming into being' of the physical landscape. Following these interactions in these arenas through history requires attention to many of the same data sources as used in chapter four (including the trends and fluctuations in indicators such as rainfall, livestock types and densities, spatial patterns of livestock foraging behaviour, the frequency, intensity and timing of fires, and the spatial and temporal patterns of small-scale 'suitable-patch' creating factors), but in particular also to the discourses among people living in Nqabara, that give insight into social memory and its contestations, of past patterns of practices. These discourses emerge in day-to-day conversations, but importantly also in discussions and statements at meetings of the *ibandla* of the local *ilali*, as well as in *ilali*-level rituals and feasts.

Livestock foraging as an arena of landscape emergence

For practical purposes it is useful to imagine at the focal point of this arena, the interaction between livestock individuals in the act of foraging and trampling and the life cycles of the species of resource they harvest. This point of interaction represents the coming together of a range of patterns of social actions and ecological processes across several scales. The spatial extent and intensity of foraging and trampling by individual animals, are the outcomes of complex interactions between social institutions, practical geographical considerations and ecological variation in the species that are foraged. The spatial distribution of homesteads, the differential ownership among homesteads, in terms of the type and number of livestock owned, the spatial patterns of herding, the topography of the landscape, the institutions relating to tenure and land use, as well as human and animal perception of the spatial distribution of nutritious forage resources, all play a role in the emergence of spatial foraging patterns. Spatial patterns of forage intensity influence the success of the establishment and persistence of spatially structured populations (i.e. metapopulations) of plant species by altering interspecific competition, soil chemical and physical structures as well as fire patterns (Turner 2001). Furthermore, the spatial distribution of past metapopulations of forage species, with regard to their connectivity and the permeability of the matrix habitat, plays an important role in the establishment, re-establishment and persistence of local plant communities (Turner et al 2001, Opdam *et al.* 2003, 2006). These complexities are further amplified since the processes that make up the interactions take place at different rates and over different spatial scales.

Historic trends in livestock densities

Cattle, goats and sheep have been the most important browsers and grazers in terms of numbers and biomass in Nqabara for the last century. Timmermans (2004) established for Ntubeni and Cwebe in 1999 that more than 90% of homesteads owned at least some small stock (sheep or goats). Mules, donkeys and horses have probably been present in Nqabara for much of the same period, but their numbers were always significantly lower. Pigs and domestic fowl were extremely abundant, but the role of these animals as foragers in the wider landscape of grassland-woodland-forest mosaic are however comparatively small. This is because most of the foraging of pigs and domestic fowl takes place in the immediate vicinity of the homestead where they feed on waste and surpluses produced by the homestead, as well as insects and plants associated with the homestead (McAllister 2001).

I have already mentioned the caution that is necessary in interpreting historic livestock data for the rural areas of the former Transkei, and these are especially pronounced in data on goat and sheep numbers (Muller and Mpela 1994b). Data for Willowvale suggest that the first half of the previous century generally saw an increase in all livestock numbers, including cattle, goats and sheep. Cattle and sheep density reached their zenith in the early to mid-1930s. Ainslie (2002) attributes this increase to the widespread impacts on overall herd productivity of the government dipping programme, which was initiated in various parts of the Transkei from 1912 to 1918.

Sheep numbers (along with wool production) in Willowvale rose sharply from approximately 55000 at a density of 40 sheep/km^2 in the early 1920s to peak in the late 1920s at around 120000 sheep (87 sheep/km^2). Hereafter sheep numbers declined gradually to around 90000 in 1961 (65 sheep/km^2) (Muller and Mpela 1994b). No data is available for sheep numbers after this date. It is difficult to estimate current

sheep numbers since a great deal of variation exist among locatlities. For example, Timmermans (2004) found that almost no homesteads in Ntubeni owned sheep in 1999, yet almost 40% of homesteads in neighbouring Hobeni did own some. The majority of sheep farming in Gatyana municipality takes place in the higher lying inland wards (Beinart 1991) and Nqabara probably has lower densities than the average. Only a small proportion of homesteads in Nqabara were observed to own sheep during participant observation.

Older respondents describe that at least until the 1940s a few senior men owned enormous herds of sheep. It seems that then too, most of the sheep were owned by only a few homesteads in Nqabara. It is difficult to determine in detail the causal factors involved in decline of sheep numbers. The agriculture and market related policies that were introduced by the Union and the Republic governments that had caused such a dramatic collapse in agricultural products produced for trade and commerce, would have had a similar effect on the demand of wool and the capacities of sheep farmers to have access to significant markets. The steady reduction in size of suitable grazing in open grassland as well as a change in abundance of grasses conducive to sheep farming may also have played a role. Respondents (of up to 70 years old) quote that sheep health and numbers continued to decline significantly all throughout their lives and that it had been as a result of the decline of appropriate short grass grazing areas.

> 'People sold wool at Nocwane, sheep started to decrease when I was still in primary school (*roundabout 1940s*)' –Lady (1934), Mtokwane (*parenthesis added*).

Respondents also add that sheep graze on different species of grass, as well as on different parts of grass. Historically they had been herded to different grazing areas than cattle, and the reduction in area of such grazing areas that are suitable for sheep farming are also mentioned as possible causes for sheep number decline. The spread of *Acacia karroo* shrubs and trees are also said to render sheep farming more difficult.

Goats are the only true domestic browsers in Nqabara (although cattle do occasionally browse on young shoots of trees and saplings of woody species). Goat numbers did not rise as dramatically as cattle or sheep numbers during the first few decades of the twentieth century. Instead the number of goats in Willowvale remained relatively constant at around 40000 (29 goats/km^2) until the late 1930s and thereafter increased only gradually to peak in the mid 1950s at 70000 (51 goats/km^2) before declining again to about 40000 in 1961 (Muller and Mpela 1994b). After 1962/63 no statistics are available for goat numbers in Willowvale. Current records held by the Department of Agriculture in Gatyana state that Nqabara had only 755 goats in 2006 (*pers. comm.* Mboro 2006) which is equal to a density of 11,7 goats/km^2. Although goat numbers are undoubtedly lower than cattle numbers in Nqabara, it is unlikely that this is an accurate reflection of goat numbers, since the data are based on annual counts at dip tanks, and many homesteads no longer send their goats to dip tanks, opting to treat goats for ticks at the homestead with purchased poison. As with sheep numbers estimations of goat numbers are likely to have a large margin of error since numbers vary greatly across localities. Overall one can assume that goat numbers in Nqabara probably declined from the mid-twentieth century onwards, resulting in an overall release of browsing pressure on shrubs and trees in the landscape.

Despite the role played by sheep and goats in grassland and woodland interactions, cattle outweigh them in number and biomass as the dominant herbivore in the landscape. Cattle numbers have been highly variable as far back as documented history goes in the study area. In the second half of the nineteenth century and first decade of the twentieth, numerous disasters saw cattle numbers falling recurrently and precipitously after gradual build-ups since the preceding calamity (Beinart 1991). The disasters included the lungsickness and cattle killing delusion (from 1855 to 1857), bovine babesiosis (1870s), rinderpest (*Morbillivirus*) (1897), east coast fever (1912/13) as well as several droughts. Since the early 1900s cattle numbers have fluctuated less dramatically.

The number of cattle for the whole of the district rose steadily from approximately 45000 (32 cattle/km^2) in 1922, to around 80000 (58 cattle/km^2) in the period 1929 to 1939. The number fell and subsequently recovered in the next decade to between 80000 and 90000 (Muller and Mpela 1994b). Hammond-Tooke's (1956) estimate of 100000 (72 cattle/km^2) based on data from the 1951 census is most likely an overestimation (which subsequently served to reinforce official narratives of widespread overstocking and the need for intervention in the Tomlinson report). Soon after the mid-point of the previous century the number dropped substantially once again. From then until 1962/63, when the statistical series ends, numbers have fluctuated between 60000 and 65000 (44-47 cattle/km^2) (Muller and Mpela 1994b, figure 4.7).

Data from the three dip tanks in Nqabara suggest that the sustained but punctuated decline in cattle numbers for Willowvale magistrate from the mid-1930s to the 1960s persisted in Nqabara until the mid-1990s. Overall cattle numbers show a trend of continuing decline characterised by large drops during and recoveries after the dry seasons of 1972/73, 1974/75, 1982/83, and 1992/93 as well as during the outbreak of 'red water' from 1975-1978 and a disease locally known as *isifosomkhono* in 1984 (figure 5.1).

It is estimated that overall cattle numbers in Nqabara decreased from approximately 3800 cattle in 1966, i.e. 59 cattle/km^2 or 1,03 hectares per large stock unit (ha/LSU), assuming all cattle to be adults and an adult individual being equal to 0,84LSU (cf. Meisner (1982) in Timmermans (2004)), to approximately 2000 cattle (31 cattle/km^2 or 1,96ha/LSU) in 1995 (table 4.5). Accounts from respondents confirm this trend.

> 'Cattle numbers have decreased quickly through such diseases as red water (*1975-78*), but they had been in the process of decline since before 1969. Cattle are not even being milked nowadays.' – Lady (1954), Luphaphasi (*parenthesis added*).

Since then cattle numbers have recovered marginally to about 2800 (just over 43 cattle/km^2 or 1,39ha/LSU) in early 2006 (own data). It is important to note that the values given in hectares per large stock unit exclude the contribution by sheep, goats and horses.

> 'Cattle are coming a little bit better now, there was a big drought maybe in 1993 when they were dying like flies. Even the trees were dry back then. The monkeys could not hide from hunters' – Man (1971), Ngqeza.

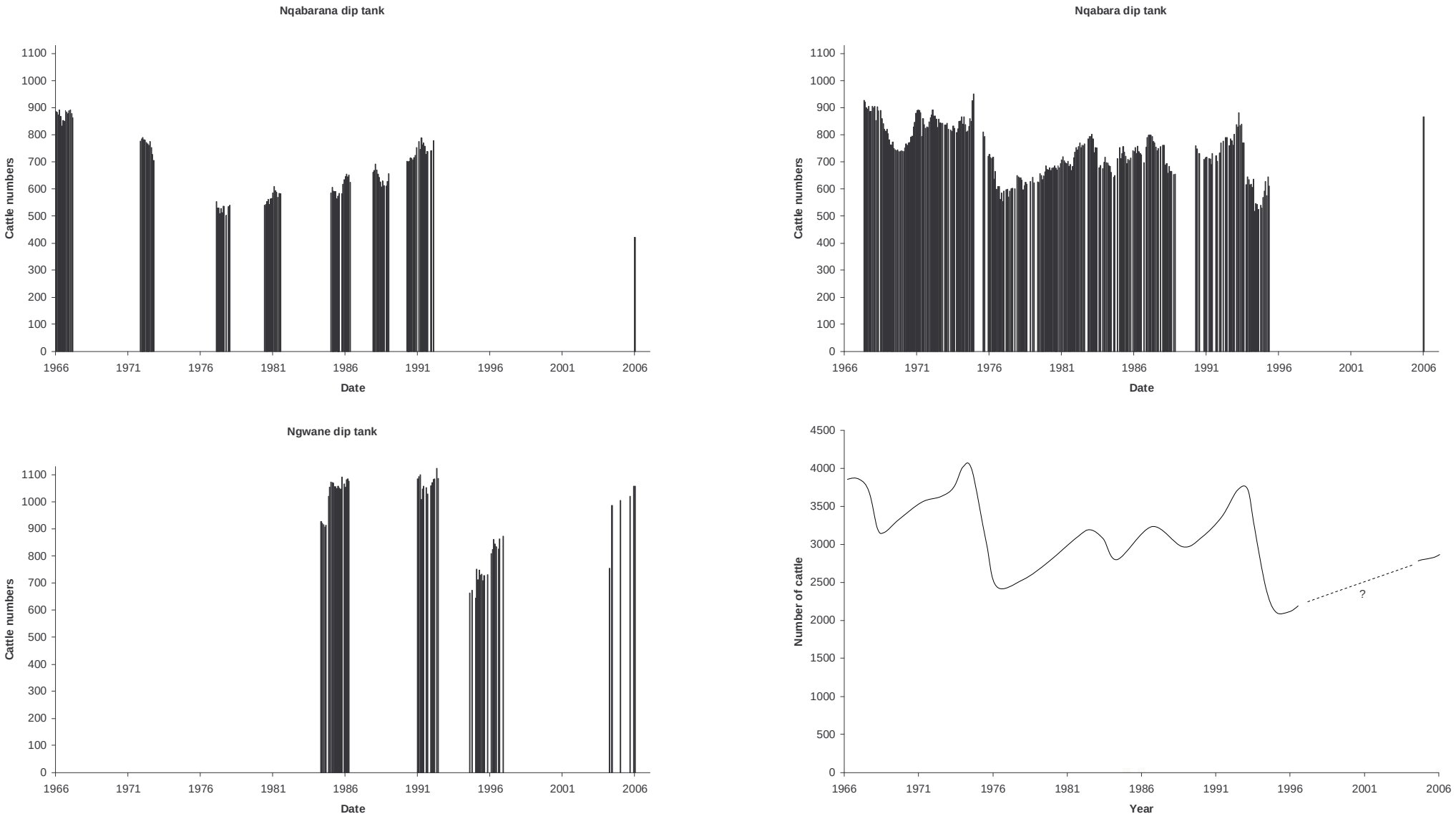

Figure 5.1: Dip records from the three dip tanks in Nqabara, and a stylised graph of total cattle numbers in Nqabara from 1966 to 2006. Top left, Nqabarana dip tank, bottom left Ngwane dip tank, top right Nqabara dip tank and bottom right stylised cattle numbers for all of Nqabara. Stylised cattle numbers were extrapolated from the trends exhibited by the dip record of Nqabara dip tank, as well as the periods in which data from all three tanks were available (cf. methods chapter).

Before I attempt to interpret the trends in livestock numbers on the vegetative land cover of the landscape, it is necessary to pay attention to the ways in which livestock densities are mediated through spatial foraging patterns as well as the articulation of foraging with the fire regime operant in the landscape.

Spatial distribution of livestock foraging

Patterns of livestock ownership

Commentators of livestock ownership in the rural areas of the Eastern Cape, including those in the former Transkei (Beinart 1991, Ainslie 2002) generally agree that livestock ownership have become increasingly concentrated over the last century. Beinart (1991) estimates that on average for the whole of the Transkei in the 1940s, between 25% to 35% of households did not own cattle, and that this percentage had grown to more than half of all households by the 1980s. Part of the reason to explain this lies in the rapid growth of the number of households during this period. Other reasons lie therein that homesteads had varying access to cash through wage labour and pensions, so that their resilience to recover from shocks affecting the size of their herd varied accordingly. The number of male and female children also affected cattle ownership through the exchange of bridewealth.

Spatial distribution of homesteads

The spatial distribution of homesteads also influenced where livestock grazed. Livestock are generally kraaled at the homestead site every night, placing a limit on the distance from the homestead an animal can travel in its foraging per day, and thus on the area it utilises as forage. On some days, as a result of weather conditions, demands on homestead labour or the use of oxen for transport or ploughing, livestock are left around the homestead to graze. Furthermore, livestock are often collected and brought closer to the homestead in the afternoon a while before they are kraaled for the night, affording them some chance to graze around the homestead. Cumulatively these factors result in more intense utilisation of forage resources around the homestead.

As explained in the chapter three, I analysed trends in spatial density of homesteads using a working definition of 'residential area'. As stated in chapter four the total area covered by 'residential area' rose from 19,1km^2 in 1961, peaking at 23,8km^2 in 1972 and thereafter reduced significantly through the villagisation activities of Betterment Planning to remain relatively stable at 13,2km^2 in 1995 and 13,4km^2 in 2001 (figure 5.2). Over the forty year period this represents an increase in the density of homesteads in residential areas from 26,5 homesteads/km^2 to 69,7 homesteads/km^2 (table 4.7). After 1976, the areas immediately surrounding the nucleated villages would have been grazed at much higher densities than before, whereas grasslands, grazing fields and abandoned homestead sites in far-off corners of the landscape would have been subjected to a much lower density of grazing herbivores.

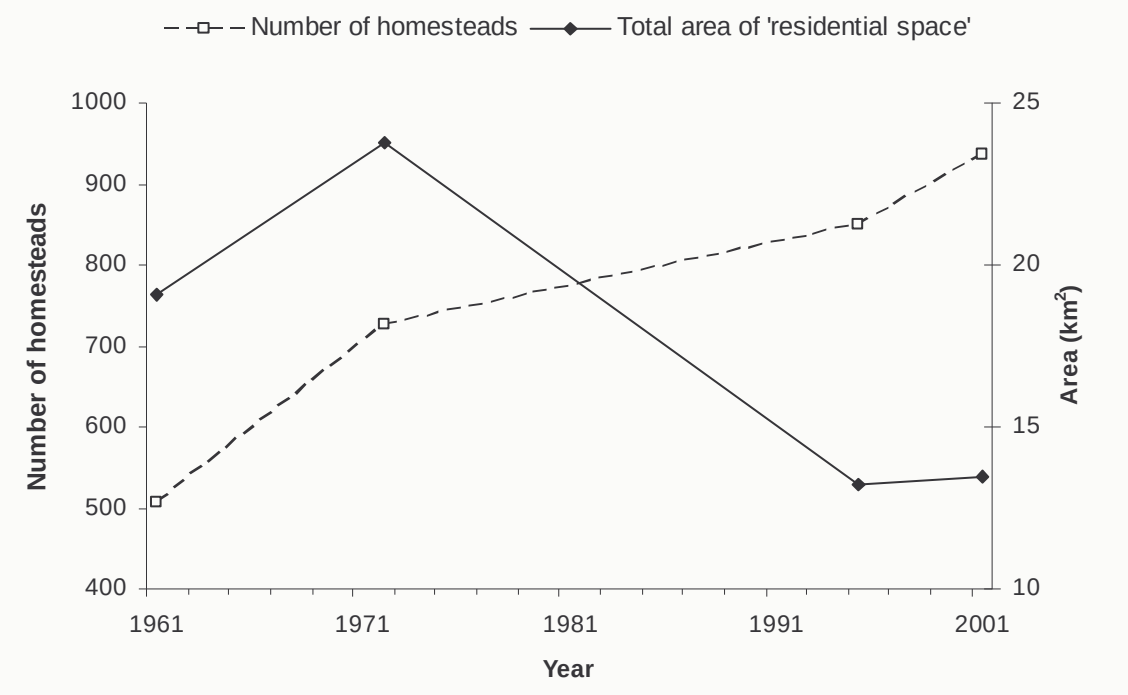

Figure 5.2: Homestead numbers and area covered by residential space. Residential space is defined as the minimum area which includes all homesteads so that no homestead occurs alone in a disjoint patch of residential space. The definition is operationalised by generating buffers around each digitised homestead point, of a radius of half the maximum distance between two homesteads (r=190m) and calculating the area for this in each year.

During the fieldwork, South Africa had just celebrated its first decade of democracy and its third democratic elections. Discussions abounded on voting and politics. On one occasion such a discussion provided a backdrop for insightful perspectives on the effect that depopulation of some and nucleation of other villages had had on grassland. XS, a man from Nocwane, had been lamenting the state of cattle health in the present:

> 'Look where there was settlement before, there is now forest, and cattle don't live on forest but on grass. Where should we look for grazing land? Cattle that go down valleys find it too hot there, yet they are driven away from human settlement; so they have no place where they can be comfortable' – Man (1956), Nocwane.

He proceeded to enquire from the other men what the use voting and democracy is to an ordinary man living in a rural area and the problems he experiences such as this issue of cattle health. The rhetoric of the answer is telling, both about the role Betterment played in the spatial distribution of grasslands, but on a different level also about the practical ways in which democracy is seen to have changed people's lives:

> 'Why is it that people have been moved into places that used to be grazing land for cattle, places with nice and cool air, and why are the cattle now grazing in those hot places down there where they don't want to stay, where they get diseases? Is it not because people had no say in themselves being moved during iTrasti?' Man (1950), Nocwane.

Subsequent to betterment, living in clustered residential areas further away from previous areas used as grazing, and with these areas of grazing rapidly transforming into wooded vegetation, the perception of a scarcity of suitable grazing areas grew among respondents.

> ‘Now that there is no more ploughing in the fields, cattle are just driven away from homesteads.’ –Man (1922), Mayiji.

> ‘My children used to look after the cattle when my husband was working; they used to take the cattle across that hill to the west of us before it became forest. Then people still used to have homesteads there, but they left to go and stay at Ngwane. So we don't take the cattle that side anymore; … now the cattle graze just around the homestead since there are no more ploughing fields these days.’- Lady (1942), Ngqeza.

Changes in the social institutions of livestock herding and its articulation with the abandonment of extensively cultivated fields, with the spread of woody vegetation and with changes in labour available for herding, may have played an equally important role as homestead spatial distribution in shaping the spatial extent of foraging.

Changes in livestock herding

Cattle and sheep are more actively herded than goats are. Most respondents agree that during the time when most homesteads were still cultivating their extensive fields, before the implementation of Betterment, i.e. before 1974 (cf. figure 4.8), it was necessary to stay with the cattle (v.t. *ukuzilusa*) in the grazing fields if these were close to cultivated fields, since the fields were mostly unfenced or poorly fenced with branches only. As large patches of cultivated fields began to be left unploughed, it became less of a necessity to stay with cattle all day long, and they were only taken out, or accompanied (v.t. *ukuzikhapa*) to the places of grazing and then left there to be collected (v.t. *ukuzinqanda*) in the afternoon.

In the subsequent decades, woody vegetation expanded and thickened in abandoned cultivated fields, along streams and in the floodplains of rivers, along forest margins and even in previously open grass grazing areas. As a consequence it became increasingly difficult, and more expensive in terms of the time spent searching, to collect livestock that have ventured into these thickly vegetated areas in the afternoons. As wooded vegetation started to increase in far off grazing areas and access routes to these became less passable, some families deliberately tried to prevent their cattle from going to these places, preferring to herd them to clear open areas close to the homesteads. Many respondents, especially from homesteads with restricted labour capacities (through homestead size, and the age and health of its members) stated that they rather accompany (or take out) cattle (*ukuzikhapa*) away from such areas in the morning, to prevent them from getting lost and to ease the task of collection in the afternoon.

> ‘Cattle used to graze at Makuta, Nogumbe, Matyeni; now they don't graze there anymore because they get lost there. They just graze around the homestead.’ – Lady (1932), Nondobo.

> ‘My husband's children and myself used to take out the cattle to the grazing fields and for ploughing. The children used to wake up early and go to the ploughing fields and thereafter to school, while I would then take the cattle out to graze and the children would collect them after school. The ploughing fields were down there to the north of Nkelekete. Nowadays the cattle just graze across the road since we are not ploughing.’ – Lady (1942), Mayiji.

This practice is justified by referring to the ease with which cattle can get lost, stolen or injured in these areas and the subsequent difficulty of retrieving or healing them. Thus in recent years it has also become increasingly accepted for homesteads with a shortage of labour to accompany their cattle for only short distances from the homesteads and sometimes not at all, just opening the cattle kraal gates, thereby affording cattle to ‘loiter’ around the homesteads.

> ‘During the time of my youth the land was demarcated for grazing and for ploughing land. Even the goats, cattle and sheep had their own grazing fields, where they were driven and left to graze on their own. Nowadays the gates are just opened and they loiter around the homestead as there is no land to drive them to.’ – Man (1946), Nocwane.

Such cattle ‘loitering’ around homesteads influences the costs and constraints of cultivating a homestead garden. Loitering livestock makes it increasingly difficult to cultivate a homestead garden if it is not properly fenced with pole and wire fencing. The spread of proper fencing of homestead gardens, indeed the institutionalisation of it as an expected element of cultivation, renders the altered cattle herding practices acceptable through positive reinforcement. The resulting increased entry costs into homestead cultivation is, however, likely to exclude the most vulnerable homesteads from gardening.

Outside observers sometimes assume that the attendance of school by children detracts significant herding labour from the homestead (cf. Heron 1990). Attending school had been a significant part of the lives of children for the majority of homesteads in Nqabara since very early on in the twentieth century. Since early in the century children have had to adapt their daily activities in several ways to answer to the labour demands of the homestead and the school. Annual reports by the Department of Bantu Education do however show an increase in school attendance from the late 1950s into the 1960s, as a result of the increased political will in which the policies of Bantu Education was implemented, as well as a proportional increase of schooling children in the population. By 1961 combined school *enrolment* in junior primary schools of the area were more than 1 000, which is approximately a third of the population of Nqabara at the time. School *attendance* on average was 68,8% at the time (CADe Undated). Respondents that had been schooling at the time described that herding activities were generally done in the mornings before and afternoons after school and that they only stayed with the herds on weekends or exceptional days when cattle were likely to be in close proximity to ripening crops in the cultivated fields. This pattern was facilitated by a landscape with grazing patches distributed on hills relatively isolated from cultivated fields and where cattle are reasonably visible from the homestead. Thus it was necessary to guard (*ukuzilusa*) cattle only on the days when they grazed close to the cultivating fields, and only in the growing and ripening season. For this reason it can be assumed that the changes in herding practices were predominantly as a result of factors other than labour competition with schooling.

The situation observed in 2005 and 2006 when fieldwork was done, does not depart significantly from the one just described. Children and, less commonly elderly men or even elderly women accompanied cattle to the grazing fields in the morning and collected them in the afternoons. No cases were observed where the cattle were herded all day long (*ukuzilusa*). Those extensive fields that are still being cultivated are all properly fenced and all-day herding is therefore not necessary. Although in general each homestead is responsible for the herding of its own livestock, a great deal of mutual help does exist among the homesteads of an *ilali* in the taking out, searching for and collection of cattle, especially when for some reason members of a homestead are temporarily absent or unable to perform the tasks. In such cases a neighbour readily stands in and assists that homestead.

Livestock choice in forage locality

Whereas the basic direction and locality of foraging is influenced by herding practices, the finer scale movements during the day, and the choice of forage, is further shaped by choices the livestock themselves make. People observe that cattle remember and actively head for patches of nutritious grazing, attempt to enter crops and choose suitable resting places. Launchbaugh and Howery (2005) discuss in detail how the conditioned preferences and aversions of domestic and wild animals with regard to food and habitat influence their foraging locality. They show that animals recognise and remember places in the landscape through sensory cues, and through conditioning or social learning they relate these places to 'rewards' or 'punishments' associated with them. Preferences are conditioned for places associated with safety, relief of thirst, thermal neutrality, freedom from pain, comfort, a sense of security, rest, play among juvenile animals, opportunities for sexual interactions and successful aggressive interactions. Conditioned aversions would be formed for habitats which the animal associates with hunger, excessive heat or cold, pain, stress, illness, weariness or fear.

In their day-to-day taking out and collecting cattle and other livestock, people of Nqabara grow keenly aware of the preferences and aversions that their livestock have for certain places in the landscape. This is easily observed in the anticipatory character of livestock herding. In driving animals to grazing fields, to the dipping tank or back to the homestead, the herder anticipates which animal will attempt to break away from the herd and he knows the reason why the animal attempts it at that specific place and time. The sight and smell of growing and ripening crops, and even the drying post-harvest crop plants are described as great attractions for livestock. Forests and streams are experienced as places where livestock enter when they experience discomfort or disease. Open grassy patches on the higher slopes of hills, where cool afternoon breezes are prevalent, are known to be favoured resting and ruminating localities for cattle.

Through the combined effects of the spatial distribution of homesteads, the herding practices of livestock and livestock choice in forage locality, means that livestock utilisation of forage resources is spatially heterogeneous. It is therefore more useful to imagine overall livestock density as a range of densities that vary in space and time, with some patches in the landscape utilised with much greater intensity than others. This heterogeneity is likely also to be reflected in vegetative cover patterns in the landscape, but before I can consider these, it is necessary to consider one other important factor in the dynamics of vegetative land cover, fire.

Articulations of livestock foraging with fire regime

The spatial extent and intensity of livestock foraging articulate with the fire regime in several ways. Firstly, livestock foraging and trampling influence the standing dry matter, which affects the temperature of fires. Livestock foraging patterns also influence the connectivity among grassland patches, thereby influencing the spread of fires, which also affects the frequency and intensity of fires. Lastly, people actively set fire to certain areas in order to stimulate fresh plant growth for livestock forage.

Very little data is available regarding the history of fire or for burning programmes or post-fire succession in the mesic coastal grassland (McKenzie and Cowling 1979). In the absence of detailed studies, fire incidence has to be gauged through the limited data available such as references of colonial authorities in policies and archival communications, as well as opinions and accounts of local people in Nqabara and

the neighbouring areas. Any discussion should at best be seen as informed speculation since fire is an ecosystem process subject to so many sources of stochasticity. Given the scarcity of data, it is impossible to draw any firm conclusions on the role of fire in Nqabara's landscape.

As early as 1903 negligent use of fire had been prohibited as one of the activities regulated by Proclamation 135 of 1903 on forest use (Palmer et al. 2002). Before 1900, large fires were associated with big organised hunts:

> 'Year by year the Willowvale district is burnt over… In the winter months large hunts are organized by some of the traders and visitors to the seaside, with thousands of native beaters and dogs. They last for a week at a time, and the game, formerly abundant, is now very scarce' (Henkel 1888 pp.63 in Palmer et al. 2002).

The increased presence and control of the Transkei Forest Department and Native Affairs Department from the 1920s to 'self-government' in 1963 would have made the organisation of such big hunts increasingly difficult. People still regularly use small localised fires to clear new homestead sites or field sites that have been left fallow for long during the fieldwork period. Some investigators have argued that sustained activities and promotion of 'fire narratives' by colonial and post-colonial authorities are likely to have influenced popular opinion on the role of fire in the landscape and as a result also of the desirability of fires as grassland management tools (Chalmers and Fabricius *In Press*). By the mid-1970s, in the Dwesa nature reserve at least, McKenzie and Cowling (1979) reported that grasslands in general were moribund as a result of a lack of fires. It is unclear how much this is true for areas such as Nqabara since ther was less grazing by domestic livestock inside Dwesa Nature reserve than outside. The period of relatively meek law enforcement during the late 1980s and early 1990s saw some increase in local hunts and associated fires but nothing on the scale of those of a century before that time (Palmer et al. 2002).

Chalmers' (2005) and Chalmers and Fabricius' (*In Press*) studies of indigenous knowledge of fire use in Nqabara and its role in shaping the landscape found that the knowledge of individuals identified as local natural resource 'experts' diverged significantly from those of other indiviudals. The 'experts' judged a reduced frequency of fire to be a major factor causing the expansion of forests into previously grassland areas as a result of the absence of its positive consequences of stimulating the growth of young grass shoots and curtailing forest expansion. It was also said that the absence of fire would cause forest and woodland areas to expand. In contrast, most non-experts identified only the destructive aspects of fires and stated that it should be avoided at all costs. Timmermans (2004) also found very little evidence of coordinated grassland burning in Ntubeni and Cwebe in 1999.

If the responses of the respondents are anything to go by, it appears as if fire is not seen as a desirable process in the landscape and one would presume that its use similarly would be negligent.

> 'There have only ever been these small fires in the grazing lands, never any big fires that I can remember' Lady (1935) Ngwane.

This certainly would make sense from a conventional ecological point-of-view which regards the absence or infrequency of large 'hot' fires as an important aspect that favours the establishment of seedlings of

woody perennials. Furthermore its seems, with the history of the activities of the various governments' and the outsiders acting as their agents, that people are likely to be reluctant to start fires, and if not, at least reluctant to acknowledge their use of it. Similarly in the village of Hobeni in Cwebe, a survey on the use of fire as a grassland management tool found local opinions to vary between those who believed that fire stimulated the growth of *Acacia karroo* leading to subsequent loss of grassland and those who believed that burning at the right time improved the condition of grazing (Palmer *et al.* 2002).

Local responses and opinions however, may in fact not correspond to actual practices. The influence of decades of sustained narratives on fire by colonial officials may have influenced how people respond to the questions of outsiders on fire, but not necessarily on their use of it. In any case, fires also have natural causes (a fact grimly supported by at least two homesteads that were struck by lightning in the period that fieldwork was done).

One should remember that fire incidence, intensity and frequency are influenced not only by factors that start fires, but importantly also by factors that allow or inhibit the spread of fires. Fuel load and the proportional contribution of grass cover and woody cover to fuel load importantly influence the spread of fires. Furthermore, the most intense fires occur under 'bergwind' conditions in early spring months when hot, north-westerly berg winds are common along the Transkeian coast (McKenzie and Cowling 1979). The increase in woody vegetation on landscape patches that were previously dominated by grasses that has occurred over the last forty years is likely to have perpetuated the altered fire regime by limiting the spread of fires, thereby also influencing the frequency of fires. Small, localised, infrequent and 'cold' fires are likely to have become the dominant type of fire over the last few decades. This in turn, is likely to have afforded herbs and woody vegetation opportunities to establish and persist in grassland with greater success than under previous fire regimes, as Du Toit (1972) and Trollope (1974) in McKenzie and Cowling (1979) have demonstrated that, subsequent to *Acacia karroo* invasion, annual burns may not be sufficient to eradicate *Acacia karroo* since it coppices profusely after fire.

The foraging activities of livestock as well as the fire regime also importantly articulate with the resource harvesting activities of people in the landscape, which I will discuss as the second arena where landscape comes into being.

Natural resource harvesting patterns

As with the discussion of the arena of livestock foraging, it may be useful to structure the presentation of resource use as an arena, around the central point of individuals busy in the act of harvesting resources, whether these are construction timber, fuelwood, thatching grass, weaving grass, medicinal plants or plant or animal food resources. Once again the spatial extent and intensity of harvest are the outcomes of complex interactions among the enabling and constraining structures presented by social institutions and spatially structured ecological processes. A homestead's resource demand is influenced by its size and composition and its capability and willingness to substitute the harvest and use of natural resources through the purchase of commercially available alternatives. A homestead's capacity to fulfil its resource demand is further influenced by the labour requirements of the harvest (which on its part is influenced by the spatial distribution of resources relative to the spatial position of the homestead) as well as the homestead's labour endowments or financial endowments with which to mobilise the necessary labour

from outside the homestead. Formal as well as informal social institutions may influence the choice of resource, the amount and frequency harvested, the labour used in the harvest and the locality of its harvest. On its part, the spatial extent and intensity of harvest interacts with ecological processes that shape the population dynamics of resource species by altering microhabitats, influencing interspecific competition, stimulating growth through coppicing or clumping, or shaping the spatial interactions between metapopulations of resource species.

Demand for resources

Resource demand is influenced by the number of people living in Nqabara, the growth of new homesteads or expansion of structures within existing homesteads as well the choice of fuel and building material of a homestead.

The population of Nqabara grew at an annual average of 0,75% from 1961 to 2001, with the fastest growth occurring in the last decade of that period. Concurrently, the number of homesteads grew at an annual rate of 1,54%, with the most rapid expansion occurring from 1961 to 1972 (annual rate of 3,29%) (table 4.4). The period of most rapid establishment of new homesteads occurred from 1974 to 1978 as a result of forced resettlement.

The forced relocations during betterment would have increased pressure on forest resources during and for several years after betterment as homesteads gradually built-up savings to organise *ilima* goups or contract individuals to cut, collect and prepare resources for fences, houses and other structures in the new homestead sites. It is improbable that a homestead would have been able to transport all the raw material from the original homestead since at least some infrastructure had to be built in the new homestead before the move could be made. The change in homestead distribution pattern is likely to have placed the forests in immediate vicinity of nucleated villages under greater pressure of use than forests far from them in the landscape. Furthermore, the changes in herding institutions discussed in the previous section, increasingly necessitated the fencing of gardens and fields and thereby increased the demand for poles from forests.

However, homesteads differ with regard to their dependence on natural resources to fulfil these resource demands. Respondents state that even since the 1960s some homesteads have been purchasing poles and corrugated iron for the building of houses, and wire netting for fencing. The upswing in the opportunities for labour migrants during the 1960s and 1970s coupled with the increased availability of alternative resources such as purchased poles, rafters, corrugated iron and cement bricks enabled many homesteads, including recently relocated ones, to invest in alternative, possibly more durable building resources in the years subsequent to betterment. It is unlikely that newly established homesteads could immediately afford such purchased resources and they probably continued to rely on forest resources to fence their sites and build houses.

Timber from local forests continues to be an important construction material to the present. Data from the 2001 national census state that only 10,6% of households had houses of brick structures, and that the rest was made from traditional materials (Statistics South Africa 2001). This statistic however overlooks the fact that a homestead normally has multiple house structures of varying materials and fails to distinguish

between traditional pole and mud structures, or traditional mud-bricks. Mud-brick structures are regarded by many people as more durable structures than mud and pole houses, but more affordable than those built from purchased cement bricks. In each *ilali* several women manufacture mud bricks, for own use or for sale to other homesteads.

In Nqabara thatched and corrugated iron roofing seems to be in equal use, and little is known about historic trends in their relative importance. Homesteads that have invested in rainwater tanks and guttering, have generally shifted to corrugated iron. Nevertheless many homesteads have at least one thatched roof structure, mostly of circular structure, where cooking and ritual activities take place. The harvesting of thatch, predominantly *Hypharrhaenia hirta, Cymbopogon validus* and *C. excavatus* has been shown to stimulate their growth as well as clump formation (Shackleton 1990). These species also increase when they are underutilised by grazers (Van Oudsthoorn 1999).

The most important fuelwood resource in Nqabara is *umnga* (*Acacia karroo*). It has been present in the landscape as long as respondents can remember, though inhabitants perceive its current abundance as significantly higher than in earlier periods in history. The use of paraffin as a means of homestead cooking is widespread among homesteads but few if any rely solely on paraffin. Paraffin-fuelled stoves are used for specific cooking tasks only, such as making tea or cooking specific types of meals (such as *amagwinya* or fried chicken) that are eaten infrequently, often as treats on the days of pension pay outs. Cooking for rituals or funerals is always done on wood fires.

Medicinal plant harvest is limited to individuals having knowledge of the various leaves, roots, tubers and bark that can be used for medicinal purposes. Individuals without this knowledge consult knowledgeable individuals (*amaxhwele*-herbalists or *amagqirha*-traditional healers) when they experience a need for medicine rather than harvesting it themselves. Wild greens are harvested as food supplements, mostly from fallow fields or gardens, and in an ad hoc or opportunistic way. Game species is hunted by young males with the aid of hunting dogs and rifles, mostly during winter months when the forests are less dense. The importance of these three activities in shaping the emergent patterns in the landscape can be considered to be relatively small.

Overall one can assume that resource *demand* for construction materials was highest in the 1960s and 1970s, when the growth in the number of homesteads was most rapidly, while that for fuel, food and fibre is currently at its highest because population densities is currently at its highest. However, resource demand is mediated by a number of factors and the patterns of resource harvest and use are completely reflected by attention to demand only. In this regard it is necessary to turn to the factors that shape the labour requirements of resource use as well as the labour organisation of its extraction.

Labour requirements and organisation of resource harvest and use

Apart from the obvious fact that the labour demand of resource harvest will be influenced by the physical distance between the resource and the homestead as well as the topography and vegetation of the route to be travelled, labour requirements are importantly shaped by the type of resource to be harvest and the specific use for which it is required. In this section I pay attention to the social organisation of mainly fuelwood and construction timber harvesting.

The impact of collection of fuelwood on woody vegetation in the landscape corresponds to two categories of fuelwood collection, differentiated in terms of the labour organisation of fuelwood collection and the social use for which it is collected. Day to day fuelwood collection involves the collection of small twigs and branches as well as thicker poles, but mostly from dead and drying plants. It is mostly done by women and girls but in many cases also by young boys. This activity reduces dry fuel load (relevant to wildfire intensity) in wooded grasslands and woodlands without reducing the density of woody vegetation. Fuelwood collection for social occasions such as funerals or *imicimbi* often involves the cutting of living trees and transporting them with oxen to the homestead where the occasion is to be held. Since the activity involves the harnessing (Xh. v.t. *ukubopha*) and driving of oxen it usually involves only men and boys. The two types of collection are interrelated as men will sometimes cut living trees and branches but leave them to dry for women to collect them later, and collection in the type of men and oxen is almost always supplemented by women collecting as individuals or in groups.

The three main categories of construction timber are poles (*isibonda*, pl. *izibonda*), branches (*ihlahla*, pl. *amahlahla*) and sticks (*isinti*, pl. *izinti*). *Izibonda* are used in the construction of houses (*indlu* pl. *iindlu*), fences, cattle kraals (*ubuhlanti*) and granaries (*udladla* pl. *amadladla*), by planting the bottom portion of the poles in the soil, and weaving *izinti* (in the case of houses and granaries) or *amahlahla* (in the case of kraals between the poles), or spanning wire netting in between the poles (in the case of fences). *Izinti* and *amahlahla* are generally cut and prepared on the site of harvest, by individuals or members of a homestead, over the course of days or weeks, and then transported home at a later stage with the aid of oxen (either owned by the homestead or organised through a ploughing company or work party). *Izinti* are cut from saplings of trees in the margins of and from within forests, using a range of species, while *amahlahla* are most often cut from *intsinde* (*Coddia ruddis*) occurring in forest margins and bush clumps in woodland and wooded grassland.

In contrast, the harvesting of *izibonda* requires more complex organisations of labour. The harvesting of poles for construction requires the labour of adult men as well as oxen. For homesteads with a shortage in either of these, it is possible to organise the labour of a work party by brewing beer or buying, cooking a meal and/or buying and distributing brandy and tobacco or by contracting a specialist individual or groups of individuals to collect and process the necessary resources. *Ilima* groups and specialist individuals differ in the type of resource they harvest as well as the techniques they use. Men in *ilima* groups generally harvest trees of sizes ready for use as poles without further preparation. The process requires only the use of an axe (*izembe*) or bush-slash (*ibushe*) and involves the chopping down and debranching of a large number of trees within a single patch of forest. The process is normally split into several, not necessarily consecutive, days of working. After the poles have been carried to the edge of the forest, it is necessary to organise a span of oxen to transport the poles to the homesteads where they are to be used. In contrast, specialist individuals working singly or in small groups work with a range of tools that include various shapes and sizes of wedges, chisels and hammers. They carefully select trees of substantial size and suitable size, which they fell and split the trunk into poles of usable sizes. This process requires several days of work, and mostly not consecutive days as a result of the physical strenuousness of the

job. Given the different sizes of trees chosen in the two methods of harvesting, it follows that forest physiognomy will also be differentially influenced by the two methods.

The relative frequencies with which the methods are used, depends on the availability of labour to form *ilima* locally, the financial capability of a homestead to contract individuals to prepare batches of poles and of the preference of pole-type by the homestead head. As the labour demands of both types of harvest is relatively high, the shift from using construction from local forests, towards the use of mud bricks, purchased poles or even cement bricks represents a shift in investment patterns towards more capital intensive as opposed to labour intensive construction methods.

Formal institutions on resource use in Nqabara

Resource demands and the labour demands of harvest, are further subject to formal rules concerning the harvest and use of forest resources. Over the past century and a quarter, the various local and central governments and their departments have made several attempts of intervention with regard to local patterns of resource use form forests.

As early as 1893 headmen were being recruited to administer government regulations with respect to 'undemarcated' forests (Palmer *et al.* 2002). In 1932 undemarcated forests were formally handed over to the headmen (and then became known as 'headmen's forests') in a proclamation that made it their duty to conserve all forest produce for the public good. The Native Affairs Department assumed at least a nominal role of protecting African interests in the conservation measures proposed, but the after the 1936 Native Trusts and Land Act effectively lost control over forests to the Forest Department (Palmer *et al.* 2002). In 1938 a list of all forests with potentially commercially valuable species in Nqabara and the rest of Willowvale was produced. In 1950 this was followed up with a techeometrical survey and the production of maps for eight undemarcated (headmen's) forests (of between two and five morgen each, covering a total of 21 morgen or approximately 18ha) and 24 so-called 'Trust Forests' (of between three and 49 morgen each, in total covering 314 morgen or approximately 270ha) (CADc Undated). These lists were produced with the aim of eventually fencing a total of 194 morgen (approximately 160ha) of these 'Trust Forests' in Willowvale district.

No harvesting of any species whatsoever was allowed in Trust Forests and only harvesting of species of trees with no potential commercial value were allowed in headmen's forests. Harvesting from headman's forests was subject to the issuing of permits by subheadmen which they obtained from the headman who in turn received these from the Native Affairs Department. Forest rangers were appointed to monitor compliance (CADc Undated). According to respondents' remarks, these rangers would inspect one's homestead yard and demand to see permits for all recently harvested material. It is not certain to what extent the new regulations were consistently enforced on a day to day basis. The fact that they had caused a fair deal of resentment on those dependent on forest resources may be as much due to a loss of local control and decision making as it is due to a loss of access to valuable forest resources. After the military coup in 1987, government intervention in local use of forests became less important and control of forest use by default reverted back to the level of the *ilali* (cf. Fay 2003a). The activities of various non-governmental organisations, natural resource-based development organisations and research institutions since the mid-1990s has resulted in a high degree of awareness of the value of forest resources among

users in Nqabara, visible in the various community structures that have come into existence that relate to forest use and natural resource-base development.

Informal institutions on resource use in Nqabara

Informal social institutions relating to the forms of resource extracting behaviour that are acceptable, expected or prohibited, play a further important role in influencing patterns of resource use. A homestead's daily activities are for the most part open and visible to the neighbours living in the same *ilali.* A social actor's behaviour is always modified in some way by the accepted notions of proper behaviour, the expectations of and obligations toward other social actors. For example, the physical appearance of homestead structures, especially the size and solidness of cattle kraals are important cultural symbols that are associated with wealth and identity. Large and sturdy poles at the entrance to a cattle kraal (*ixhanti*, pl. *amaxhanti,* loc. *emaxhantini*) are often experienced as signifiers of the presence of the ancestors to a homestead and their cattle, and therefore also signifiers of health and prosperity (cf. plate 17).

> 'The big poles called *ixhanti* are there to remind the children and grandchildren of their forefathers. Similarly the cattle horns are to remember the favourite ox of the deceased homestead head and ask that his strength be with the homestead. You should stand on the left side of *ixhanti* when asking for health and good luck (*ukucela impilo*). Also, you should not put up the horns of a black ox.' Man (1967), Mayiji.

Informal social institutions also undergo change as the values people place on the materials, condition and appearance of homestead structures evolve and change. For example, the use of cement bricks and tile roofs can be afforded only by a very small proportion of homesteads. Homesteads that have such structures are seen by some respondents as signifiers of specific social identities, often of educated individuals who through their education have gained access to higher paid jobs.

Resource harvesting by people, together with the foraging of livestock and the pattern of burning in the landscape, interact with a third arena, namely the creation of patches that favour vegetation succession along alternative trajectories.

Creating patches of disturbance

Livestock foraging, fire patterns and resource use are important processes in the patterns of persistence of the spatially structured plant populations in Nqabara. However, the spatial distribution of metapopulations of plant species is influenced not only by the persistence of populations, but importantly also by the patterns of establishment of new populations. For this reason it is important to consider the various human actions that result in the creation of patches favourable for the establishment of specific plant populations. In landscape ecology, such patches are often referred to as 'disturbance' patches which can be created by various types of ecological processes and may or may not involve humans. In this section I use the term 'pioneer-favouring patches' as a synonym for 'disturbance patches'.

Homestead-based activities that produce altered microhabitats through changes in soil surface characteristics, shading, protection against foraging by animals or against evapotranspiration (cf. studies by Fairhead and Leach 1994, 1996), represent a diverse arena that are influenced by a wider range of activities and social institutions than the other two arenas discussed up to now. Through the repeated cultivation of crops, the manuring of homestead gardens, the erection of livestock kraals and accumulation

of dung therein, the fencing of gardens, as well as the dilapidation of old homestead structures, small-scale patches are created in the landscape, which facilitate, catalyse, speed-up, inhibit, slow-down or deflect processes in the landscape that take place over greater spatial and temporal scales. In considering the arena where these patch-creating processes emerge, it is necessary to pay attention to the actions operant in these patches during homestead occupation and active cultivation of gardens and fields, but also to the factors that influence the spatial extent and rate of creation of new and abandonment of old homestead sites, gardens and fields, as well as to the post-abandonment processes that influence the character of these patches.

Patterns of actions during years of cultivation

The practices in the last season of cultivation of a garden or field are the most important in terms of the effects that changes in the physical properties of the soil will have on subsequent vegetation succession. Some gardens or fields had been deep-ploughed in early spring, but due to drought or shocks to the homestead, these cultivated patches were abandoned. The result is that deep furrows, mounds and broken soil create many pockets or microhabitats suitable for seedling establishment. The physical aspects of pioneer-favouring patches are further shaped by the fencing of gardens and fields and the planting of hedges and trees that act as perching sites for frugivorous and seed-eating birds, during the cultivation of the field or garden as well as after its abandonment. The fences and hedges further protect the seedlings of seeds thus transported against trampling, foraging, dessication, strong wind, rain and hail.

Continued cultivation of patches of fields and homestead gardens, results in changes in the chemical properties of the soil. Whereas in extensive cultivated fields the cultivation of mainly beans and maize over several years are the main driver of this chemical change, in homestead gardens the main drivers are the manuring of the soil with livestock dung from cattle kraals, and the use of household waste as compost. Practices of fallowing, contouring, the planting of grass verges in between cultivated patches, and the shifting of boundaries of cultivated patches further influence changes in soil composition. The chemical changes in homestead gardens and extensive fields can therefore be expected to diverge greatly.

Species associated with nitrogen-fixing bacteria, such as *Acacia karroo,* have an ecological competitive advantage over species without (such as many grasses) to establish in the nutrient impoverished patches of abandoned extensive fields. Although Smits *et al.* (1999) found that abandoned fields in an inland district of the former Transkei had mostly herbaceous species in them, the divergence is attributable to differences in climate between low-lying coastal districts with a more subtropical climate than higher lying inland districts. Furthermore, the broken soil, furrows and contour lines that remain in abandoned cultivated fields, trap seeds, of various annual herbaceous species as well as *Acacia karroo*, carried in run-off rainwater and offer them microhabitats of protection from desiccation, fire and herbivory. After a few years, patches of abandoned cultivated land that occur alongside open grassland, act as dispersal sources for the seeds of such newly established species (cf. Aucamp *et al.* 1983). In this way the small-scale processes that result in the creation of pioneer-favouring patches, interact with the larger scale process of the geographical expansion of *Acacia karroo* in Southern Africa (Aucamp *et al.* 1983, O'Connor 1995).

Homestead gardens that have been abandoned, especially the hedges and fences around gardens, act as sites of establishment for a range of pioneer woody and herbaceous species (*ukhulo* – weeds), both indigenous and exotic, from where they spread to other parts of an *iilali.* The most important exotic species identified during fieldwork are *Caesalpinia decapetala* (locally referred to as *ibhobho*)*, Cestrum laevigatum* (*umplayi*), *Conyza scalmida, Datura stromonium, Lantana camara* (*libazisa*) *Rubus sp.* (*iqunube*)*, Senna didyomobotrya* (*umbhangabhanga*), *Sesbania punicea, Solanum mauritianum* (*umparafini*) and various other *Solanum spp*.(*umthuma omkhulu, umthuma omncinci*) Indigenous species identified and assumed to be associated with hedges, fences and dilapidating structures of *iilali* are *Achyranthus sp., Coccinea sp., Corchorus sp., Diospyros dicrophylla* (*mpangisa*)*, Lippia javanica, Maesa alnifolia* (*cawuza*) and *Plectranthus sp.* Apart from *iilali*, some of these species are also found along streams, rivers and along the margins of forest. Accessibility of landscape patches is greatly influenced by their occurrence since footpaths and access paths into forests can and do become completely overgrown by them.

The complete abandonment of homestead sites results in the creation of a number of different patches favourable for the establishment of woody vegetation. Apart from the abandoned garden, such patches are also created on the sites of old kraals, along fallen-over fence lines and poles, as well as dilapidating houses and granaries (cf plates 14, 16 and 18). The accumulation of cattle dung (including undigested seeds) in the cattle kraal, combined with the relative protection against wind, herbivory and desiccation offered by the ruined remains of an old kraal, very often results in the establishment of an island of vegetation constituted mainly of fast growing invasive species and a small proportion of woody perennial trees. The most important species are the same as those mentioned for abandoned homestead gardens. Within the walls of dilapidating buildings the same process of succession is favoured by the microhabitat it affords. Hedges and fences act firstly as perching sites for seed-eating birds, as well as for protection against herbivory and evapotranspiration of the young seedlings and secondly they influence the movement patterns of livestock and thus creates corners that are less heavily browsed than had there been no fences. Chickens, pigs and other domestic animals spread dung and seeds all around the homestead, which, upon abandonment offers soil with increased nutrients upon which plant species readily and rapidly establish. Furthermore, homesteads and deserted homesteads also alter the fire pattern of the micro-landscape.

Patterns of actions after abandonment

Not only the human activities during the inhabiting of homesteads and cultivation of gardens and fields, but also the activities after the abandonment thereof, influence the vegetation succession of pioneer-favouring patches. Social institutions on tenure play a critical role in the actions that take place in such sites after abandonment.

Although sub-headmen agree that after the last member of a homestead have passed away or permanently settled outside Nqabara the site should be re-allocatable to new applicants, in practice few such applications are made or approved. It seems that the possibility that in future some member of the homestead or a child or grandchild, may wish to return and settle, convinces most new applicants to rather apply for sites that have never been settled before. This also represents a strategy whereby the family who reserves a site for an absent homestead member, may retain some access to possible remittances

and prevent the homestead member in question from absconding (*ukutshipa*) (Fay 2003a). Furthermore, abandoned sites (*iinxiwa*) normally contain the graves of those who inhabited them, this might further dissuade new applicants from applying for such sites (cf. plate 16). The consequence is that in every *ilali* a large proportion of homestead sites are *iinxiwa,* consisting of locked-up or dilapidating homestead structures where invasive plants establish readily and produce seeds that spread through the rest of the *ilali* (cf. plates 8 and 14).

Factors influencing spatial extent and rate of abandonment of fields and homesteads

Up to now I have considered the effects of actions in individual pioneer-favouring patches, on vegetation succession, without paying attention to factors that influence the rate of creation and spatial configuration of such patches. Such factors include the spatial distribution of homesteads and tenure institutions that bring them about, factors that influence the growth in homesteads and factors that shape people's decisions to permanently emigrate from Nqabara.

The forced resettlement implemented under Betterment Planning must be seen as the single factor that had resulted in the most sudden increase in abandoned homestead and cultivated patches in the landscape, throughout the period covered in this study. Data on the growth in numbers of homesteads suggest that the decade prior to Betterment saw the fastest growth in the number of homesteads (table 4.4). The subsequent abandonment of these sites would have resulted in a large number of sites, varying with regard to the length of their occupation, suddenly left abandoned and open to the establishment and succession of opportunistic plants.

The homesteads and fields that were abandoned as a result of forced resettlement and villagisation, occur mostly in far-off places in the landscape, such as on the lower slopes of hills and ridges next to forests and on ridges and hills far from roads, accessible only through footpaths. Where several homesteads occurring next to each other were abandoned, the invasion of woody and herbaceous vegetation soon reached threshold levels beyond which seed dispersal into non-disturbed patches (such as grassland grazing fields) could result in successful establishment of seedlings there.

Subsequent to Betterment, most abandonments of homesteads have taken place within clustered *ilali*, resulting in a patchwork of actively occupied and abandoned homesteads of different ages. In contrast to the abandonments brought about by Betterment, these patches are still characterised by human action and livestock movement, so that seeds from a wider range of invasive plants establish here, than in abandoned sites in the far corners of the landscape.

The rate of population growth in Nqabara and Willowvale over the period from 1961 to 2001 is significantly lower than averages for the Transkei or indeed South Africa (table 4.4). In the period 1985 to 1993, the annual percentage population growth of Willowvale was 0,8%, compared with 2,8% for the whole of the Transkei and 2,3% for the whole of the Eastern Cape over the same period (Palmer and Fay 2002). Although little data is available on birth and death rates, most scholars agree that the lower growth rate is as a result of high levels of emigration from rural areas and permanent to semi-permanent settlement in urban or semi-urban areas. The relatively smooth population growth rate for Nqabara over the period covered in the study suggests that emigration has been equally important throughout the period.

The arenas combined

The three arenas of livestock foraging, resource harvesting and pioneer-favouring patch creation overlap spatially and temporally, firstly in the ways that social practices in the various arenas form part of the same broader social project and secondly in the ways in which ecological processes, such as vegetation succession, and the metapopulation dynamics of the plant species that form the main vegetative cover, cut across the arenas. In this section I will consider the combined role played by these three arenas in the continual emergence of and change in the landscape, with particular reference to the vegetative land cover as visible in historic aerial photographs. Recapping on the previous sections in this chapter, the main trends from 1961 to 2001 in the arenas where landscape comes into being have been:

i. An overall reduction in the density of cattle, sheep and goats, combined with an increasing spatial heterogeneity in their forage patterns, as a result of the spatial concentration in the distribution of homesteads, changes in herding institutions and as a result of livestock choice in the act of foraging. The reduction occurred punctuated over time, with dramatic drops in livestock numbers occurring during droughts and outbreaks of disease, and slow recoveries in numbers in between such events, but not entirely to pre-disaster numbers.
ii. An overall reduction in the intensity and frequency of fires in the landscape as a result of shifting social institutions regarding the use of fire in the landscape as well as a decline in the connectivity of grassland patches that facilitate the spread of fires. It is likely that the increasing spatial heterogeneity in livestock foraging has articulated with the fire regime in complex ways.
iii. The countering effects of an overall growth in homesteads and population size, and that of an increasing importance of purchased alternatives to natural resources in terms of fuel and construction material, means that it is very difficult to gauge the overall trend in the level of natural timber resources used. Most likely levels of use vary temporally and spatially in response to periods of accelerated growth in homestead numbers as well as the spatial distribution of homesteads. In the context of increasing homestead labour resources, the labour that a homestead has access to is likely to have played an essential role in the level of natural resource use a homestead can engage in.
iv. Activities in homesteads, gardens and fields that create patches favourable for the establishment of woody vegetation, and importantly also, the factors that influence the cessation of the patterns of these actions, influence not only the vegetation succession in these patches, but also of the surrounding areas. Certain periods in history resulted in an increased rate of the number of such patches in the landscape, leading to woody vegetation growth to beyond thresholds relating to the accumulation of seed in the landscape, to the resistance of woody patches against fire as well as to the access of livestock to such patches. The creation of small-scale pioneer-favouring patches have thus created opportunities for documented larger scale processes, such as the expansion of the geographical range of *Acacia karroo* and various indigenous and exotic invasive species, to be speeded up locally.

As a measure of the role played by the above trends in the emergence of the landscape, we can start by tracing their role in the changes in the vegetative land cover of Nqabara over the forty years covered in this study.

From the 1961 aerial photograph it is apparent that *cultivated fields* occurred mostly in the floodplains and the lower slopes adjacent to the two main rivers in the study area. As I have mentioned in the previous chapter they covered a total area of 1616ha, or 25% of the study area in 1961 (table 4.1). Footpaths accessing these fields followed contour lines as far as possible but the significant descents from homesteads to fields necessitated the crossing of at least some steep slopes for all of the footpaths connecting clusters of cultivated fields with homesteads.

Grassland patches were distributed mostly on the crests and upper slopes of hills and ridges (figure 5.3). They represent the land cover category that is most easily accessible to people, since almost all homesteads are situated within grassland, and grassland patches that are further away from homesteads, are accessible through footpaths that tend to follow contour lines. Their occurrence on crests and upper slopes of hills and ridges, allows a high degree of connectivity among patches. Variation in colour and grain, most probably the result of heterogeneous distribution of clumpy grass species and a variety of herbs, suggest that grassland patches were not homogenous in constitution. The ten disjoint grassland patches that can be identified together occupied an area of 1869ha, or 29% of the study area in 1961, but more than half of this area was constituted by a single patch covering 1160ha (table 5.1). Effective grassland (grassland adjusted for the area covered by homesteads occurring within grassland) covered 1586ha or almost 25% of the study area (table 5.2). The average and median patch sizes of respectively 186ha and 86 ha are relative large in comparison with other land cover categories (figure 5.4).

Forest distribution in 1961 corresponded to the steeper slopes of hills and valleys, and forest patches were more abundant on south-facing than north facing slopes (figure 5.5). With regard to proximity to homesteads, forest patches exhibited great diversity, but the accessing of all forests required the negotiation of steep slopes. The overall area covered by forests was 1281ha, or 20% of the study area. Forest patches were significantly smaller than grassland, with average and median patch sizes of respectively 13,2ha and 5,2ha (figure 5.6). 96 disjoint forest patches could be identified with the largest forest patch constituting 136ha (table 5.1).

Woodland in 1961 consisted of small and slim patches occurring along small streams and adjacent to forests, and a variety of gradients and aspects (figure 5.7). More than two hundred disjoint patches were digitised, together constituting 582ha or 9% of the study area (table 5.1). All patches were smaller than 100ha with average and median patch sizes of 3,0ha and 1,1ha respectively (figure 5.8). *Wooded grassland* patches were small and fragmented, occurring mostly on the borders of grassland, as well as in clusters on hillsides and valleys on what appears to be land used for cultivation prior to the taking of the photograph. Wooded grassland covered 1088ha or 17% of the study area. The maximum, average and median patch sizes were 51ha, 5,2ha and 2,6ha respectively (figure 5.9). The density of trees and shrubs in wooded grassland and woodland, as visible in their dappled appearance on aerial photographs, varied within and among patches.

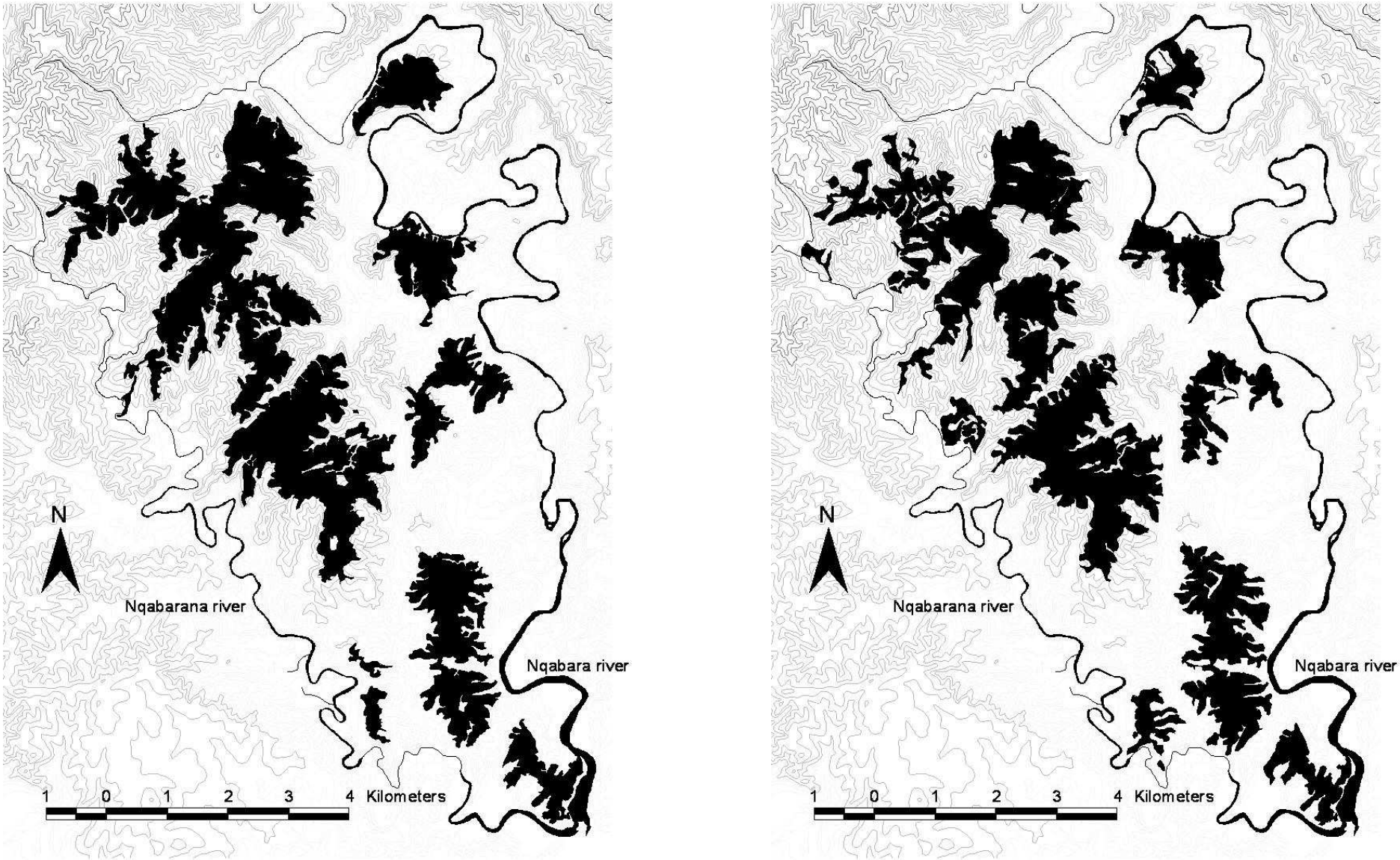

Figure 5.3a: Maps showing grassland patches in Nqabara. Left 1961, right 1972.

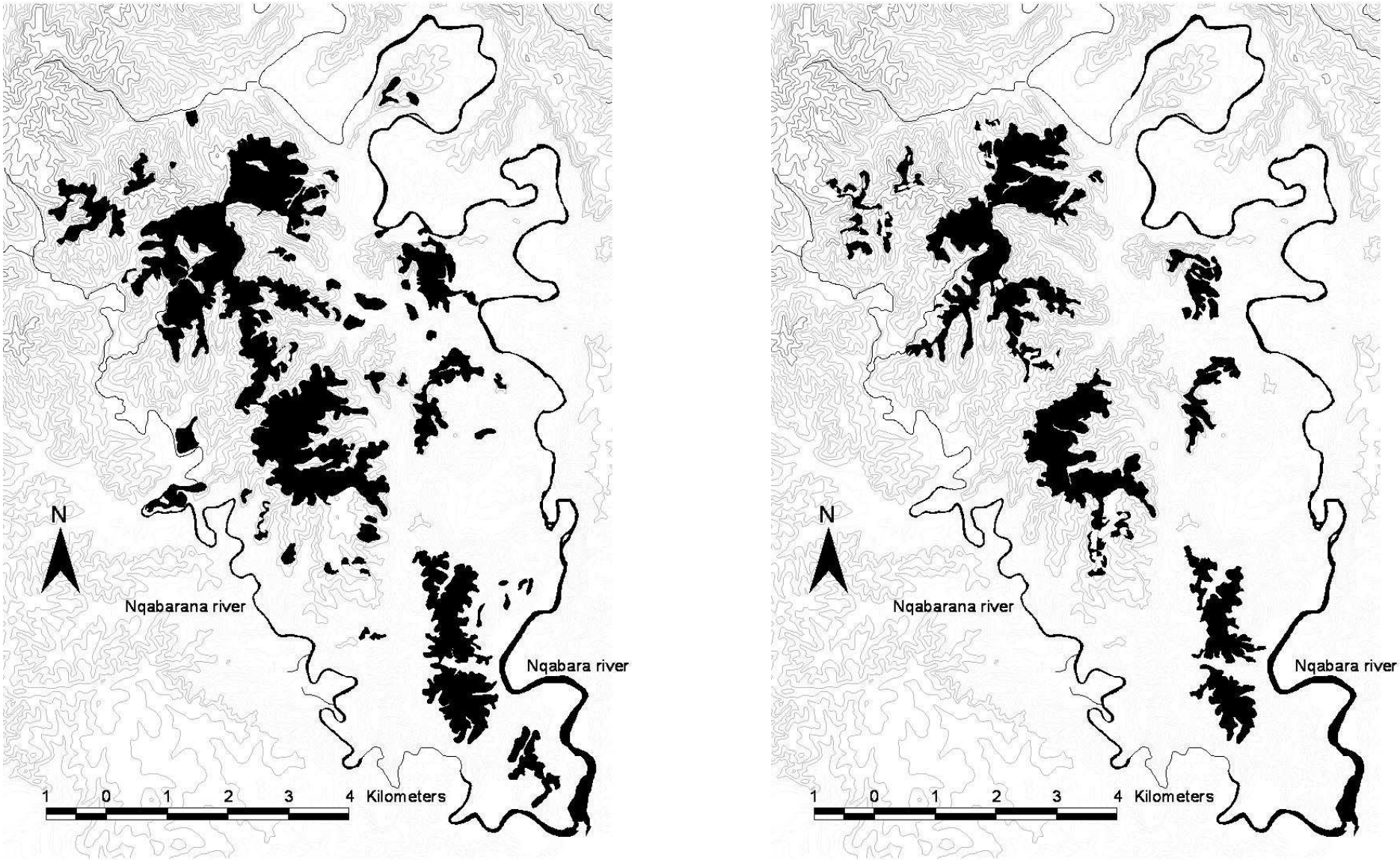

Figure 5.3b: Maps showing grassland patches in Nqabara. Left 1995, right 2001.

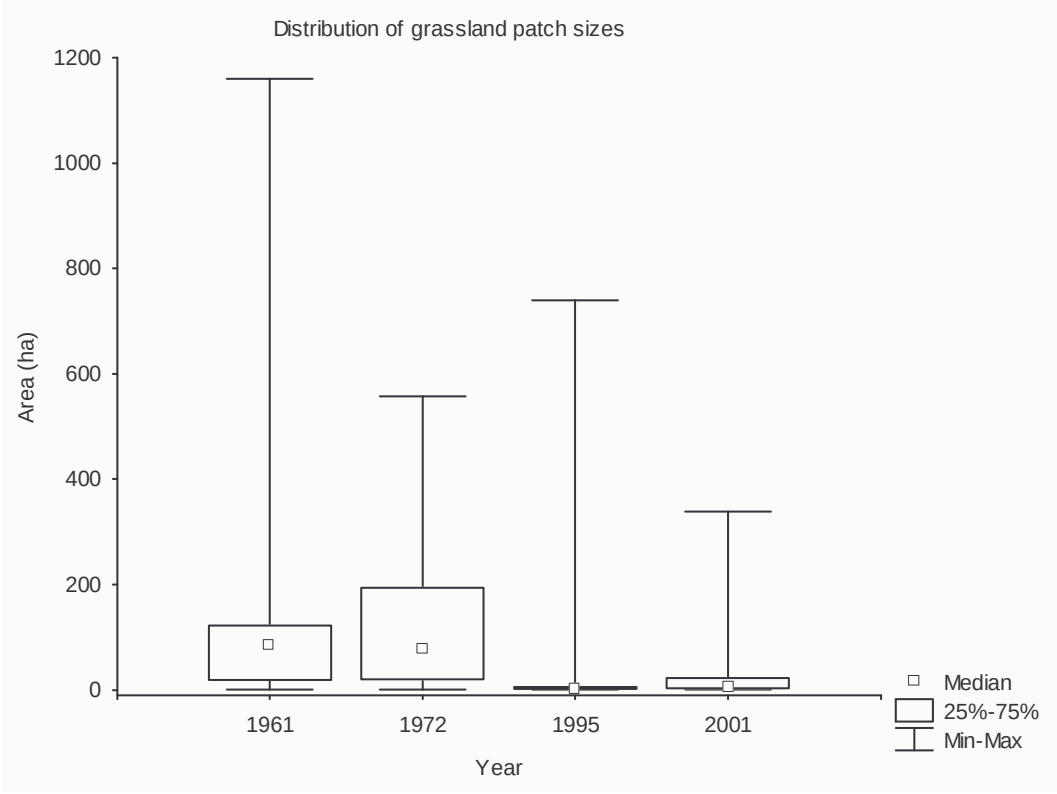

Figure 5.4: Box-whisker diagram of the variation in patch sizes of disjoint grassland patches in Nqabara, 1961-2001.

Table 5.1: Total area covered by four land cover categories in Nqabara, 1961 to 2001, including average patch size and number of disjoint patches.

	Grassland			Forest			Wooded Grassland			Woodland		
	Total Area (ha)	Average patch size (ha)	Number of patches	Total Area (ha)	Average patch size (ha)	Number of patches	Total Area (ha)	Average patch size (ha)	Number of patches	Total Area (ha)	Average patch size (ha)	Number of patches
1961	1869	186.4	10	1281	13.1	96	1088	4.9	220	592	2.9	203
1972	1784	149.2	12	1541	16.9	92	1108	7.3	153	555	4.4	126
1995	1277	25.5	50	1624	18.9	86	1423	6.5	217	1776	10.6	166
2001	830	35.5	23	2427	53.7	45	1394	6.9	202	1501	7.8	192

Table 5.2: Area homesteads occupy in grassland, total grassland and effective grassland.

Year	Average size of homesteads (m^2)	Number of occupied homesteads	Homesteads in grassland		Total grassland		Effective grassland	
			Area (ha)	% of study area	Area (ha)	% of study area	Area (ha)	% of study area
1961	6470	478	284	4.4	1869	29.0	1586	24.6
1972	5520	687	326	5.1	1784	27.7	1458	22.6
1995	4450	802	331	5.1	1277	19.8	945	14.7
2001	4063	885	335	5.2	830	12.9	495	7.7

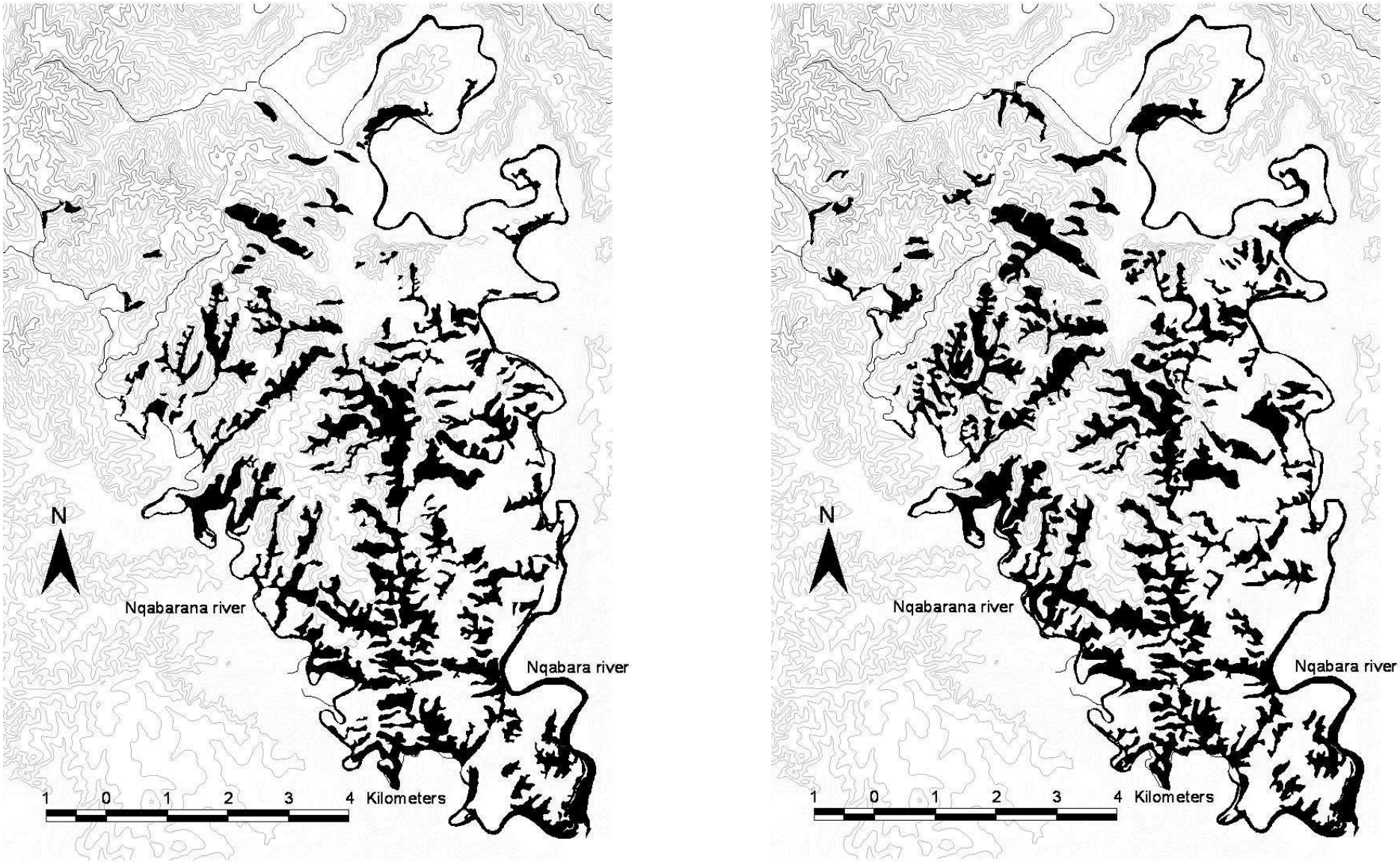

Figure 5.5a: Map showing forest patches in Nqabara. Left 1961, right 1972.

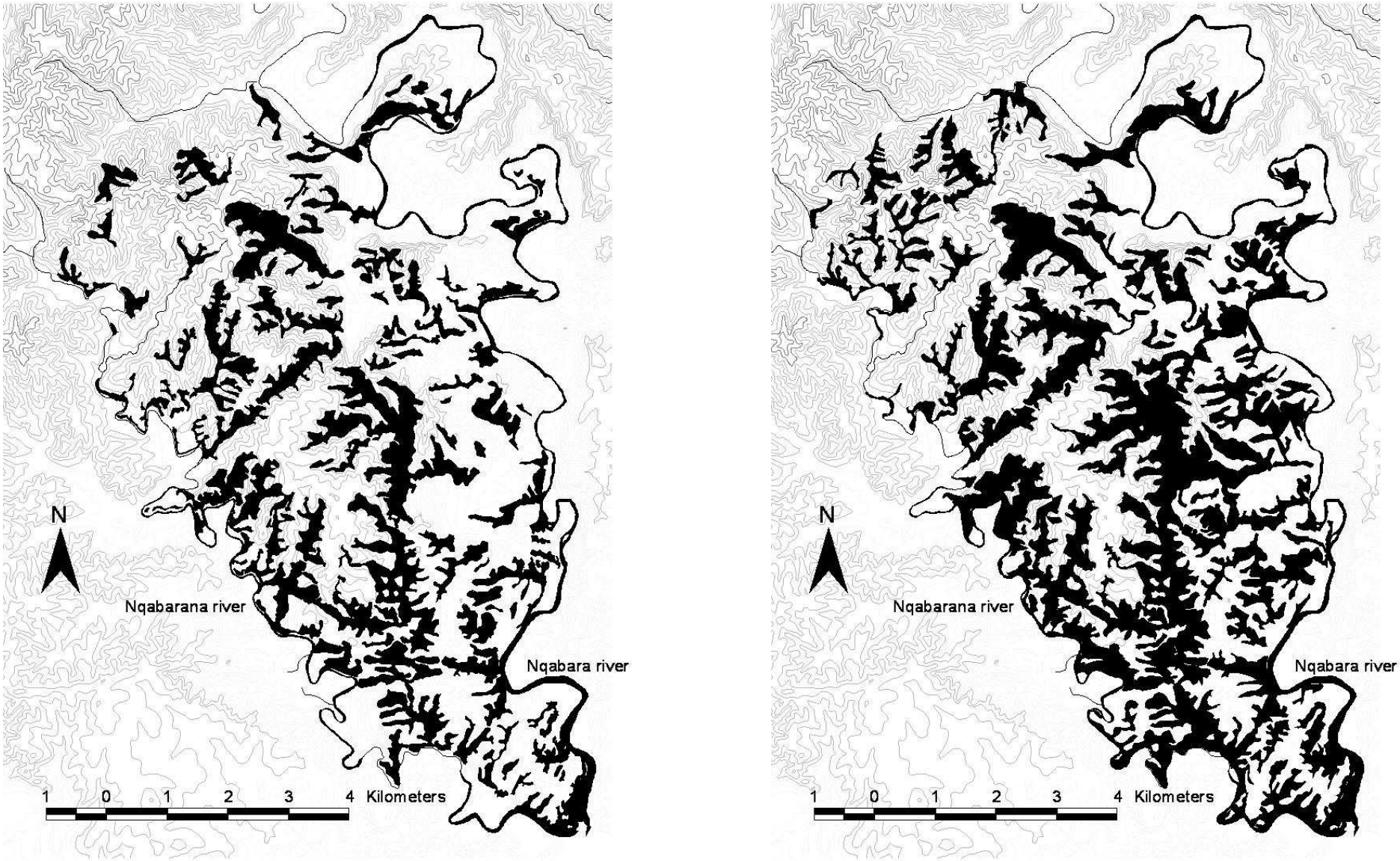

Figure 5.5b: Map showing forest patches in Nqabara. Left 1995, right 2001.

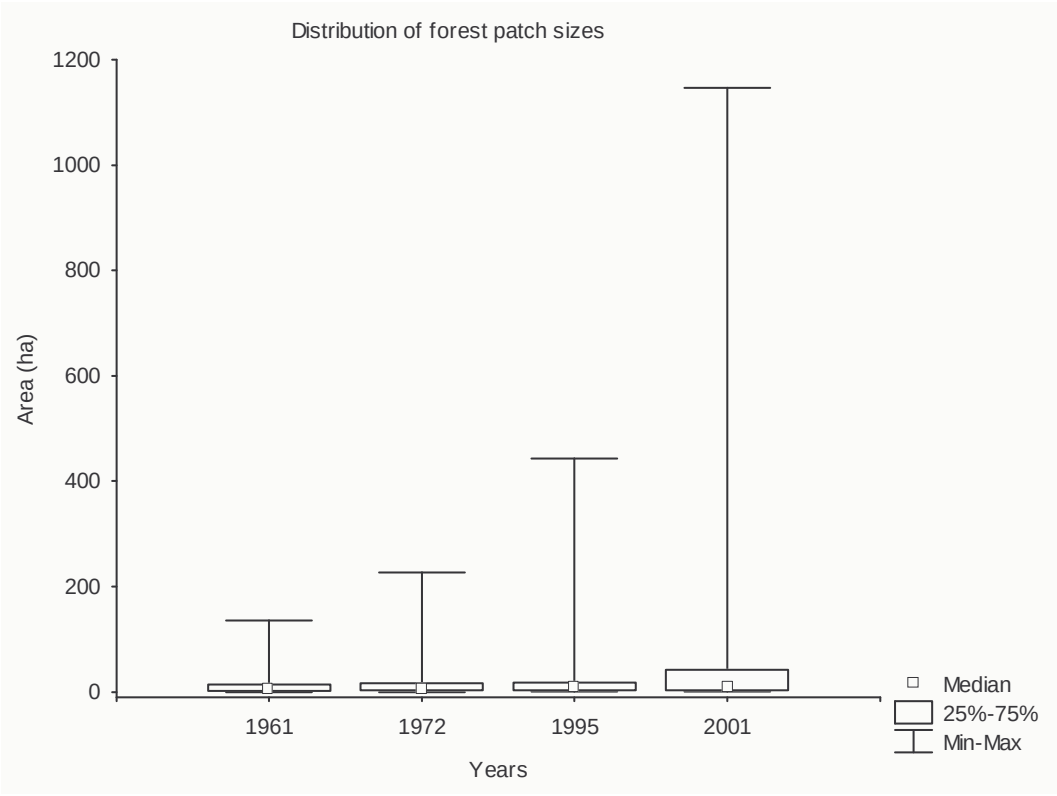

Figure 5.6:Box-whisker diagram of variation in patch sizes of disjoint forest patches in Nqabara, 1961-2001.

Before moving on towards the dynamics of land cover change in the subsequent period, a note of caution is necessary. The spatial configuration of land cover in Nqabara in 1961 represents but a snapshot of one particular aspect of a dynamic and continually changing landscape. Although I focus here on the unfolding of the history of the landscape in the period subsequent to 1961, it must be recognised that landscape change occurs continuously and the identification of a 'starting point' is always observer-defined and arbitrary to a certain degree. Although 1961 is taken here as a point of departure, it represents nothing more than a moment frozen in time in the continuous process of change the landscape undergoes.

Woody vegetation, including forest, wooded grassland and woodland, underwent a dramatic expansion, from covering 2960ha (almost 46% of the study area) in 1961 to covering 5322ha (more than 82% of the study area) in 2001 (figures 54.10 and 5.11 and table 5.3). These figures are significantly higher than that of combined forest and woodland which Timmermans (2004) estimated to be 30% and 25% respectively in Ntubeni and Cwebe in 1999. This expansion consists mostly of the transformation of abandoned cultivated fields and patches of grassland, into wooded grassland, woodland and forest. Forests increased throughout the period of study, although with varying rates of growth. The growth in forests improved the connectivity among forest patches, resulting in a smaller number of patches with higher average patch sizes (table 5.1 and figure 5.5). The growth in forests are spatially accounted for by the expansion of existing forest patches, the connection of previously isolated forest patches as well as woodland maturing and transforming into forests on steep areas, deep valleys and south-facing slopes (figure 5.6).

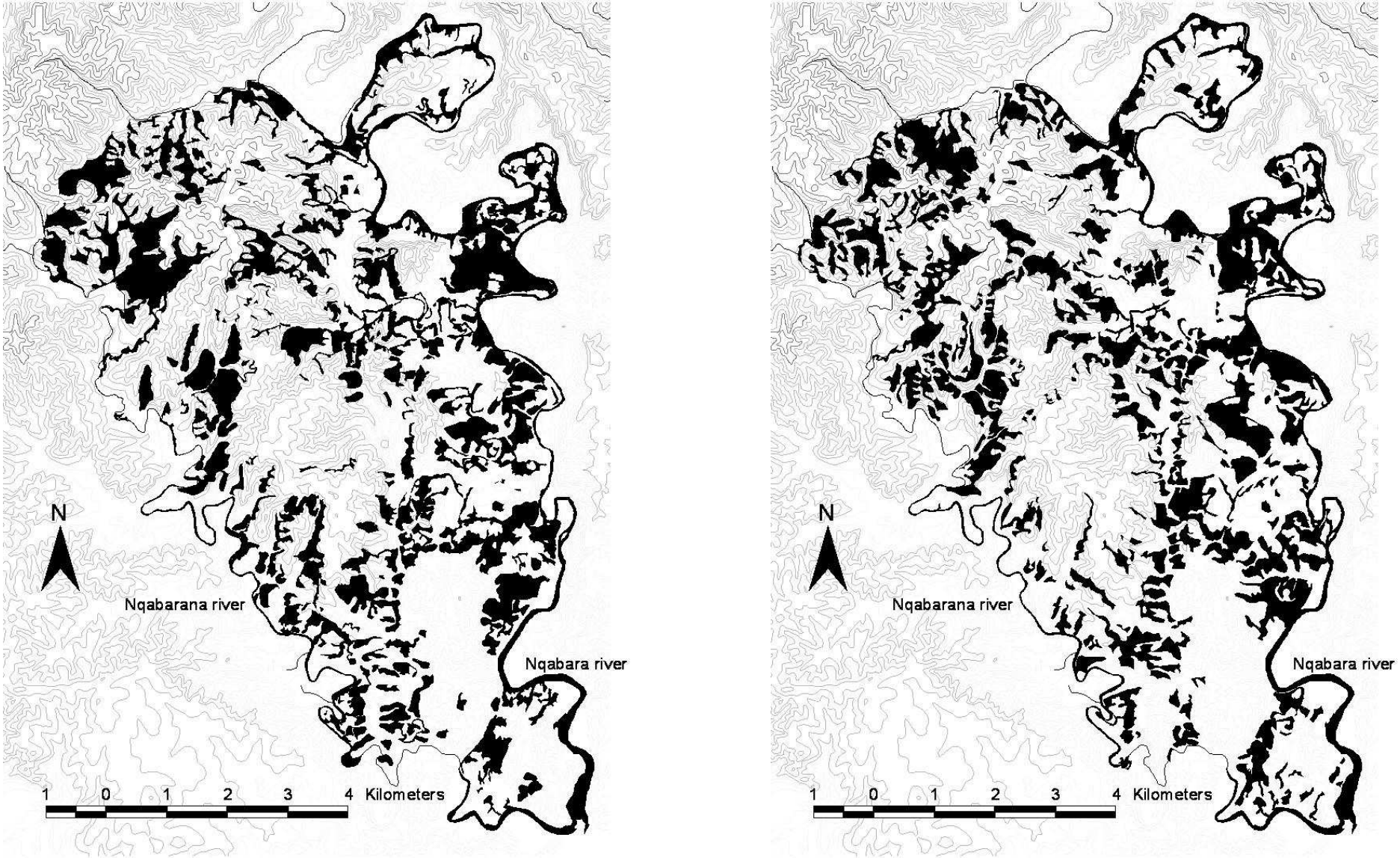

Figure 5.7a: Maps showing combined area covered by wooded grassland and woodland in Nqabara. Left 1961, right 1972.

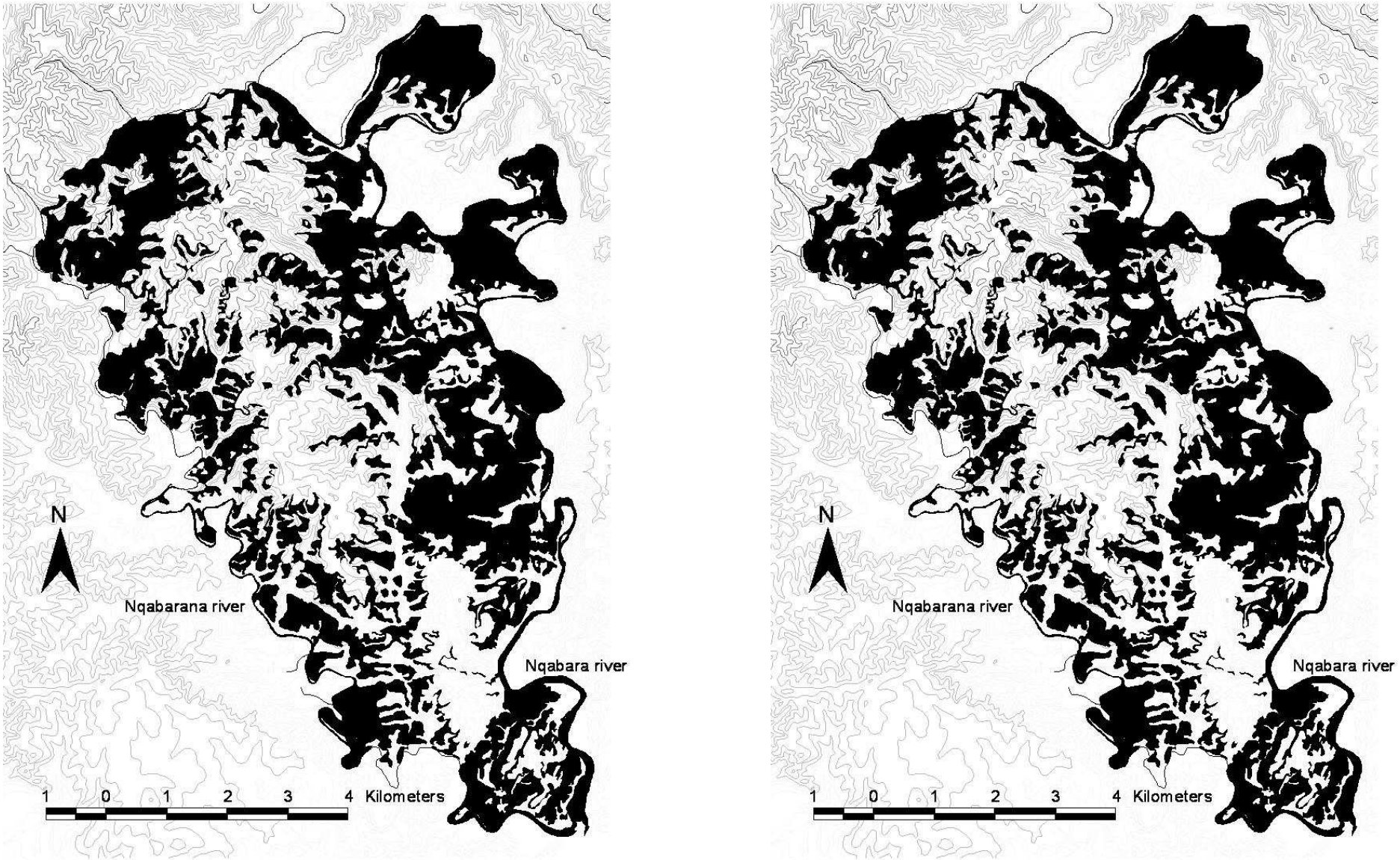

Figure 5.7b: Maps showing combined area covered by wooded grassland and woodland in Nqabara. Left 1995, right 2001.

Figure 5.8:Box-whisker diagram of variation in patch sizes of disjoint wooded grassland patches in Nqabara, 1961-2001.

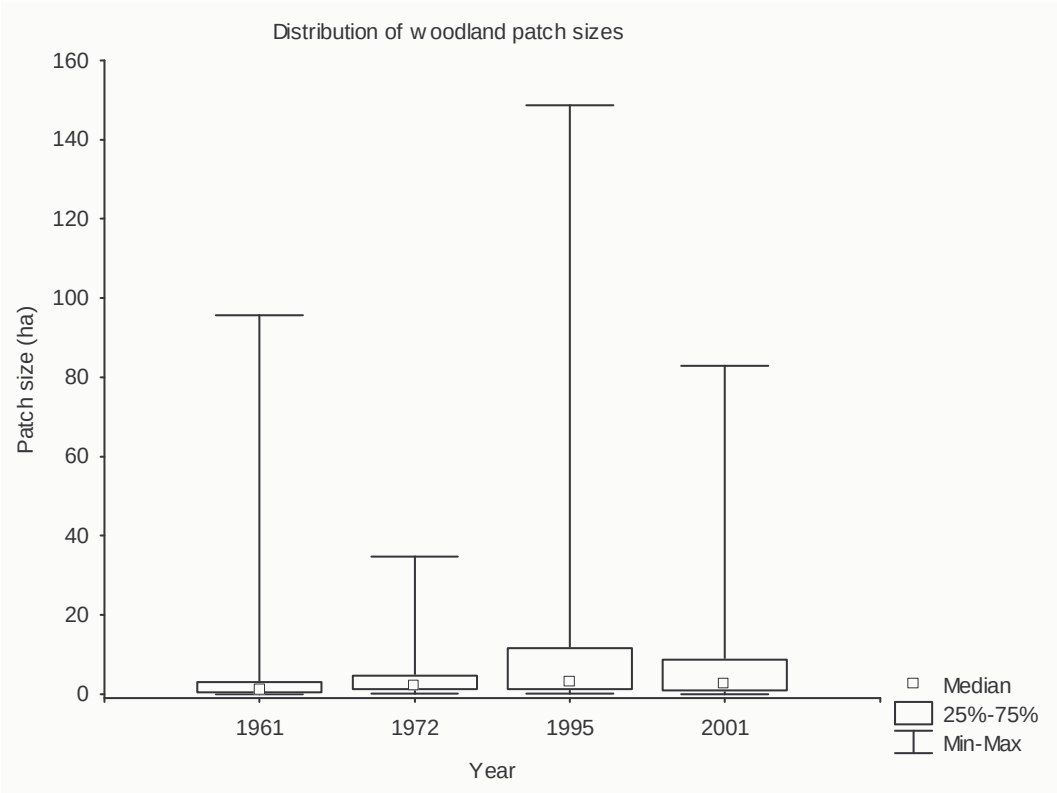

Figure 5.9: Box-whisker diagram of variation in patch sizes of disjoint woodland patches in Nqabara, 1961-2001.

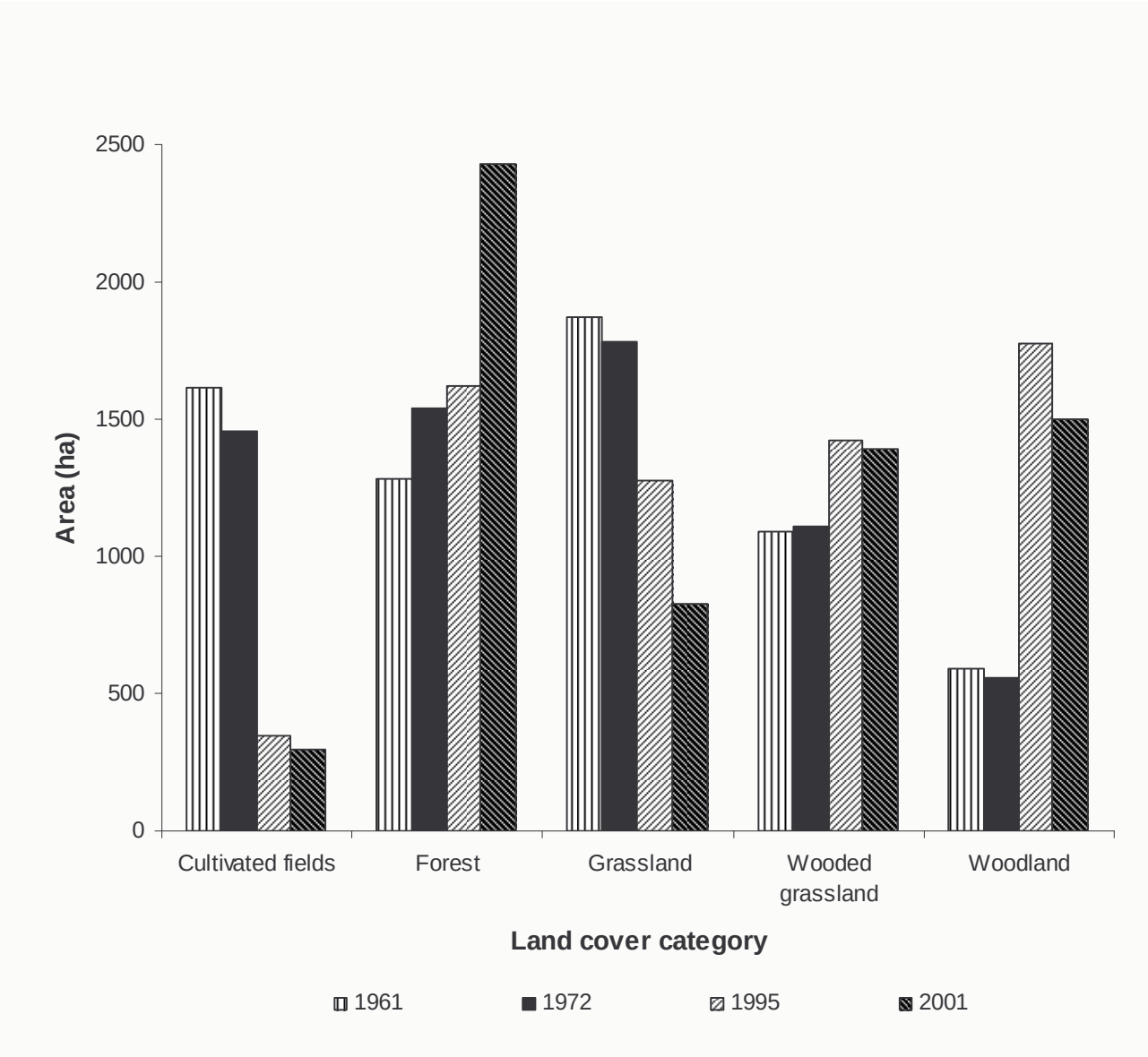

Figure 5.10: Bar chart representing the relative area (ha) covered by four land cover categories in Nqabara from 1961 to 2001.

Grassland declined throughout the period from covering 1869ha (29% of the study area) in 1961 to 830ha (or just under 13% of the study area) in 2001 (figures 5.3 and 5.4; tables 5.1 and 5.3). It did so at a progressively faster rate as time went by with the most rapid decline occurring in the last decade of the study. Spatially this decline translated into progressively smaller patches of grassland situated on the ridges and upper slopes of hills, and concentrated around residential areas. As a consequence of the transformation of grassland that occurred on land bridges between hills into other vegetation types, grassland patches became increasingly fragmented therefore the number of grassland patches increased while the average patch size declined. An important qualitative difference in grassland is not reflected in these statistics. On the aerial photographs it is evident that grassland patches over the 40 year period have experienced an ongoing qualitative transformation in the increasing importance of non-grassy (herbaceous and woody vegetation) elements within the grasslands. In the successive aerial photographs, the texture of patches of grassland appear progressively more coarse because of a reduction in colour-uniformity of grassland patches. In 2004 and 2006 while fieldwork was done, small trees of mostly *Acacia karroo* and clumps of shrubs of various species associated with woodland invasion

of grassland, were identified as possible causes of the increased graininess of grassland patches on orthorectified aerial photographs. The decline in grassland was exacerbated by the fact that the majority of homesteads occur in grassland. Effective grassland declined from 1586ha to 495ha (from just under 25% to less than 8% of the study area) over the same period (table 5.2). Both wooded grassland and woodland increased significantly from 1972 to 1995, and both experienced declines in the last decade (tables 5.1 and 5.3; and figures 5.9 and 5.10).

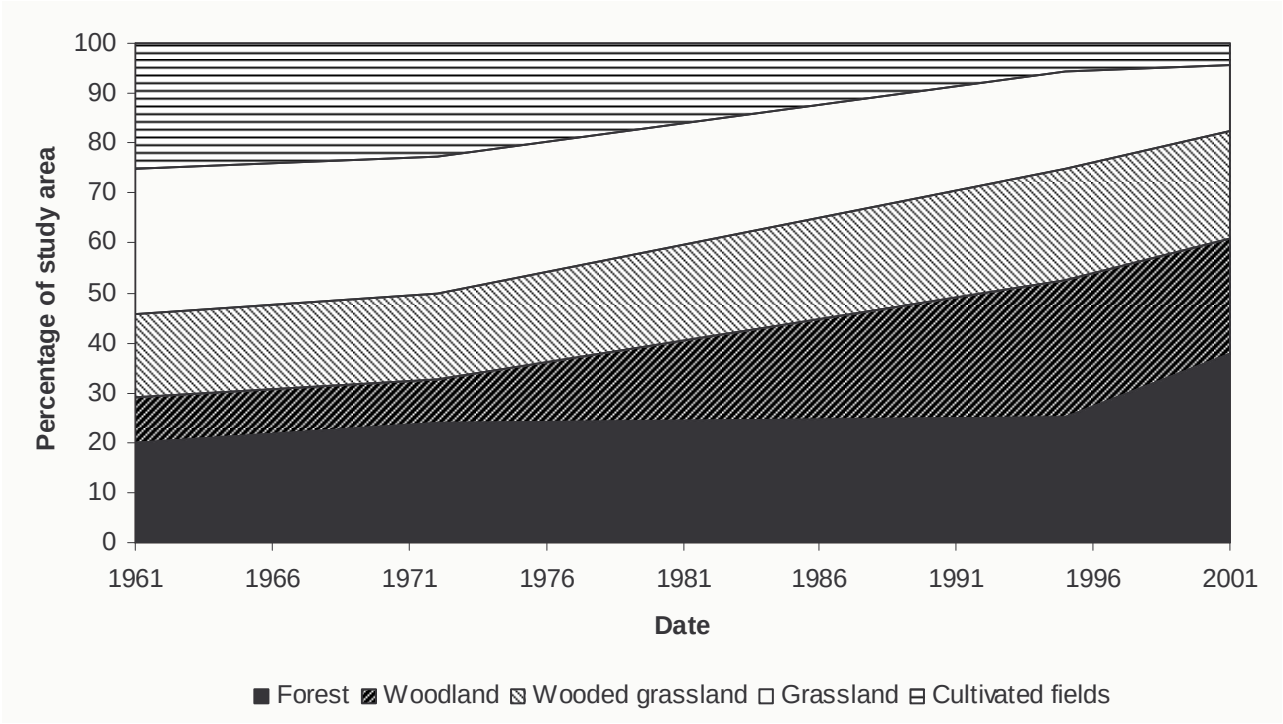

Figure 5.11: Area chart showing the changes in relative importance (%) of four land cover categories in Nqabara, 1961 to 2001.

Table 5.3: Average annual percentage change in land cover in Nqabara, 1961 to 2001.

Annual % change in land cover	1961-1972	1972-1995	1995-2001
Cultivated fields	-0.9	-6.2	-2.7
Forest	1.7	0.2	6.7
Grassland	-0.4	-1.5	-7.2
Wooded grassland	0.2	1.1	-0.3
Woodland	-0.6	5.1	-2.8

This data however pays no attention to the specific transformations that individual landscape patches have undergone. As explained in the chapter three, minor shifts of the images resulting from the orthorectification process, and the relatively small sizes of patches, render the inaccuracy in an analysis of all land cover transformations unacceptably high. Instead, an analysis of the null-transformations (cf. chapter three) can be used as a measure of the minimum stability in terms of land cover of different patches in the landscape (table 5.4).

Table 5.4: Land cover categories and area (ha) that have remained unchanged (1961-2001).

Start and end of period / Land cover category	1961	to		1972	to		1995	to		2001
	Total (ha)	Null-transformations		Total (ha)	Null-transformations		Total (ha)	Null-transformations		Total (ha)
		Area (ha)	Proportion of maximum possible		Area (ha)	Proportion of maximum possible		Area (ha)	Proportion of maximum possible	
Cultivated fields	1616	1037	0.71	1457	201	0.58	347	137	0.47	294
Forest	1281	907	0.71	1541	902	0.59	1624	1320	0.81	2427
Grassland	1869	1396	0.78	1784	994	0.78	1277	697	0.84	830
Wooded grassland	1088	392	0.36	1108	402	0.36	1423	591	0.42	1394
Woodland	592	156	0.28	555	258	0.46	1776	735	0.49	1501
Total	6446	3117	0.48	6446	2432	0.38	6446	3142	0.49	6446

The land cover categories of wooded grassland and woodland consistently demonstrate the lowest proportion of area that underwent no transformation in any given period (table 5.4). This suggests that despite the fact that a significant proportion of the area covered by wooded grassland and woodland may transform into other land cover types in a given period, the total area they occupy may still increase, as a result of other patches transforming into these patches. Wooded grassland and woodland exhibit the characteristics of diachronic ecotones, or temporal transitions between the land cover types of cultivated fields and grassland on the one hand and forest on the other.

The overall increase in woody vegetation predominantly took place in grassland and cultivated patches of the landscape furthest removed from homesteads. Land cover transformation was particularly dramatic in old homestead sites and residential areas abandoned as a result of the forced resettlement activities implemented as part of Betterment, as well as in clusters of abandoned cultivated areas in river valleys and low-lying areas. It can be surmised that central to the transformation has been the sudden cessation of long-established patterns of foraging, resource harvesting and soil-surface altering activities, in spatially localised areas of the landscape. The expansion of woody vegetation fed back into the spatial heterogenising of living in and making a living in Nqabara, by effectively reducing the area available for grazing and cultivation. This cessation has been the result of the interaction among a variety of proximate factors, including changes in the spatial distribution of homesteads, in the spatial forage density of livestock, in the spatial manifestation of the fire regime as well as in patterns of resource demands and resource use. Each of these proximate factors, as have been discussed in this and the previous chapter, emerge as the result of an equally complex interaction among secondary causes. Although proximate and secondary causes arise from a whole range of scales, including wider political-economic as well as ecological factors, they are all mediated through the ways in which they are experienced by local social and ecological actors. For this reason it is necessary to turn to the ways in which landscape change and its causal factors have been experienced and made sense of by people of Nqabara.

Inhabitant's experience of landscape and landscape change

An important aspect of the three arenas, and their role in the embodiment of the landscape, that have been overlooked up to now, is the ways in which people living in the landscape have experienced the emergence and change of landscape. Insight into the ways in which the inhabitants of the landscape

experience, or make meaning of, landscape can be found in the discourses that penetrate and transcend informal conversations, discussions at *ilali*-level *ibandla,* statements and discussions at feasts and ritual gatherings, as well as evident from people's livelihood activities and decisions and their responses to questions pertaining these activities. As discussed in the chapter one, the ways in which landscape is experienced and the processes of semiosis to make meaning out of the forms and changes of forms in the landscape, should be understood not as some internally created image existing in the minds of people prior to engagement with their environment, and projected onto the perceivable forms of the landscape. Rather, it is necessary to search for inhabitants' experience of and making sense of the landscape, as emerging from the process of their moving in, living in and making a living in the landscape. Thus, through the everyday practices of dwelling and livelihood, the attention of individuals is guided through the landscape so that the actions of muscular movement, sensory perception and cognitive ordering represent a single action-experiential arena. This arena is inherently social, since movement, perception and cognition cannot be separated from the relational fields in which it takes place and through which it is guided. As I have discussed in chapter one, another way in which this arena has been thought of, is as a tripartite but inseparable complex consisting of cosmos (beliefs), corpus (knowledge) and praxis (practice).

In Nqabara, the dramatic changes in the landscape are therefore experienced within the everyday actions of people living in the landscape, especially in the ways in which forms in the landscape influence the living in (dwelling) and making of a living (livelihood) in the landscape. I will discuss people's experiences of the changing landscape with a focus on the dramatic spread of woody vegetation in the landscape and its perceived effects on livelihood activities, in particular crop cultivation and livestock husbandry. I will pay attention to three key narratives in the discourse surrounding the spread of invasive woody vegetation, namely i) associations of heat, disease and the drying of the soil with the spread of *Acacia karroo* in grazing fields and old ploughing fields, ii) descriptions of forests and their encroachment on homestead sites through the bird-facilitated spread of invasive plants, and iii) explanations of the increase in the distribution of bush pigs and their impacts on crop cultivation.

<u>The spread of woody vegetation in grazing lands (*amadlelo*) and cultivated fields (*amasimi*)</u>

To properly understand the ways in which the spread of woody vegetation is experienced in the landscape, it is fruitful to first pay attention to ways in which reference is made to landscapes that are without dominant woody vegetation. *Amatafa* (open grassy ridges and hilltops) are referred to as beautiful and clean places, places where cattle can grow fat and healthy (cf. plate 4). The cool breezes prevalent in these upper grassy hill slopes are seen as one of the elements that causes cattle themselves to choose these places as preferred resting spots. Similarly, a landscape filled with cultivated ploughing fields is described as beautiful and together with such symbols as ox-wagons, large sleighs, large spans of oxen and large *amadladla*, it is associated with wealth and prosperity. As a lady (1938) from Nqabarana remarked emphatically when I asked her whether the landscape surrounding her home had changed since the time of her marriage: "No! It was beautiful back then: it was ploughed!".

> 'The homesteads were not where they are now, they used to be where there are big forests now. Even thatching grass was not available back then, we used to go and fetch it across the Nqabara river. There were no forests and long grass, it was clean here. That is until Matanzima regime when people were collected to come and stay together. Then the trees and grass came up on those places where people used to live. Today these places have tall trees and forests and grass' – Lady (1937), Nondobo.

Thus the process of woody vegetation expansion, predominantly *iminga* (*Acacia karroo*) in grazing fields, but also *imiplayi* (*Cestrum laevigatum*) and *imithuma* (*Solanum spp.*) in abandoned cultivated fields along the rivers, are often described as a closing up (*iyavalisa*, litt. it causes to close, or *ivaliwe*, litt. it has been closed) or a filling up (*iyagcwalisa*, litt. it causes to fill, or *igcwaliwe*, litt. it has been filled) of the landscape (cf. plates 7, 8, 10, 11, 14, 16 and 18). This filling-up, or closing-up of the landscape encapsulates on the one hand the closing of access to landscape patches as a result of the spreading of the woody vegetation, but on the other hand also the obstruction of fresh breezes and the creation of hot and humid, places with stale air. But the heat that an increase in woody vegetation is said to bring about, refers to more than purely an increase in perceivable temperature. Heat is described as a kind of social actor.

> '*Umnga* and other trees invade grassland and can then bring heat. Heat is like wind, its impact becomes less when there are things to absorb it, only, heat gets absorbed by animals. Since there are less wild animals, the heat comes down more on our cattle.' – Man (1956), Mtokwane eZantsi.

Heat as an active agent is then perceived as one of several causes of disease. Mosquitoes and ticks as agents of disease are more prevalent in summer and associated with hot, humid and thickly vegetated areas.

> 'Forests are growing up like anything; trees come up where it used to be open veld; cattle can't be reared in a bushy place where it is damp (humid) and there are mosquitoes; sheep can't be reared in a bushy place. People used to be able to make a living out of their own; owning a single cow and one could milk; not nowadays anymore, now if you have one it is a burden to you.' Man (1948), Nocwane.

As *iminga* becomes a symbol of disease through its articulations with heat and disease-bearing vectors and their effects on livestock, so it, together with plants such as *imiplayi* (*Cestrum laevigatum*) and *imithuma* (*Solanum spp.)* becomes symbols of poverty through their invasion of abandoned cultivated and the perceived drying out of the soil associated with it. Many respondents claim that as a result of their temporary absence during labour migration, and the difficulty they had had in organising people to help them cultivate their fields, *iminga* had invaded their fields and grown to such numbers and sizes that upon their return, it presented too much of an obstacle for their limited labour resources to overcome fields (cf. plate 11). Temporary abandonments of cultivated patches became permanent as a result of the combination of vegetation succession and people's reduced labour resources.

> 'In 1979 when I returned from Cape Town for holiday, I found knee height *iminga* where there were ploughing fields and I could not plough anymore.'- Man (1957), Ngwane.

> 'If you go to town from January to June, or even shorter, for four months only, on your return you will find all these bushes coming up around the homestead. The forests are coming up everywhere. Previously there were a lot of people living here in Ngqeza and the old people used to cut these bushes, they did not allow vegetation to just come up naturally like this. They should be cut before they make flowers and seeds and the birds come to disperse all these seeds. *Iminga* is coming closer and closer to the homesteads, because fields are not being ploughed and because people are moving away from their homesteads. The youth is not interested in ploughing, they like to go to factories and work there. The old people were ploughing these areas but nowadays people like to stay in town in shacks. This soil is very

> fertile, it just needs ploughing. I would like to live here and prevent *iminga* from increasing' – Young man (1968), Ngqeza.

However, an important distinction should be made with regard to the way in which people refer to woody vegetation. When referring to bushy places (*amatyolo*) or forests (*amahlati*) that have come up on grazing fields and cultivated fields, people generally exclude true (or named) forests (also referred to as *amahlati,* but context of use distinguishes meaning). True forests are described with reference to the important role they play in sustaining the homestead with construction material, with medicine and with wild game that improves health. Fox (2005) quotes similar in terms, the value-laden distinction made between true forests and recent woody expansion among Xhosa-speaking residents of villages in the Kat river valley in the Eastern Cape. When looking upon a healthy forested environment 'your eyes …don't want to move, they just want to look at it, your eyes stick to it' (p.142), but for a landscape filled with encroaching *iminga* and other woody plants with sparse grass 'When you look at it you don't have hope…it is like a house that when you look at it you will swear that no one lives there although there are people who do' (p.143) (cf. plates 10, 17 and 18).

But this reverence for forests seems to be in the context of a landscape equally balanced with forests and grazing areas and cultivated fields.

> 'This place used to be very beautiful with many fields ploughed and many medicines in the forest, even a beautiful smell in the forest. It has changed but we want it to be beautiful again.' Man (1945), Ngwane.

During an *ibandla* meeting I attended, I had been asking questions about people's experience of the spread of *Acacia karroo* and other invasive species. The discussion had been centring on the negative impacts of the expansion of woody vegetation for a while, when one man provided the following statement in order to balance the collective argument and show that differentiation should be made between true forests and places that are thickening up with bushes.:

> 'The forest is our clinic. We get medicinal bark from it to cure cattle diseases, for example *umgxam* (*Schotia affra*). Although nowadays the cattle are dying even in spite of this medicine, I don't know why? …Nevertheless, even the house we are currently sitting in is from the forest, poles and branches make up this house. As a child we were doctored by herbs. Furthermore, in the forest we can get knob kieries (*izigweba*) and we hunt in the forest. If you come back with meat from the forest, everyone will be healthy at home. To prove that the forest and health go hand in hand: when I'm in the forest and get a headache, I look for *umhlonyane* (*Artemisia affra*), which is nature's vicks and put it in my nose then I recover. We are speaking about the forest here! I use *umnonono* (*Strychnos henningsii*), chew it, or the bark of *inkwenkwe* (?), if I have a stomach ache. We are speaking about the forests here! The forest means health, without it we cannot survive. *Ihlati* and *ihlabati* (forest and earth) are as synonyms to us. I am pleased to hear a question of what the forest means to me, the forest is my god… Every living thing in this area is dependent on the forest. We teach our children how to use the forest, how to get a load of poles or branches and inspan oxen to fetch these loads. Even rafters and perilines, chairs, everything is made from forest resources. Without the forest there will not be people, we depend on the forest. *Ayikho ihlati, asikho nathi; aphela ihlati saphela nathi* (if the forest is not, then neither are we; if the forest perishes, then so do we)'. - parenthesis added.

<u>The spread of woody vegetation around the homestead</u>

People have been acutely aware of the spread of exotic and other invasive plant species around their homesteads. Both *umthuma omkhulu* and *umthuma omncinci* (two species of *Solanum*) are said to have

occurred around homesteads even by the 1960s, currently dominant species such as *umplayi* (*Cestrum laevigatum* or inkberry), *umparafini* (*Solanum mauritianum* or bugweed), *umbhangabhanga* (*Senna didyomobotrya* or peanutbutter bush), *libazisa* (*Lantana camara*) and *ibhobho* (*Caesalpinia decapetala* or Mauritius thorn) are said to have started to increase significantly only in the late 1980s and early 1990s. The plants were first noticed along the river courses of the Nqabara and Nqabarana rivers, a dispersal presumably facilitated by the flow of water. From here people describe frugivorous birds as the active dispersal agent spreading the seeds to homesteads and gardens.

> 'These bushes coming up, as if it were that we have been ploughing with bird excrement. Birds have played an important role in the spread of forest' – Man (1943), Mtokwane eZantsi.

> 'Because of the birds coming from different areas, bringing seeds with them, many trees are coming up and destroying our grazing lands' – Elderly man (1921), Fubhesi.

Whereas invasive woody vegetation in grazing fields and cultivated fields impact livelihoods through their perceived impacts on livestock health and the ease and success of cultivation, and thereby becomes symbols of heat, disease and poverty, those around the homestead are experienced mainly in the ways that they open up habitat and refuge for pest animals and for criminals. In this way, the encroachment of 'forests' (here not used in the sense of named forests) are used as symbols of *iinxiwa* (abandoned homestead sites) and the depopulation of residential areas (cf. plate 18). They represent an erosion of *ubuntu* (humanness) and *ubumelwane* (neighbourliness) by providing 'pests' such as snakes and harmful arthropods as well as criminals access to once safe and tightly knit neighbourhoods.

In contrast to its reference to 'true', 'named' or 'old' forests, the word *ihlati* in different contexts may also refer to the wilderness (*sihlala ehlatini* – 'we are living in the forest here', as used by people living far away from roads to describe their home), to being lost (*bendisehlatini* – I were in the forest) or to a divergence from the agreed topic of conversation in a discussion or meeting (*usehlatini* – you are now in the forest). It is in a related sense that people use the word to describe the encroachment of woody vegetation in residential areas

> 'These sites (*iinxiwa*) give an opportunity for spontaneous vegetation to gain a foothold and bring the forests into residential areas' – Man (1944), Nocwane.

> 'We don't like it to become forest close to the homesteads as criminals can easily hide and attack from there' – Lady (1941), Mayiji.

Despite these negative perceptions of the 'encroachment of forest into residential areas, and despite individuals frustration about nothing being done about it, there seems to be a growing fatalism about the expansion of woody vegetation in both residential areas and the wider landscape. One young man (1969) from Ngqeza summed up succinctly this passive observation of the expansion: 'Nowadays we just watch the bushes coming up like someone watching television'. The shortage of homestead labour for livelihood activities surely contributes to feelings of powerlessness against the expansion, which itself shows remarkable resistance against manual treatment. It may also be that people recognise the more fundamental causes of the expansion, firstly in the way that *inxiwa* remain unoccupied and are not applied for as new sites, secondly in the diversification of livelihoods beyond the complex of long distance labour

migration supplemented with homestead agricultural production and animal husbandry, and thirdly in the steady emigration of a significant proportion of people from Nqabara that has kept local rates of population growth significantly lower than regional rates for several decades now. One can read in people's fatalistic acceptance (although not condoning) of the expansion of the woody vegetation, a regard for this process, similar to the way people would regard a powerful outside actor, such as a government department or official, intervening in local livelihoods. In this way an ecological process becomes no different from a social actor, and people's relationships with the process/actor, is inherently characterised by a relationship of power. People's actions relative to this actor's actions should thus be interpreted with sensitivity to power struggles over meaning in livelihood and in dwelling. This observation leads me to discuss the third narrative in people's experience of the changes in the landscape, namely the articulation of the spread of woody vegetation with the perceived spread of bush pigs and the impediment they present to field cultivation.

The spread of woody vegetation and *ingulube* (bush pigs)

Ingulube (bush pigs, *Potamochoerus porcus)* have occurred in parts of Nqabara for as long as people can remember. A perception of an increase in abundance and geographical spread of *ingulube* dispersion arose coinciding with the establishment and restocking of Dwesa nature reserve as well as the implementation of Betterment. Fields near the estuaries of the Nqabara and Nqabarana river, which are also the closest to the Dwesa Nature Reserve, had always been prone to damage by *ingulube*, but subsequent to the restocking of Dwesa people experienced an increased occurrence of crop damage by bush pigs. In the decades following, people who ploughed fields further upstream also started to experience a progressive increase in the incidence of *ingulube*-induced crop damage, until in the late 1980s and 1990s *ingulube*-induced crop damage started to be noticed in the fields of *iilali* that had never before experienced such damage.

Although *inkau* (vervet monkeys, *Cercopithecus aethiops*) and *ivondo* (cane rats, *Thryonomys swinderianus*) are also mentioned as pests that cause damage to crops, the damage they cause are not mentioned as widespread and consistently as that by *ingulube*, and no account of increasing damage and wider geographical distribution are given.

The account that is given for the geographical spread of *ingulube* is of particular significance to understand the experience and sense-making of their impacts on livelihoods. The increase in abundance of *ingulube* is said to have resulted in the 'fleeing' of *ingulube* from across the Nqabara river, from the vicinity of Dwesa nature reserve. This exodus or fleeing is explained by reference to an animal that is never named (it is possible that no local name for it exists) but described as a fierce animal that is foreign to this area. *Ingulube* are said to have fled Dwesa in an attempt to escape this animal. Although some respondents have speculated on the identity of the animal (crocodile, hippopotamus, warthog and leopard have been mentioned), most have been reluctant to mention specific names. It is thus not clear whether the 'fleeing' *ingulube* escaped from a predator or a fierce competitor. Although its is possible to interpret the anonymity or secrecy of the identity of the 'foreign' animal as a description of a mythological or spiritual animal, there is simply not enough information available regarding the behavioural ecology of bush pigs, to rule out the explanation that Dwesa acted as a source population from where individual *ingulube* spread as a result of predation or competitive pressure.

What I find important in the dressing of the narrative of ingulube expansion lies not in the ecological confirmation of such a dispersal nor in the explanation of the dispersal. Rather, I would like to draw attention to the parallels in the ways in which people describe the exodus of *ingulube*, and their own experiences of being forcibly resettled during the implementation of Betterment. The first visits of extension officers to Nqabara (probably around 1972 to 1974) to identify and demarcate the resettlement areas coincided with rumours that the Dwesa Nature Reserve would be fenced and that it would be restocked by a range of wild animals. In the subsequent years, as the first homesteads moved voluntarily and others were eventually coerced to resettle through threats, the fencing of Dwesa did materialise and eventually enclosed trucks did arrive with animals inside, hidden from view but certainly not escaping the attention and conversations of the people whom they were driven past.

The resettlement experience uprooted some families and neighbourhoods and replanted them among existing neighbourhoods, which in the process was equally transformed. Although not all new neighbourhoods can be assumed to have been filled with conflict, it is likely that the division of existing homestead sites, the increased density of homesteads and the odd livestock breaking into a neighbour's garden, would have resulted in at least some conflicts among homesteads. Conflicts almost always have longer histories and more fundamental causes, but frictions concerning cattle and crops, the main livelihood activities must have sparked most of them off. I draw attention to such conflicts around basic livelihood activities among newly resettled homesteads and those they were resettled among, as this represents an important parallel to the experience of 'resettled' *ingulube*.

The spread of *ingulube* is described as the spread of animals that had little choice but to move away from their old areas, move closer to the fields of people, as a result of the intervention of outside agents. *Ingulube* had always been in the landscape and conflicts had always arisen over crop damage, but they had for the most part lived far from humans and so conflicts were kept to a minimum. Their increased presence and damage were however not as a result of their own choice, but ultimately their response to the alienation created by outside intervention. In this way, both the families resettled during Betterment, as well as those whom they were resettled in amongst, came to understand some of their own experiences of villagisation better, in their description of the experiences that *ingulube* had had of the restocking of Dwesa.

Both villagisation and the spread of *ingulube* were experienced as processes that little could be done against. *Ingulube* are animals that feed at night and that can inflict serious harm, even death, to dogs and people alike who threaten or corner them. Defending crops against *ingulube* demands armed stake outs in fields far away from homesteads. Many respondents have stated that the costs of defending crops against *ingulube* are too high and eventually made them despair and abandon the cultivation of their fields.

> 'When I arrived in the morning at my field, it was as if a span of oxen had been ploughing through it. Then I decided I will no longer plough for ingulube. Even my two sons stopped cultivating their fields'. Man (1936), Ngwane.

After the initial increase in abundance of *ingulube*, their geographical range has continued to expand and so has the damage they inflict to the fields of other *iilali*. Respondents know that the transformation of previous homestead sites, gardens, kraals, fields and grazing areas, into woodland and forest, lies at the heart of this expansion. They perceive the transformation of human habitat into that of *ingulube*, as a very powerful symbol of alienation from the land. They feel themselves 'spat out' by the land just as *ingulube* were spat out from Dwesa.

> 'The places where there were ploughing fields there are now forests. People were chased away by wild pigs. In my knowledge people should go back to ploughing then the forests will not come up' Man (1948), Ngwane.

Shared elements in the narratives

Any narrative is a story encapsulating a certain course of events and causal relationships. As a story, it necessarily implies a story teller. However, the narratives I have just presented are not collective and homogeneous stories as agreed upon by arrange of respondents. Rather, they represent elements, that as an outside observer, I have distilled from the varying range of unique stories told by individuals, each of their own distinctive experience of changes in the landscape. The narratives as represented do not coincide with any of the stories told by respondents, but attempts to draw their varying experiences into a single framework. Furthermore, when narratives are drawn upon to make sense from patterns in the landscape and in people's livelihoods, they simultaneously serve as means to cope with changes over which people have little control, as well as to morally and socially justify changes over which people have more control.

With this caution in mind, I will attempt to illustrate some fundamental elements to all three narratives presented. In all three narratives presented above, the themes of health, wealth, good luck and neighbourliness, as well as their opposites such as disease, poverty, and alienation can be found.

> 'Nature and humans are all connected through one thing: health. It is for health that you will be told to go and slaughter or prepare Xhosa beer and have an *imcimbi*. When I go to *emaxhantini* and talk with the ancestors, whatever I ask them, eventually comes out. If my father tells me in my dreams to brew beer and I resist, he will persist in my dreams until I ultimately brew beer and announce in a gathering that I dreamt and that is why we are here.' Lady (1934), Nondobo.

These elements are drawn from the local and contemporary emergence of elements of a 'traditional Xhosa cosmology' which centres on notions of i) the common humanity of the neighbourhood, including its corporal and spiritual inhabitants, ii) the material and spiritual centrality of cattle as signifiers of wealth and good luck, iii) the spread of this wealth through the neighbourhood through mutual assistance in cultivation and sharing during feasts and rituals (i.e. a sharing of the wealth associated with cattle within the neighbourhood) and iv) the drawing of non-human organisms and processes into the realm of the social through the ways they interact with human action.

All three narratives reflect people's alienation from the land, catalysed by the intervention of outside forces (government departments, invasive plants, bush pigs), and reveal a degree of powerlessness people experience in the face of change. Nevertheless, the narratives, by emphasising people's disempowerment to continue with a livelihood centred on livestock and the cultivation of crops, provides

scope for the moral and social justification of a diversification of livelihood activities towards practices that previously may have been thought to be conflicting with accepted local identities. Thus, in the emergence of narratives of alienation and disempowerment, people exercise agency to open up different strategies of livelihoods. These livelihoods are sometimes humouristically described in the terms of past livelihood practices.

> 'It is because people have other means of income that they lose interest in ploughing. The new ploughing is women carrying bags from Idutywa on the bus, so heavy that it presses like yokes on them. People are wearing expensive clothes that perish soon and build expensive houses, that contributes to people not wanting to plough.' Man (1942), Ngwane.

Conclusion

In this chapter I have continued the historiography of the landscape started in chapter four, but with a shift of emphasis from chronology towards the arenas where social practices and ecological processes interpenetrate to produce landscape. I have traced the main trends in the processes constituting three main arenas, with emphasis on the spatial patterns in land cover emerging as a consequence. I have shown that increasing spatial heterogeneity in livestock foraging densities and in resource harvesting, changes in the fire regime towards 'cooler' and more infrequent fires and that an abundance of pioneer-favouring patches in the landscape at critical points in time, all contributed to the documented expansion of woody vegetation in Nqabara. I have also drawn attention to the ways in which the changes in land cover are experienced by people during the actions of living in (dwelling) and making a living (livelihood) in the landscape. Although experiences of alienation characterises their perception of changes in the landscape, their making sense of the changes have enabled them to invest in a diversity of livelihood opportunities.

Chapter 6: An application of the embodiment of practice perspective to the history of the emergence of landscape and social institutions in Nqabara

Introduction

Having sketched the unfolding of the history of the landscape of Nqabara, it is useful to reconsider the original aim of the current inquiry and the progress that has been made toward this purpose. In chapter one I have set out the argument for a monist conceptualisation of the landscape as an emergent interface coming into being through, and incorporating the multiple overlapping and intersecting patterns of actions of agents (human, non-human, as well as inanimate). I have shown how, by focusing on the organism-in-its-environment, its living in and moving through (dwelling) and its making a living in (livelihood) the landscape, the dualism between object and subject, between action and experience, between object and meaning, can be overcome and dissolved. I showed that such an approach is critically dependent on the gathering of extensive and detailed historical information, and the handling of historical contingencies in a manner that is sensitive to the ways in which relations of power and meaning come into being through the affordances provided by intersecting patterns of action. In order to achieve this, I outlined the methodological considerations to construct such a history in chapter three. Chapters four and five unfolded as the body of this history, divided into four analytically separable arenas where landscape becomes embodied. A progressive shift in emphasis ran through the two chapters, starting with a preoccupation with historical contingency and moving gradually to an underscoring of local agency (by both human and ecological actors) and the meaning arising from praxis. These two chapters function as the preparatory work for the two tasks that remain. Firstly, it is necessary to integrate the histories of these four interfaces into a single history of landscape and livelihood, and secondly, this history needs to be subjected to analytic attention through an application of the conceptual framework developed in chapter one.

The present chapter aims to move the discussion beyond historical description, towards theoretical explanation. First, the histories of the arenas of landscape as presented in chapters four and five are synthesised and summarised. To enable brief comparative notes with the regional literature on history and livelihoods in rural communal areas in the Eastern Cape, I organise the synthesis in three themes that are central to this literature:

- the changing patterns of homestead production in homesteads gardens and extensive fields,
- the social and spatial implications of Betterment-induced resettlement, and
- the changing patterns of economic and social urban-rural linkages.

Each of these represents an intersection of complex processes and demand in-depth and transdisciplinary inquiry in their own right. The purpose here however, is to present them in a concise and descriptive manner that will facilitate the subsequent task of bringing the praxis-embodiment perspective to bear on the main trends identified, which will form the second section of this chapter. In the second section the purpose is to explore the possibility of moving from description to explanation and to explore the implications of the monist ontology of the embodiment of praxis, for the explanation of the observed landscape and livelihood transformations in Nqabara. The potential and shortcomings of this perspective are also discussed. In the last section of this chapter I explore some of the practical considerations of

livelihoods and development, and landscape and natural resource management, arising from the alternative ontology developed and applied in this study.

Changing patterns of homestead production in homesteads gardens and extensive fields

The history of homestead agricultural production in Nqabara over the last forty years shows a number of parallels with trends identified by a number of other scholars in the neighbouring areas of Shixini (McAllister 1979, 1986, 2001, Heron 1990, Andrew 1992, Andrew and Fox 2004) and Dwesa/Cwebe (Palmer *et al* .2002, Fay 2003a, Timmermans 2004). It is evident from all of the above studies that homestead agricultural production have undergone dramatic changes in the last half a century, and that the processes of change exhibit a large degree of heterogeneity in different areas and among different homesteads. Further, all demonstrate the complex role that homestead agricultural production fulfils in rural livelihoods and how it articulates with other livelihood activities.

The present inquiry confirms the manifold and dynamic articulations of homestead agricultural production with other livelihood generating practices, especially those practices that link agriculture with rural and urban economies, with homestead livestock and labour economies, and with the spatial position of a homestead relative to land and other natural resources its members draw upon in making a living. The results also underscore the importance of variation among homesteads that other studies have drawn attention to. Homesteads vary in the extent of their involvement in homestead agricultural production, with regard to its composition in terms of the number of, age and gender of its members, its access to capital and cash, livestock and land, its ability to mobilise labour, its spatial and social relationships with other homesteads and communal resources as well as its notions of identity and extent of conservatism. All of the above play a role in influencing the extent of as well as type of a homestead's engagement in homestead agricultural production. The evidence from the life histories of homesteads draws attention to the ways in which a homestead's engagement in agriculture may vary over time as its own composition and access to wage income, livestock, human labour and land fluctuates according to homestead developmental cycle and shocks and opportunities that present themselves in a contingent fashion.

As do the studies in Shixini and Dwesa/Cwebe, this study reveals a systematic reduction in the overall area under agricultural cultivation over the last fifty years, together with a proportional increase in the importance of homestead gardens in agricultural production. Important variations among the study areas however characterise the details of these trends.

The trends in Nqabara seems to share more similarities with those in neighbouring Ntubeni (a subward of Dwesa) (cf. Fay 2003a, Palmer *et al.* 2002, Timmermans 2004) than with the trends in Shixini or Cwebe (cf. Andrew 1992, Andrew and Fox 2004), for the trends in the cultivation of extensive cultivated fields as well as in that of homestead garden cultivation.

Whereas in Shixini homesteads have been able to continue to expand homestead gardens into at least the late 1980s (cf. Heron 1990, Andrew 1992, Andrew and Fox 2004, McAllister 2001), in Nqabara and Ntubeni this was made impossible for most homesteads since they found themselves living in clustered residential areas after the forced resettlement of Betterment in the mid-1970s (Nqabara) and late 1970s (Ntubeni). Opportunity for subsequent expansion was almost entirely precluded except for a small

number of homesteads who through their spatial position in the landscape had effectively resisted or escaped resettlement and resizing of homestead area. Fay (2003) documents for Hobeni (a subward of Cwebe), where Betterment was only implemented in 1983-1984, relatively soon before the military coup in the Transkei in 1987 ('the time of politics' as people from Hobeni refer to this period), that a large proportion of homesteads had been able to resume expansion of homestead gardens a short period after the implementation of Betterment, since many homesteads started to move out from resettled nucleated villages back to their pre-Betterment sites. This afforded both the moving as well as the remaining homesteads to not only expand their homestead sites, but periodically shift the location of kraals, houses and the garden within the site, thereby improving soil fertility. Fay (2003) also shows that a large degree of variation characterises the responses, to Betterment and the undoing of Betterment, of homesteads in different sub-villages of Hobeni. This differentiation emerged as the result of a complex integration of various factors, including the proximity of the resettled homestead to its pre-Betterment site, the homestead's position in the domestic development cycle, the kin composition of the villages it was resettled to as well as the social relationships with its neighbours.

Trends in field cultivation show similar spatial heterogeneity among different study sites. In Shixini, Andrew (1992) documented a dramatic decline in the area of extensive fields under cultivation, most rapidly in the period from 1960 to 1980. She shows that in the period from the 1930s to the 1960s, garden cultivation was mainly a form of supplementing the cultivation in extensive fields. From 1960 onwards however, she argues that the decline in field cultivation and expansion of homestead gardens documented over the same period, became increasingly linked. Declining soil fertility in extensive fields after decades of cultivation, is mentioned as a main reason for both the decline in extensive field cultivation as well as the expansion of homestead gardens. The argument is forwarded that homestead gardens, with their proximity to the homestead, require less labour and facilitate the spread of labour over time for ploughing, hoeing and harvesting activities. Furthermore the proximity to the cattle kraal enables annual manuring of the garden, which together with the intercropping of a range of crops, improves soil fertility and thereby extends the life-span of a homestead garden. A contributing factor is the rising wages and broader access thereto which enabled more homesteads to afford wire fencing, which is more of a necessity in gardens than fields because of the proximity of livestock.

Andrew (1992) also infers more indirect and fundamental causes for the trends in homestead agricultural production. She draws attention to the rates of population growth in terms of number of people and number of homesteads. She describes population growth after the 1950s as a population explosion that, in conjunction with decreasing homestead sizes, resulted in a significant increase in the proportion of poor households. These households faced higher risks and costs to labour and capital in the cultivation of extensive fields than they did in homestead gardens (McAllister 2001, Timmermans 2004). Note however that despite the increased population growth rates after the 1950s, population growth in Gatyana district have been low throughout the twentieth century relative to growth rates in South Africa and Transkei (Fay and Palmer 2002).

The labour constraints brought about by the reductions in the average number of people per homestead, were accentuated by increasing rates of labour migration through the 1960s to the mid-1980s. Recently

processes such as increasing permanent emigration, youth pursuing education elsewhere and an increasing proportion of individuals and homesteads infected and affected with HIV and AIDS-related diseases are also like to have aggravated homestead labour shortages. Timmermans (2004) quotes that HIV prevalence in the Eastern Cape among sexually active women was estimated at 18% in 1999, which is a 45 fold increase since 1990.

In contrast, in Cwebe most homesteads have been able to continue to produce a significant proportion of cultivated produce in their extensive fields. A number of factors may be associated with this pattern. Fay (2003) and Timmermans (2004) speculate that patches of fertile soil are more widespread in Cwebe in the floodplains of the Mbashe river and on soils derived from doleritic outcrops. In Cwebe the *de facto* homestead size and cattle herd sizes per homestead are slightly higher than in Shixini, Nqabara or Dwesa, resulting in fewer constraints on mobilising sufficient labour for field cultivation. The population of Cwebe has had a much shorter historical tradition of contact with missionary education, and as a result the proportion of the population having attained higher levels of education is smaller than in Dwesa and Nqabara, although probably not different from Shixini. Fay and Palmer (2002) and Timmermans (2004) argue that this historical distinction has resulted in a lower proportion of homesteads with access to the wage income of a migrant labourer in Cwebe than in the other sites. For this reason, it may be argued that levels of poverty in Cwebe is probably slightly higher than in other study areas, which could be interpreted as intensifying the need to produce subsistence food requirements from extensive fields as well as gardens. If this is the case, it would lend support to Beinart's (1991) assertion that the long-standing positive relationship between migrant labour income and agricultural output is gradually being broken down. This is however not equally true for all localities, as Timmermans (2004) has shown that in Ntubeni there is still a significant correlation between cattle ownership and access to remittances, migrant workers continue to invest in cattle.

The divergent histories in terms of contact with missionaries and education, may also account for the relatively longer persistence of the conservative ideology of ubuQaba in Cwebe and Shixini, as opposed to that in Nqabara and Dwesa. However, the weaker effective state presence and resultantly the relatively late implementation of Betterment and partial resistance thereto and eventual reversal of some of its forced resettlements, may also have played a role in the persisting capacity of people in Cwebe to continue field cultivation.

It seems that in Nqabara and Ntubeni the abandonment of extensive fields have been most dramatic and permanent. It is striking that in Ntubeni, as in the *iilali* of Nqabara that are closest to Dwesa Nature Reserve, the damage to crops caused by bush pigs are inferred as the most important reason for abandoning the cultivation of extensive fields. People in Ntubeni claim that the bush pig population underwent a population explosion in the 1970s whereas people from Nqabara experience the increase in crop damage to bush pigs 'fleeing' from Dwesa from the effects of the stocking of Dwesa with animals foreign to the area. However, these two areas share other similarities which may explain the similarities in trends of cultivation. They were, unlike Shixini and Cwebe, settled by people who associated themselves with *amaMfengu* identity in the latter decades of the nineteenth century after the last Frontier War. They were some of the most industrious cultivators of the first half of the twentieth century as they had already

had some experience with tractable cultivation, as well as being prominent sheep and cattle farmers. They had had a long tradition of contact with education (the high school at Nqabara served areas as far as Shixini and Cwebe until recently). This may explain the current trends of a slightly higher proportion of homesteads with access to migrant labour wages as well as the relatively early demise of a conservative ideology in these areas. Furthermore, Nqabara and Ntubeni, along with other 'amaMfengu' settlements such as neighbouring Nqabarana, had been the first ones in Gatyana district where Betterment was implemented (from mid-1960s onwards) and where resistance to Betterment was least pronounced (although by no means absent). The significant influence Betterment-induced resettlement have had on homestead productive capacities have already been underlined and this is likely to be a major cause for the similarities in agricultural trends between Nqabara and Dwesa.

Another important trend shown by several of the studies in neighbouring areas, and substantiated by the current inquiry, is the ways in which the range of livelihood activities, that a homestead may draw upon in making a living, have diversified over the last decade. All studies seem to underline that the growing scarcity of employment in the urban-industrial sector, the increasing importance of government grants and pensions in rural livelihoods and the disappearance of state intervention in urban-rural and local trade through trading stores and the issuing of trade licences and permits, have played an important role in these trends.

The social and spatial implications of Betterment-induced resettlement

Betterment unfolded during different periods and at different localities, in manifold ways as shifting official policy and local responses to the implementation combined in unique ways. De Wet's (1985, 1995) in-depth account of the differential emergence and impacts of Betterment in the two villages of Chatha and Rabula in the former Ciskei near King Williamstown, has shown how the various actors involved and characteristics of a place shape the unique emergence of Betterment in particular places and times. The characteristics of a place before the implementation of Betterment, including the land tenure system, local political struggles and power relations, its integration with the regional and national economy, its physical accessibility and infrastructure, significantly shapes the possible ways that the project can be implemented and the impacts it will have on people's lives. Furthermore, the contingencies of the implementation process itself emerge not as an unchallenged concretisation of the policy or planning official. Rather, various local and non-local actors engage with their respective goals and capacities, so that the outcome is always the result of mediation and contestation between the various expectations and goals of actors with asymmetrical relations of power (De Wet 1989). In this regard Long's (1992:20) observation is topical:

> '…although it may be true that certain important structural changes result from the impact of outside forces, it is theoretically unsatisfactory to base one's analysis on the concept of external determination. All forms of external intervention necessarily enter the existing life-worlds of the individuals and social groups affected, and in this way are mediated and transformed by these same actors and structures…'

The level of control that local people had in Chatha and Rabula, in simple things as choice over the site to which they were too move, who their neighbours would be and when they were able to move, therefore contributed to the impacts of Betterment on their lives. In this regard different homesteads, endowed with

varying bundles of assets and capacities, differ in their capacity to respond to or manipulate conditions and therefore experience different levels of disruption. Importantly, a homestead's composition (number, age and gender of members), its access to capital and cash and its network of social relations shape this experience. Furthermore, De Wet (1995) has drawn attention to the importance of considering the spatial impacts of resettlement on local social and political organisation, and their subsequent impacts on productive activities by shaping the organisation of labour for agriculture and natural resource extractive activities.

In Nqabara Betterment was implemented much later than in Chatha. The first homesteads relocating in Nqabara did so in 1973, a decade later than those in Chatha. By this time in the former Transkei, the planning was no longer done by a central permanent committee, but by ad hoc committees of planners, whose main aim was to step up the rate of planning. The initial aims of Betterment Planning, that of soil conservation and agricultural development, through irrigation schemes, contouring of fields and stock limitation had given way to a more pragmatic approach since the coming into power of the Nationalist Government in 1948, and especially after the Tomlinson Commission's report and promulgation of the Bantu Authorities Act in the 1950s. Changes in official policy reflected a need to improve the acceptance of the Bantu Authorities system and officials were therefore hesitant to impose practices that would create large-scale opposition on the ground. In practice this shift in policy towards 'stabilisation' (as opposed to reclamation and rehabilitation) resulted in the fact that most planned villages undergone changes only in the demarcation of the three major land uses namely residential areas, arable areas and grazing areas (Hendricks 1989).

In Nqabara the implementation of Betterment, conformed to the idea of 'stabilisation' (cf. Hendricks 1989) and did not entail much more than the relocation of homesteads to nucleated villages on ridges and close to roads. For some pre-Betterment neighbourhoods and *iilali* this implied the removal of complete residential groupings and their settlement among the homesteads of existing groupings. However, in some *iilali* the relocation only required homesteads to move to one side of a road or from the sides of a hill to the upper slopes. Most homesteads could choose their own site of relocation, but the ones last to move had least choice. Those homesteads who were not required to move, but whose sites were cut to accommodate other homesteads, had little formal choice in the matter but one can expect that the relocating family would have consulted first with the homestead in question. From the spatial analysis of homestead sizes subsequent to the implementation of Betterment, it was evident that some homesteads had been able to retain homesteads of sizes far larger than the official implementing Betterment, had specified.

As has been alluded to in the previous section, the unfolding of Betterment in Nqabara, Shixini, Dwesa and Cwebe differed in significant ways. Of these four areas, the implementation was done first in Nqabara (1973-1977), thereafter in Dwesa (in the late 1970s, but partially resisted), Shixini (initiated late 1970s but effectively resisted) and last in Cwebe (1983-1984 but partially resisted).

No evidence was found of homesteads in Nqabara that outrightly refused to be moved, but some homesteads did manage to evade size restrictions on homestead sites. McAllister (1989) found that when

plans to implement Betterment in Shixini in 1979, despite very real concerns and relevant objections by homesteads, and despite the fact that the planning was technically illegal, most people still displayed a fatalistic acceptance of the scheme. A similar frustration and experience of powerlessness permeate many of the accounts of people from Nqabara on a move they felt they had little choice but to make. Through the determination of a small number of influential homesteads and the assistance of researchers and NGOs, Betterment was eventually resisted in Shixini. The resistance to Betterment in Hobeni (cf. Fay 2003a) and Ntubeni (cf. Timmermans 2004) was less formal and consisted mostly of homesteads who waited to see what would happen if they did not comply with the order to resettle in nucleated villages.

In Hobeni, a number of homesteads from the most remote and agnatically dense *iilali*, had successfully resisted being moved by Betterment. In Nqabara, in contrast to the situation in Hobeni, the various governments and government departments had had a stronger local presence over a long history of intervention, not least through the appointment of a headman from a neighbouring ward in 1942, who was in office until 'self-government' in 1963. When Betterment was thus introduced under the headmanship of a recently reinstated Mazamisa (the original lineage of headmen since 1878), people of Nqabara were effectively straight-jacketed to oppose the scheme on terms relating to dissatisfaction with the headman. The new headman on his part, receiving an increased stipend from the 'self-governing' government of Transkei, could more easily afford to ignore the complaints of the people under his headmanship (cf. Fay 2003a).

The extended period between the implementation of Betterment and the collapse of local government administration in 1987, can probably also explain to a large degree why homesteads in Nqabara had not returned to their pre-Betterment site after 1987 like some homesteads in Hobeni (cf. Fay 2003a). Furthermore, the period of increased access to wage labour prior to and continuing for almost a decade after the implementation of Betterment, is likely to have enabled many homesteads to overcome the economic deprivation of relocation, and invest in infrastructure in new homesteads. McAllister (1989) argues that Betterment is likely to result in discouragements for investment in agriculture as a result of increased costs associated with the relocation, reduced tenure security as well as increased transaction costs of cultivation in terms of distance to land and labour organisation. In Nqabara, the results concerning agricultural activity post-Betterment confirms this, despite the general increased access to wage income during the 1970s which would have enabled homesteads to overcome the costs of relocation. It can be speculated that this increased income was invested preferentially in homestead infrastructure and livestock (to rebuild the herds after the decimation by drought and red water disease in the early 1970s).

From oral accounts it is evident that at least some homesteads in Nqabara, especially the young, the better educated and the wealthier, had capitalised on certain advantages that the implementation of Betterment afforded them. McAllister (1989) has documented in nearby Shixini where Betterment was eventually successfully resisted, that the homesteads that did relocate, had almost all done so through the motivation of being in some way, related to the context of the homestead in question, better off than before their move.

Similar to the case in Chatha, the implementation of Betterment in Nqabara resulted in the subsequent abandonment of cultivation of the majority of land under cultivation. However in Nqabara this occurred, not as a direct result of Betterment practices, but as voluntary abandonments of fields by homesteads as a result of a complex array of contributory factors. This contrasts with the situation in Hobeni (Fay 2003a) where people have been able to continue the cultivation of extensive fields after the implementation of Betterment. Fay (2003) partly attributes this phenomenon (which is also in contrast to nearby Ntubeni, where Betterment was implemented after Nqabara but before Hobeni) to the fact that the conservative ideology of ubuQaba persisted for longer in local livelihood practices in Hobeni than in Ntubeni or Nqabara, since Hobeni has had a shorter tradition of contact with missionary schools and education. This explanation is not completely satisfactory as in Shixini, where conservatism and traditionalism is also very important (McAllister 1986), people have nevertheless abandoned most cultivation fields in favour of homestead gardens. Other reasons for the divergence in the trends of agricultural production among various localities, have been mentioned in the previous section.

The environmental impacts of Betterment vary significantly between localities as does the social, political and economic impacts. Fay (2003) draws attention to the prevalence of encroached woody vegetation in localities where the implementation of Betterment has resulted in the abandonment of cultivated fields. De Wet (1989) demonstrated how Betterment, in moving people into concentrated residential areas have increased human and animal pressure in certain patches in the landscape and have withdrawn flexibility from the pattern of land use.

The case of Nqabara underscores the variability of impacts and experiences of Betterment within and among localities. Importantly, the timing of Betterment (relative to the advent of democracy), the level of control by the relocates in the scheme's practical unfolding, the access to income sources to overcome Betterment-induced impoverishments, and the history of state activity and intervention, all contribute to the eventual impacts of Betterment.

The changing patterns of economic and social urban-rural linkages

The various accounts of historic and contemporary rural livelihoods in communal areas of the Eastern Cape, although sometimes divergent in their arguments, converge upon the conclusion that the domestic economies of rural homestead have and continue to articulate with urban economies in dynamic and heterogeneous ways (cf. Beinart 1982, 1991, McAllister 1979, 1986, 2001, Ainslie 2002, Fay 2003a, Timmermans 2004, Hajdu 2006).

From the history presented here for Nqabara, it is evident that the increasing connectivity between homestead economies and the urban-industrial economy that characterised livelihoods from the 1960s until the mid-1980s, and that was based mainly upon long-distance oscillating migration of men to urban centres on the Witwatersrand or around Cape Town, have largely waned in importance. I have already drawn attention to the macro-economic changes which reduced employment opportunities for migrants from the rural Transkei in these areas since the mid-1980s. Hajdu's (2006) account of livelihoods in the villages of Manteku and Cutwini, in Port St. Johns and Qawukeni local municipalities respectively, also draws attention to the increasingly smaller role that long-distance labour migration is playing in rural livelihoods.

In the last decade in Nqabara, rural-urban linkages of another sort have grown increasingly important in local livelihoods. Homestead members travel to the rural centres of Gatyana and Idutywa at increasingly regular intervals, for administrative and health purposes, as well as for the purchasing of groceries, commodities and the sale of crafts produced at home. Furthermore, the number of homesteads that stock a small range of groceries and commodities for sale in small homestead-based shops in Nqabara, have grown rapidly since the constraining regulations on trade in rural Transkei have been lifted. Such homesteads typically buy their stock in the above rural centres, travelling and transporting the stock on the local bus or taxis that frequent the route. These businesses are thus made possible by the daily transport links between the rural centres, as well as by a growing local cash economy, which I have argued have been facilitated by the wider reach and increased value of government grants and pensions, and the way in which this transforms homestead power relations with regard to the control of cash resources. On their part, the activities of these small businesses and their regular need to travel to rural centres, as well as other homesteads that purchase groceries and commodities in town, have stimulated entrepreneurship in the local transport business. It is this new form of rural-urban economic linkages which Timmermans (2004) sees as critical for livelihood diversification and the reduction of economic vulnerability among rural households. It can be argued that the shift in power relations within homesteads, whereby women have gained greater access to and control over homestead financial resources as a result of a combination of the increased entry costs for males into oscillating migrant labour jobs and the wider access on the part of women to government grants and pensions, is a crucial facilitating factor in these new forms of urban-rural linkages and livelihood diversification.

Hajdu (2006) has drawn attention to the importance of local full-time, temporary and self-employment to current livelihoods of homesteads. Although the proximity of the areas she studied to the Magwa and Mazizi tea plantations, accounts for some of the high levels of engagement in local employment, the trends she sketches with regard to homesteads' engagement in small-scale local businesses, in government initiated poverty relief projects and dependence on government grants and pensions may be more widely applicable. Her account nevertheless overlooks the differential values of income procured by different livelihood strategies. Timmermans (2004) showed for Ntubeni that the upper tercile of homesteads in terms of income, were predominantly reliant on employment, whilst the middle and lower income terciles were respectively reliant on state welfare and agriculture. McAllister (2001) in Shixini, Gatyana local municipality, has similarly shown that people increasingly start to engage in local trade and service industries to augment their traditional dependence on cash income from the urban-industrial sector.

During fieldwork for the study, a number of members of the most vulnerable homesteads were involved in the poverty relief projects of the Department of Public Works in maintaining local roads and that of the Department of Environmental Affairs and Tourism, in clearing alien and invasive vegetation (Working for Water). A local entrepreneur employed a number of people on a part-time basis in the production of cement-bricks, and several people were trained and contracted as consultants in government projects for the establishment of household electricity and reticulated tap water to the villages. Some respondents had been employed at Dwesa Nature Reserve in the past, and several, especially women, had been

employed in nearby urban centres such as Gatyana, Idutywa and Butterworth (Gcuwa). The most important permanent local employment was teaching at the five junior secondary schools, one primary school and one secondary school. Religious officers (priests, ministers, reverends) were another source of local employment. Although probably less than in the past, a significant number of homesteads still reported absent members working or searching for work in Cape Town, Johannesburg and surroundings, East London and the Free State (in decreasing order of prevalence).

Although no quantitative data was gathered, people of Nqabara regularly use a range of resources from forests, woodlands and grazing fields for domestic use, construction purposes, transport and trade. Several authors agree that for rural homesteads in communal areas, land-based activities such as homestead crop production, animal husbandry and natural resource harvest play a significant role in substituting expenses that would have been necessary in the absence of these activities, as well as occasionally providing opportunities to be converted into cash (cf. Shackleton *et al.* 2001, McAllister 2001, Fay and Palmer 2002, Fay 2003a). There may be notable exceptions in areas where local employment opportunities and connections to rural centres or urban areas are better established (cf. Hajdu 2006). Such exceptions serve to remind observers of the heterogeneity of areas with different spatial and historical contexts.

In the next section it is my aim to move towards an understanding of the concurrent changes in landscape and livelihood, from the perspective which I have called in chapter one, the embodiment of praxis.

The embodiment of landscape and livelihoods in Nqabara

What are the implications and relevance for the alternative ontology and conceptual framework developed in chapter one for the history of the landscape and livelihoods of people from Nqabara, as presented in chapters four and five and summarised in the previous section of the current chapter? More specifically the question is to establish the position and mobility of the embodiment perspective on what Taylor and Garcia-Barros (1995) see as a dimension along which all approaches in the study of human-environment relations can be characterised, with on the one extreme approaches that provide dense description, but only description, of the detailed complexities of historical contingency and on the other, approaches that focus solely on theoretical abstraction and prediction of phenomena. In order to address this question, I will proceed by firstly presenting an explanatory description of how static patterns in the landscape and livelihood emerge from intersecting patterns of actions and their affordances among multiple actors embedded in a shared environment. Thereafter I will proceed to investigate the more complex cases of transformations in landscape and livelihood and the type of explanation the embodiment perspective may provide.

Consider first the situated homestead as agent in its environment. The homestead and its members engage in daily patterns of activities whereby its members sleep, wake, collect firewood, take out and collect livestock to graze, cook, wash, clean and engage in various homestead or employment work activities. Furthermore they engage in actions that repeat in slower cycles, such as the seasonal ploughing of a field and a garden, hoeing during certain months of the year, harvesting, processing the harvest, brewing beer, holding rituals and feasts, rebuilding homestead infrastructure. The pattern of the repetition of each of these activities can be seen as structures with particular rhythms corresponding to the

spatial and temporal dimensions of their frequency and their dureé. Different spatial and temporal scales come into being from the spatial and temporal rhythms of frequency and dureé of patterns of action. These structures shape the subsequent actions of not only the homestead members, but also the agents in their environment through the constraining and enabling affordances they present to other agents in the environment. For this reason, they bring into being several other temporal and spatial scales, each related to the spatial and temporal rhythm of the particular affordances, which in turn depends on both the structure emerging from the action, as well as the behavioural repertoire of the agent to whom it represents an affordance.

For example, the spatial and temporal patterns of taking out livestock in the morning and collecting them in the evening, present certain affordances for the patterns of behaviour which livestock can engage in, and therefore structure their patterns of actions. However the same patterns of actions also represent affordances (with spatial and temporal dimensions) to the growth and dispersal opportunities for grass and woody plant species, to the herding activities of neighbours in search of grazing area for their livestock, to the cultivation practices of neighbours aiming to avoid crop damage by foraging livestock, to fire patterns by influencing vegetative fuel load, to soil organisms, water infiltration and retention of rainwater and probably an endless list of other actors in the landscape. A single pattern of action such as the daily patterns of livestock herding, with its multiple spatial and temporal rhythms of frequency and dureé, therefore represents a multitude of affordances (with varying spatial and temporal dimensions) to a diverse range of actors in the landscape. Day-to-day activities of embedded actors in their environment exist not as single patterns of actions, but as a continuous flow of activity. For example, the patterns of taking out and collecting livestock are simultaneously part of the patterns of attending to the landscape, of greeting and conversing with neighbours, of finding suitable areas for the future collection of construction timber to rebuild kraals and fences, and of identifying a suitable residential site for a son growing up. It is also part of patterns of actions with slower spatial and temporal rhythms such as the expansion of the livestock herd, the ‘expansion and maintenance’ of draught labour for tractable cultivation and transport labour for the collection of timber for fuel and construction from the forest, the establishment of a respectable social position in the neighbourhood. The daily patterns of taking out the livestock in the morning and collecting them in the afternoon, together with a diverse range of other actions become embodied in the patterns of vegetation in the landscape, in the social relations among neighbours, in the structures of kraals and fences even in the preparation of meals on firewood.

A homestead and its members engage in a multitude of patterns of actions that, like the herding of livestock described in the preceding paragraph, form part of a continuous flow of activity that can be analytically regarded as multiple, overlapping and intersecting patterns of practices. Like the herding of livestock, they unfold over diverging temporal and spatial rhythms and become embodied in many patterns in the landscape and in people’s livelihoods. Furthermore, the patterns they result in, present affordances to the subsequent patterns of actions of the homestead involved, as well as the diverse range of actors in its environment. Because the patterns exist not as either form or substance identifiable to an observer detached from the environment, but as enabling and constraining affordances to embedded agents, such patterns are simultaneously both material and meaningful. In the daily flow of activity of a situated agent, such as the homestead and its members, the meaning emerging from its active

engagement with its environment lies for the most part on the level of practical consciousness. Actions and objects are meaningful because they exist in a relation to the body of the agent, in which its past engagements with its environment, has become incorporated as an embodied history, a habitus. When the homestead head wakes and approaches the kraal, extending his gaze over the courtyard of the homestead, unto the kraal fence, over each animal, the skills built up over a history of previous mornings enable him to perceive his surroundings and any deviation (a sick or injured animal, a weak fencepost, the weather for the day and suitable grazing areas etc.) from the patterned norm at an instant. Some of his observances may be significant and enter discursive consciousness when he later greets his neighbour or sits in the *ibandla* meeting of the neighbourhood and mentions what he has perceived, but most probably will remain tacit. Similarly in the active flow of day-to-day activity and engagement with their environment of the other homestead members, simultaneously meaningful and material patterns emerge and become incorporated into their bodies and their environment.

This relatively simple initial picture of the patterns of actions and affordances arising from a single homestead's actions, increases exponentially as one considers that multiple homesteads simultaneously engage in many of these patterns of actions. Furthermore, not only do their actions present affordances to a diverse range of agents in their environment, but that the opposite also continually happens. The multiple patterns of action of numerous and divergent agents in an environment, intersect with those of a single homestead and its members, through the affordances that they represent to each other.

The patterns of vegetative land cover as visible in the aerial photographs that were spatially analysed in this study, represent an emergent structure, simultaneously material and meaningful, in which multiple patterns of actions of diverse agents have become embodied. I have already described in chapter three that this structure is not appropriable by an actor situated in the environment of Nqabara, rather, it is an artefact of the assumed possibility of being detached from the landscape and viewing it from 'outside'. In order to overcome this artefact, It is necessary to take up position, to be situated, within the landscape.

If we imagine ourselves moving through the landscape, paying attention to the homesteads that dot the grassy slopes and ridges, the forested gullies and cultivated fields in low-lying valleys, each of which pass into and out of sight as we move, it is possible to become aware of the multiple intersecting patterns of actions that have become incorporated in these structures in the landscape. It also becomes possible to perceive the vegetation patterns, and the patterns of action of other people visible in the landscape, as aspects that make certain actions in the landscape possible or desirable while constraining or preventing others. The daily patterns of livestock grazing, the annual cultivation practices, practices of land tenure, practices of earning and income of people, the daily and seasonal practices of photosynthesis, respiration, growth, reproduction, dispersal, establishment and death of plants, the periodic actions of fire in the landscape, of drought, of floods, all these actions are incorporated in the visible structures of topography and vegetation in the landscape. But the intersections among these patterns of actions are also incorporated in the bodies, the skills and the knowledges of the agents that acted them out in the first place. They are also incorporated into practical and discursive systems of meaning, epistemes, emerging from the engagement of situated human actors with other actors in their environment.

When we regard the grazing lands, forests, fields and gardens in the landscape surrounding us, it is not possible to dislocate them from the activities of human and non-human agents that take place in them. In fact, it may be more useful to view the grazing lands, forests, fields and gardens as processes that continuously 'take place', i.e. happen as well as become part of the present.

So far I have illustrated that the complex intersection of patterns of actions of multiple agents, through mutual affordances, becomes incorporated into both the landscape and the bodies of the agents themselves, and their relational engagement with their environment is at once material and meaningful. Landscape and the agents dwelling in it come into being anew and continuously each moment where patterns of actions intersect. But does this view provide any new insights? Is it not possible to describe the emergence of any and every landscape in exactly the same way? What accounts for the astonishing diversity and unpredictability of different landscapes and their divergent histories? More importantly, why does a landscape which continuously comes into being, sometimes come into being in a form that closely resembles its previous form, while sometimes coming into being in rapidly and radically changing forms. For systems where the long-term legacy of past habitation and land management influences future vegetation possibilities (cf. Fairhead and Leach 1994) and which are characterised by unpredictability and surprise, as has been demonstrated for landscapes characterised by abandonment of agricultural fields (Bender *et al.* 2005) and diversifying rural livelihoods (cf. Bryceson 1996, 2002, Bebbington 1996, 1999, 2000, Ellis 2000), it is of special significance to consider to what extent detailed explanation and prediction should be sought and which alternatives of adaptive management are open. In the next section I will consider the utility of the embodiment-perspective in explaining the dynamics of landscape transformation in Nqabara. To address some of these questions, it is necessary to explicitly consider the periods of landscape change in Nqabara, and to analyse the patterns of intersection among the actions of various actors in the landscape. The complexities of this task necessitate taking a fresh look at Ingold's (1993b) notions of the taskscape and the resonance among intersecting taskscapes of various actors.

Resonance and dissonance: multiple overlapping and intersecting patterns of action

The mutual attending of different agents to the affordances their actions provide each other, is described by Ingold (1993b) as analogous to the way in which orchestral musicians attend to one another, thereby enabling resonance of tone and rhythm. Repeated patterns of action, he argues, in the way that they are cycles of successive building up of tension and resolution of tension, can be regarded as embodying rhythms. The continuous flow of action of any one agent embodies many concurrent and overlapping rhythms, and it is from these rhythms that multiple spatial and temporal scales come into being. The multiple patterns of actions of individual agents represent affordances in the environment of other agents (whether human, non-human or inanimate), resulting in a dense fabric of concurrent rhythmic cycles embodied by the complex interweaving of multiple patterns of actions (Ingold 1993b). Following Ingold, but recognising that the term 'resonance' is often an ideologically loaded term, as it conjures up self-organisation and harmony among rhythms, and furthermore recognising that the intersection of rhythms of different agents in an environment almost always involves the exclusion of certain possibilities of action through asymmetric power relations (affordances' characteristic of domination), I propose calling this mutual structuration of rhythms among agents patterns of resonance/dissonance. Up to now this complex of resonating/ dissonating patterns of actions and mutual affordances, or 'totality of rhythmic phenomena (Ingold 1993b:164), has been treated as a black box, which explains the apparent simplicity of the

framework as well as its apparent emphasis on description rather than explanation. A detailed exposition of the most significant patterns of actions in Nqabara, their rhythms and resonance therefore presents itself as key to moving forward towards explanation.

It has already been evident that when the landscape pattern remains stable and unchanged, it is not because the landscape of the past persists into the present, but because the landscape of the present is produced anew, in the same pattern of the landscape of the past. Some patterns of actions may undergo change even during periods when the emergence of landscape shows a relatively stable pattern. Similarly, even during complete landscape change, some patterns of actions may remain stable. The task is thus to investigate periods when landscape does undergo transformation, paying attention to changes in the spatial and temporal rhythms of patterns of action as well as to the specific configuration of the intersecting patterns of actions during these times. In short, it is necessary to analyse the configuration of the resonance/dissonance resulting from the intersecting rhythms of concurrent patterns of actions.

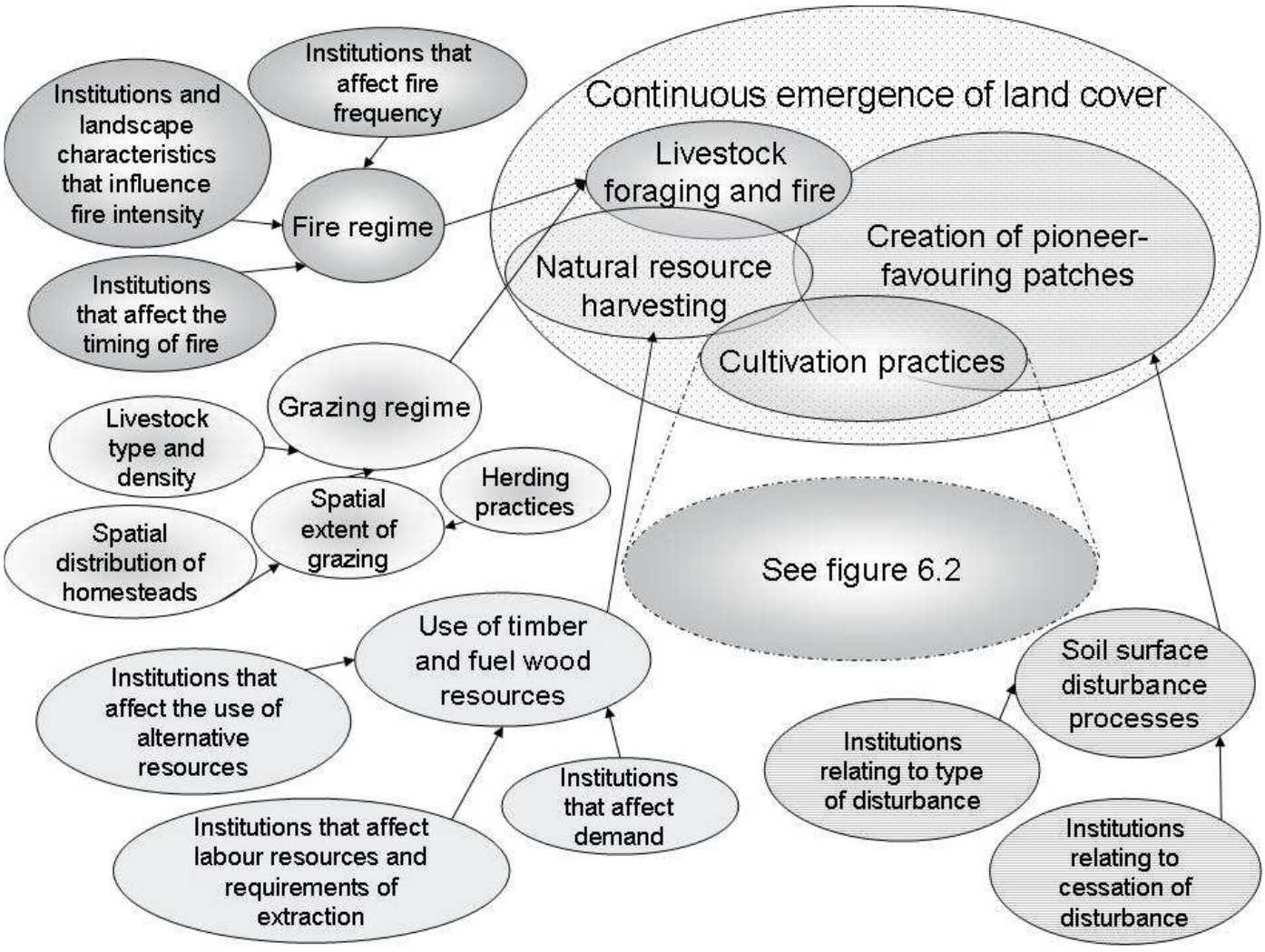

Figure 6.1 Diagram of factors, processes and their interrelationships involved in the emergence of land cover in the landscape. The diagram represents a point of departure for the analysis of these factors and processes and therefore no weighting of importance is implied by the size of the ovals nor the lengths of the arrows.

From chapters four and five, it is possible to distil the main factors and processes that have been involved in the coming into being, the embodiment, of the landscape of Nqabara. Figures 6.1 and 6.2 represent

these factors diagrammatically, showing some of the linkages among them. Here the four arena's of chapters four and five are visible together with factors and processes that mediate the patterns of actions in these arenas. From the preceding discussion on resonance, it is clear that these diagrams need to be reinterpreted with specific attention to the temporal and spatial scales that come into being from repeated patterns of actions.

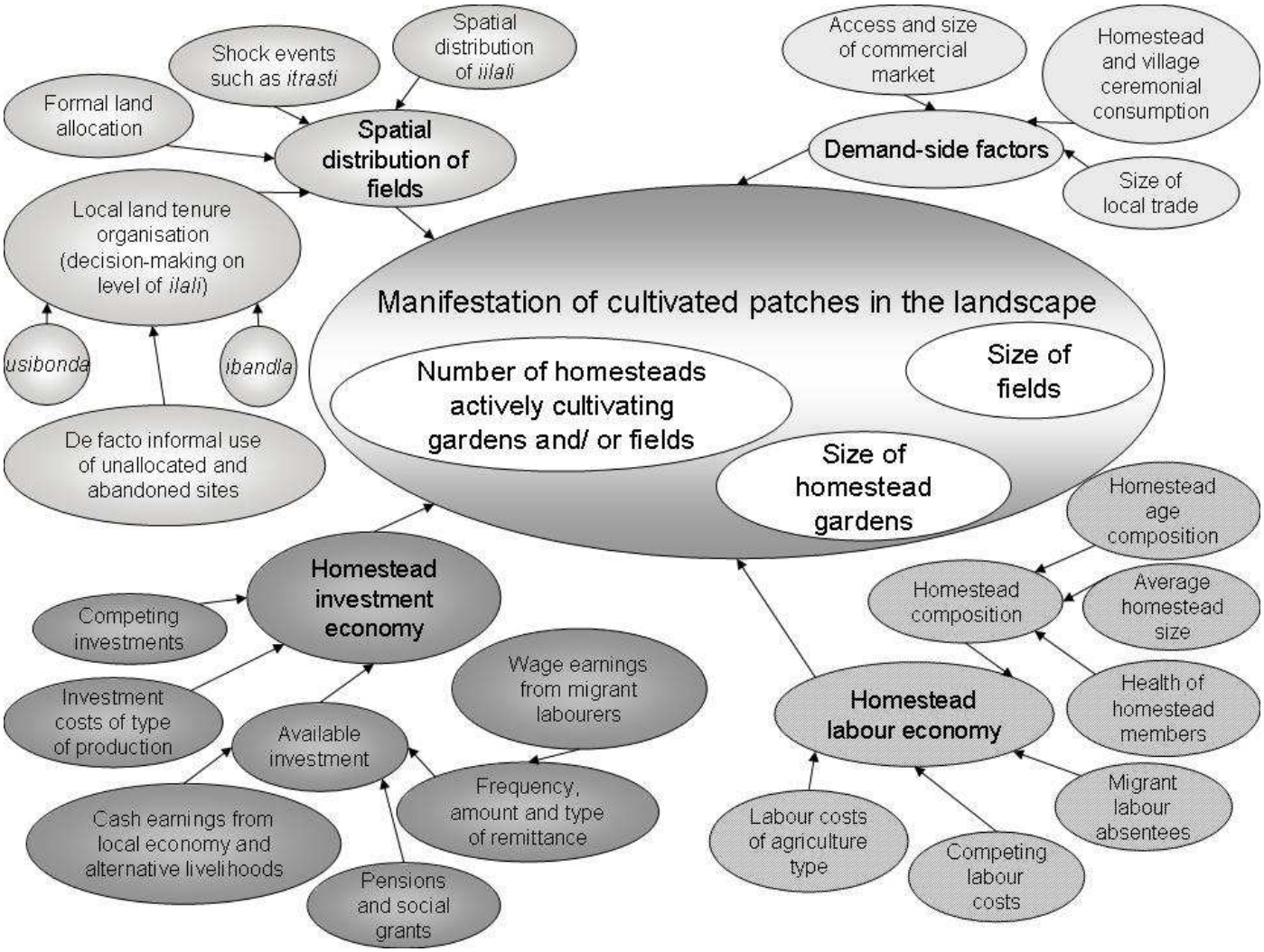

Figure 6.2: Diagram of factors, processes and their interrelationships involved in the emergence of cultivated fields and homestead gardens in the landscape. The diagram represents a point of departure for the analysis of these factors and processes and therefore no weighting of importance is implied by the size of the ovals nor the lengths of the arrows.

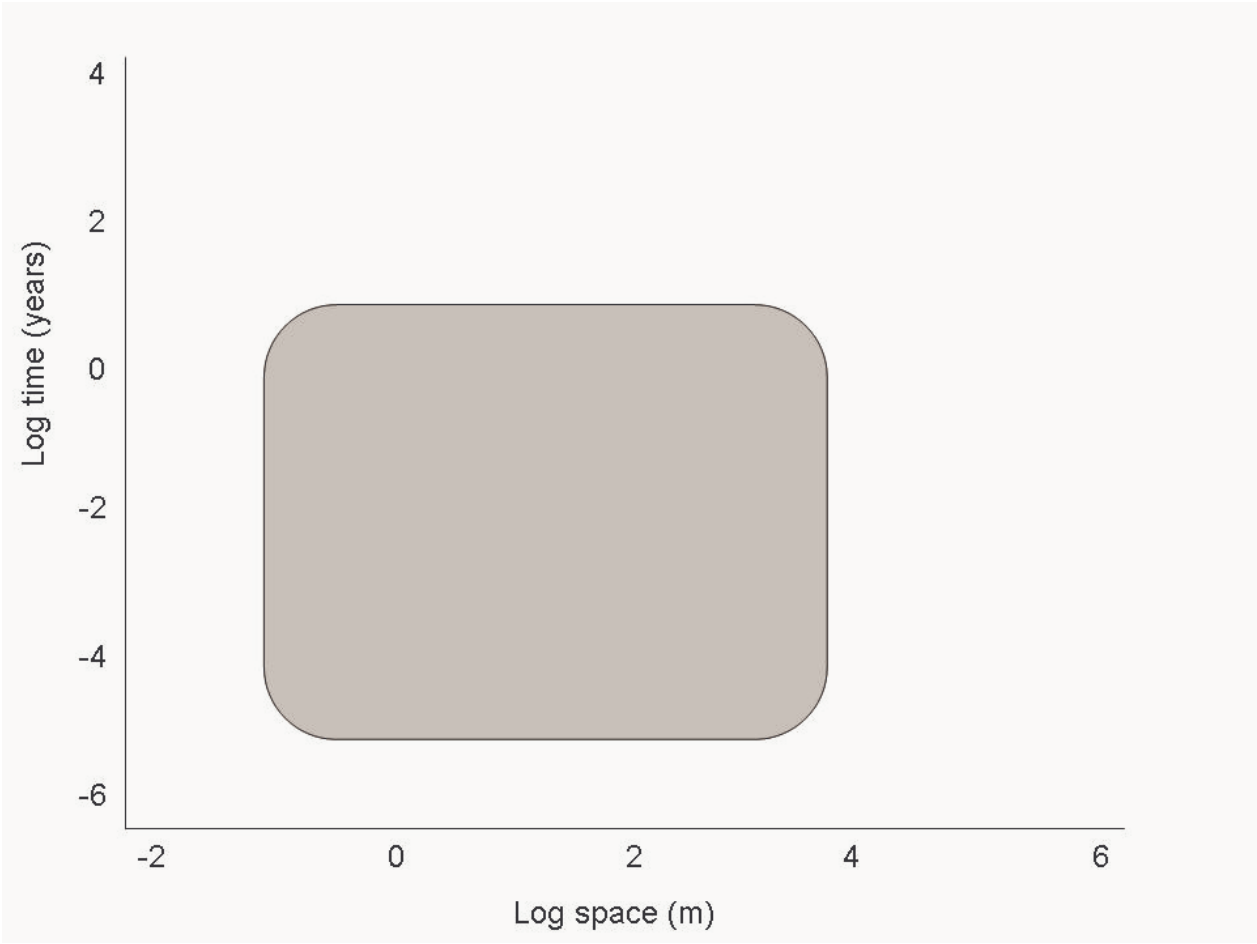

Figure 6.3: Diagrammatic representation of a log-scale plot of a specified pattern of action. The axes represent the range of temporal and spatial scales that come into being from the spatial and temporal rhythms of repeated patterns of action. Since nested processes and systems unfold over exponentially increasing scales of time and space, it is necessary to represent them on a log-scale.

In order to investigate in greater detail these configurations of resonance, and the temporal and spatial scales emerging from it, log-scale plots of the space-time in which patterns of actions occur (cf. figure 6.3), similar to the ones in Holling *et al.* (2002) can be produced based upon figures 6.1 and 6.2. Since nested processes and systems unfold over exponentially increasing scales of time and space, it is necessary to represent them on a log-scale. A few notes of caution need to accompany such a representation. The axes of temporal and spatial scale as represented in figures 6.3 and 6.4 appear as a single homogenous continuum. Since scale in the current framework is regarded not as an independent variable, but as emergent properties of the spatial and temporal rhythms of action (cf. McCusker and Weiner 2003), it follows that the unproblematic representation of the axes here to a certain extent misrepresents the inherently heterogeneous and lumpy character of emergent scale. Furthermore, any pattern of action is a product of at least three different scale parameters: the first emerges from the frequency at which the pattern occurs, a second from the dureé of the individual actions that constitute it, and third from the various affordances that the pattern of action represents to other agents in the environment. This is because the affordance of a particular pattern of action to a particular agent will differ in spatial and temporal extent depending on the particular relationship of that agent with its environment.

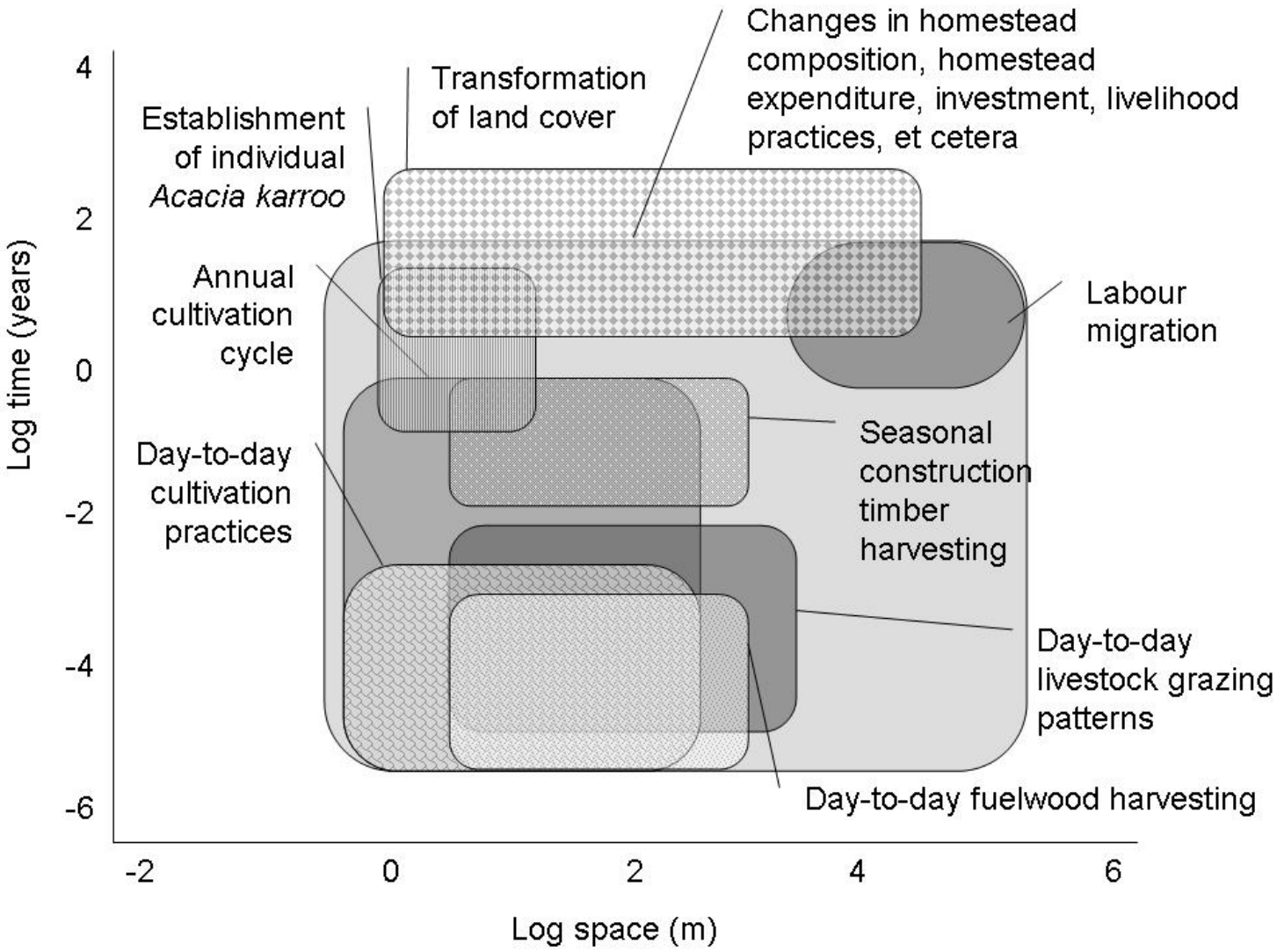

Figure 6.4: Log-scale plot of the patterns of actions that are regarded as most salient in the embodiment of the landscape of Nqabara. The axes represent the range of temporal and spatial scales that come into being from the spatial and temporal rhythms of repeated patterns of action. . Since nested processes and systems unfold over exponentially increasing scales of time and space, it is necessary to represent them on a log-scale.

An alternative way to represent the changes in patterns of actions, their spatial and temporal rhythms and their resonance, is to plot the recurrent patterns of actions of various actors as cycles or waves in space-time (cf. figure 6.5). For purposes of clarity, I will develop the discussion focused on a cross-section of the landscape (cf. figures 6.6 and 6.7). For each of the most salient patterns of actions in the landscape, the changes in its spatial extent (amplitude of waves) as well as in its temporal frequency (which is a measure of intensity) (wavelengths) can be approximated in graphs of the type in figure 6.8. These approximations facilitate a detailed exposition of the configurations of resonance among patterns of practices at different historical instances and presences (here's and now's) which I will argue is key to an understanding and explanation of landscape and livelihood transformations.

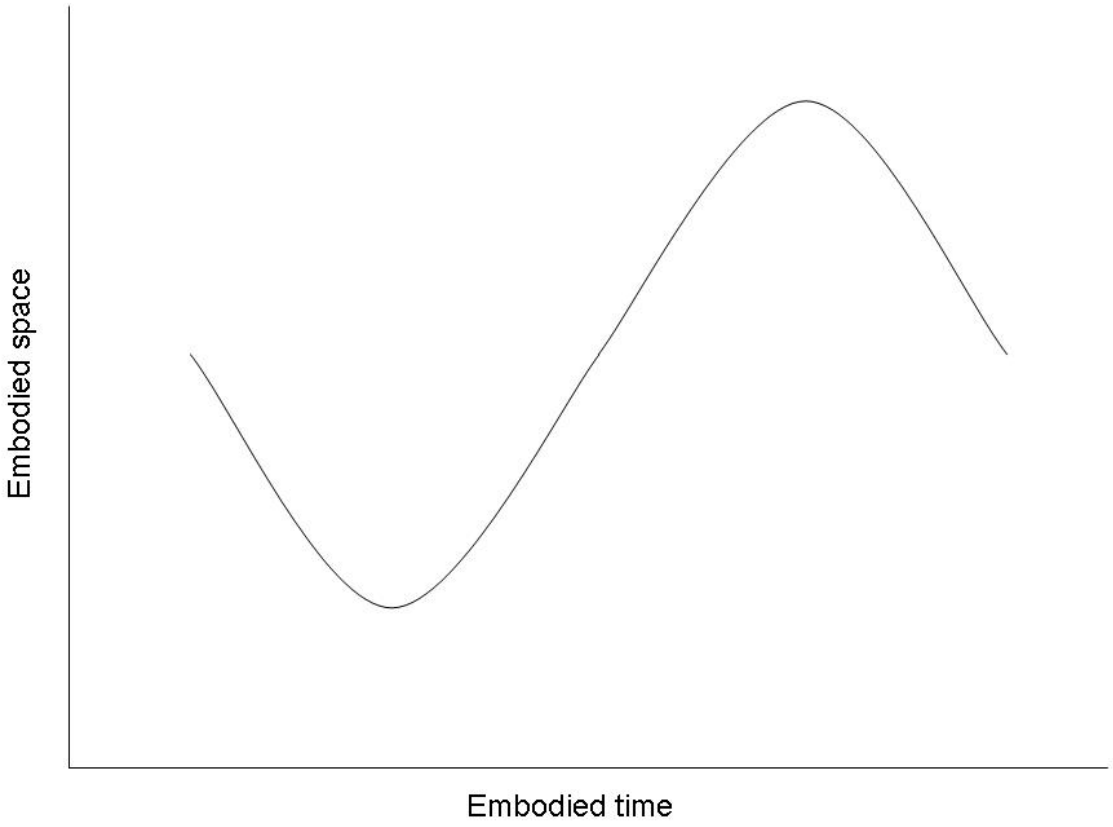

Figure 6.5: Diagrammatic representation of the emergence of spatial and temporal scales from the repetitive spatial and temporal rhythms inherent in patterns of actions. Characteristic of embodied time and embodied space is their uneven, discontinuous or lumpy nature.

The most important changes in landscape and livelihoods documented in this study have been the expansion of woody vegetation at the cost of grasslands, and the decreasing importance and changing organisation of homestead agricultural production in the composition of rural livelihoods. I have shown in chapters four and five that both these trends occurred throughout the period covered in this study, but that the rates of transformation for each of these trends varied within the period. The overall area under cultivation declined most rapidly in the two decades subsequent to the implementation of Betterment, while the most rapid expansion of woodland and wooded grassland occurred during the same period. The most rapid reduction in grassland area and most rapid expansion of forest area occurred in the decade between 1995 and 2001 (and most likely through to the present, although the analysis did not cover the most recent five years). However it has been apparent from chapters three and four that many of the factors playing a role in a homestead's decision to abandon cultivation varied independently of each other and thus produced configurations of resonance/ dissonance that varied throughout the period of study.

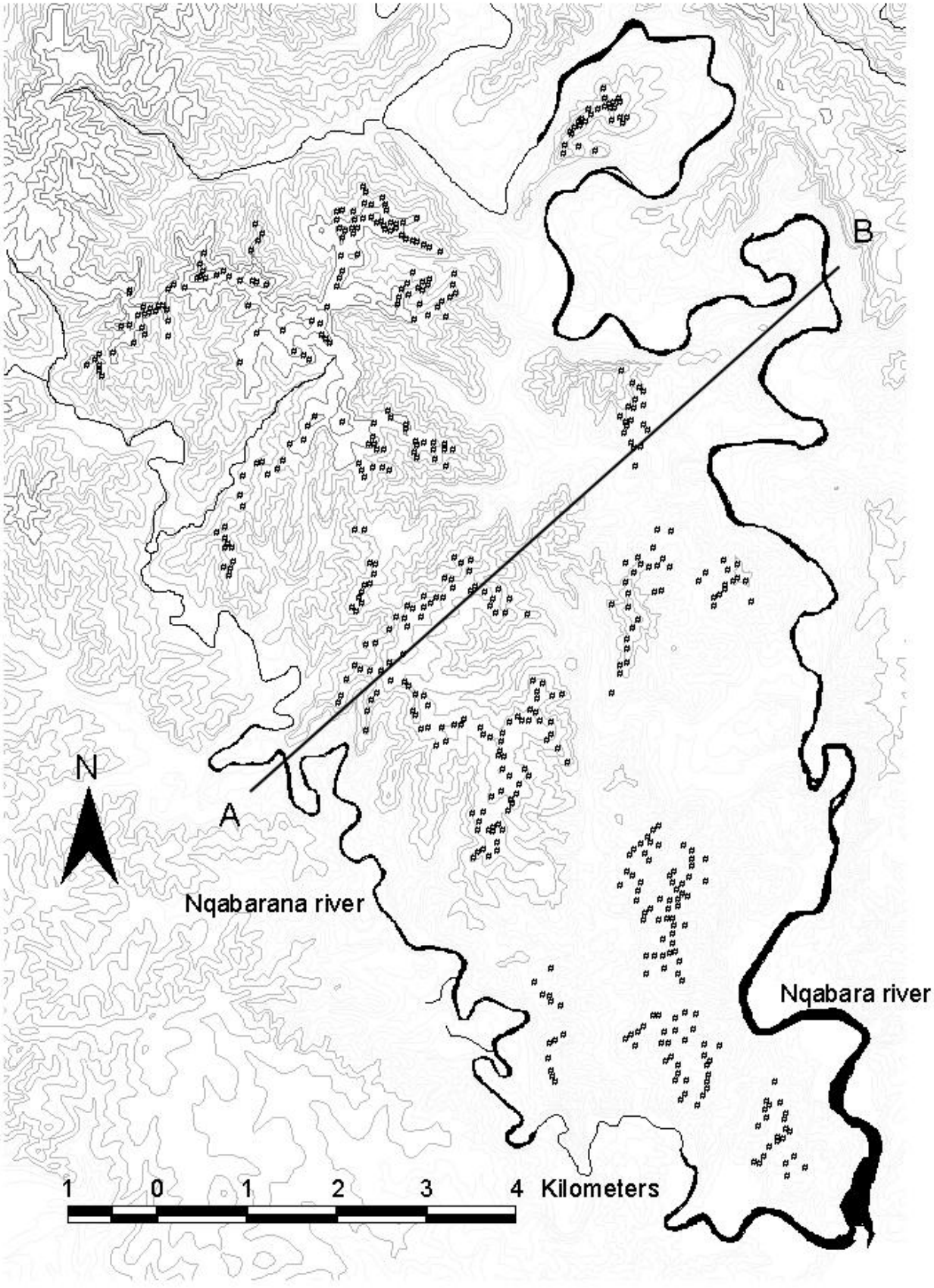

Figure 6.6: Map of Nqabara showing the cross-section A-B which can be used to follow the patterns of spatial and temporal rhythmic changes in patterns of actions and their resonance. The dots represent the distribution of homesteads in 1961.

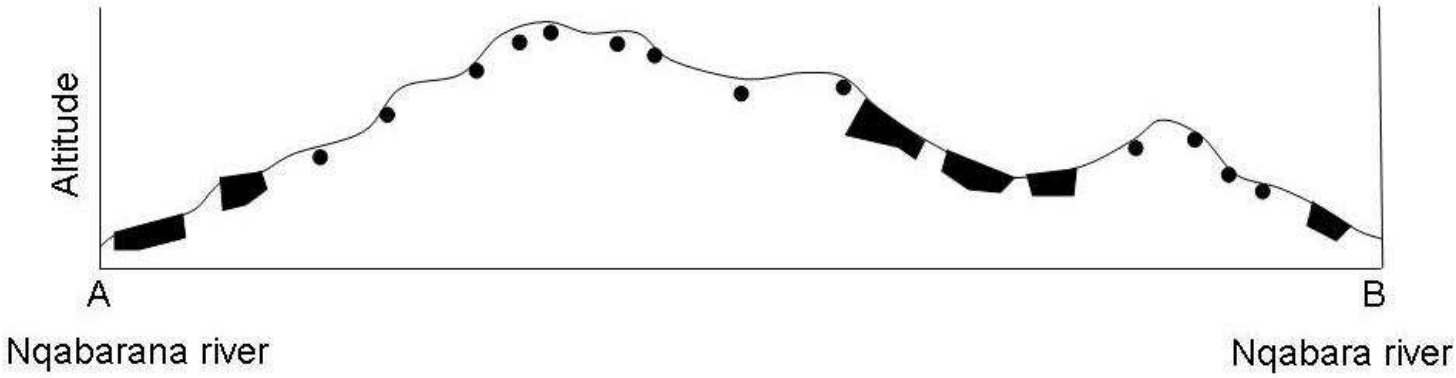

Figure 6.7: Diagrammatic representation of a transverse view of the cross-section A-B of figure 6.6. The circular black dots symbolise the distribution of homesteads whereas the black shapes symbolise the distribution of extensive fields, in 1961. The figure does not give an accurate reflection of the spatial and altitudinal scale nor of the number of homesteads or fields, but serves as a symbolic representation to guide the discussion of the graphs in figure 6.8.

Consider figure 6.8A. Here the activities which members of a homestead engage in and around the homestead on a day-to-day basis, are represented as waves unfolding and bringing into being space-time. Although the figure represents an approximation, the increase in spatial density of homestead activities, as well as the reduction in total area occupied by homesteads, as a result of Betterment-induced resettlement, is clearly visible in the first half of the 1970s. The increasing density of homesteads subsequent to Betterment when the number of homesteads continued to increase gradually, is also clearly visible. Overall the tempi of daily homestead activities have remained relatively unchanged, following daily, monthly and seasonal rhythms.

Figure 6.8B approximates the patterns of field cultivation presented in chapter four. Here it is evident that the spatial and temporal patterns of field cultivation underwent their most dramatic changes during and after the implementation of Betterment. It is evident that field cultivation underwent a reduction in total area covered by fields, most importantly in the decade after the implementation of Betterment. Also evident is that over the last decade, some new fields, though significantly smaller have been established closer to residential areas, with more intensive cultivation practices being undertaken in them (represented in the shorter wavelengths).

Figure 6.8C shows the combined effect of fluctuations in cattle numbers and the spatial distribution of homesteads on the intensity of cattle foraging in the landscape. Betterment-induced resettlement combined with droughts and disease in the first half of the 1970s resulted in reduced cattle foraging densities (longer wavelengths) over a reduced spatial extent (smaller amplitude). Economic conditions in the second half of the 1970s and the first half of the 1980s facilitated recovery in cattle densities through purchases, but the ravaging droughts of 1992/1993 again significantly reduced cattle densities. In the last decade cattle densities had recovered slowly.

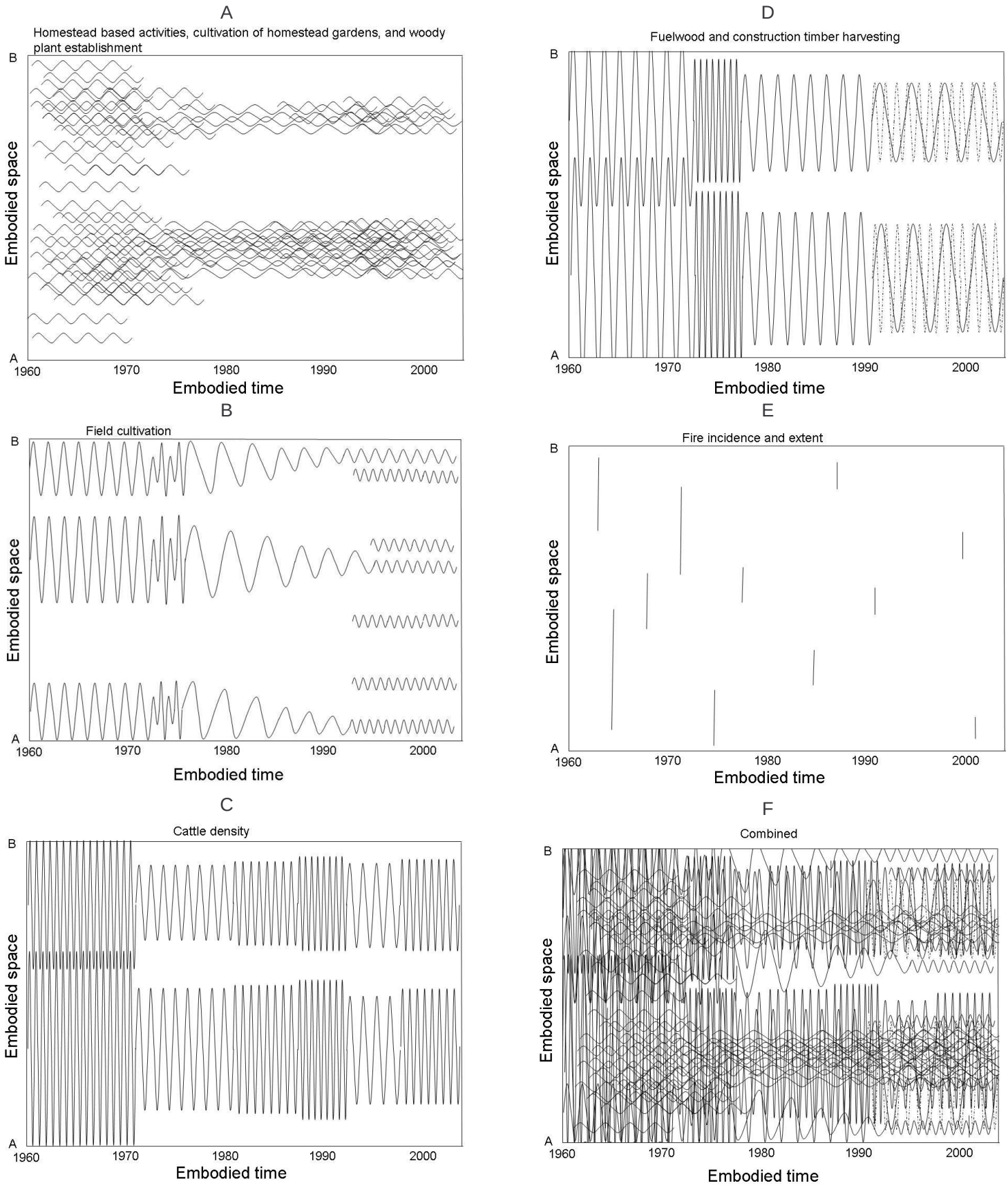

Figure 6.8: Diagrammatic representation of the changes in spatial and temporal rhythms of some of the most salient patterns of actions in the landscape of Nqabara, between 1960 and the present. The diagrams represent approximations in which the amplitude of waves suggests the spatial extent of a pattern of action and the wavelength suggests the temporal frequency, without reflecting accurately the frequency of daily or seasonal practices. The y-axes represent embodied space and the x-axes embodied time. Combined these two indicators can be seen as a measure of the intensity and extensity of a pattern of action in a given period. The dotted line in figure D emerging from 1990 refers to fuelwood harvesting since then, in contrast to timber harvesting, its use has intensified as a result of population increase.

The patterns of fuelwood and construction timber harvesting follow broadly the same spatial pattern as cattle, since both are intricately linked to homestead spatial distribution (cf. figures 6.8D). The period of resettlement is here assumed to have resulted in temporary increases in the harvesting of construction timber. In the last decade, it is assumed that fuelwood harvesting (dotted lines) have increased as a result of increases in overall population, but construction timber (solid lines) is assumed to have declined as a result of the increased importance and use of alternative infrastructural resources such as mud bricks as well as purchased poles and rafters.

Figure 6.8E is a speculative account of fire patterns in Nqabara over the last half a century, showing a decline in the extent individual fires cover, as a result of reduced connectivity between grassland patches, as well as a reduction in the frequency of fire, as a combined result of changes in normative regulation and knowledge of fire, as well as reduced probability of fires as a result of smaller grassland patches.

These figures, although suggestive of the temporal and spatial rhythms emerging from the patterns of actions of animate and inanimate agents in the landscape, provide little insight into the intersection among these patterns of actions and the resonance emerging from intersecting rhythms. At best, figure 6.8F shows that the intersection among even a small number of patterns of actions result in highly complex and unpredictable outcomes. Furthermore, these figures depict only the patterns of actions of human actors, cattle and fire. The actions of dispersal, germination, establishment, growth and reproduction of *Acacia karroo*, and other woody vegetation associated with the transformation of the landscape are not even considered here. The real shortcoming is of course that these figures depict only patterns of actions, not the affordances emerging from patterns of actions. Figure 6.9 suggests the complexity that challenges the consideration of the temporal and spatial scales, emerging not only from patterns of actions, but also of those emerging from the affordances that any specified pattern of action may represent to the diverse range of actors in whose environment it occurs. Transforming the graphs in figure 6.8 into the type of figure 6.9, would inevitably drown the framework in detail. Here I rather aim to present a narrative account of the various interactions of mutual affordance, with specific reference to the patterns of actions of woody vegetation in the landscape.

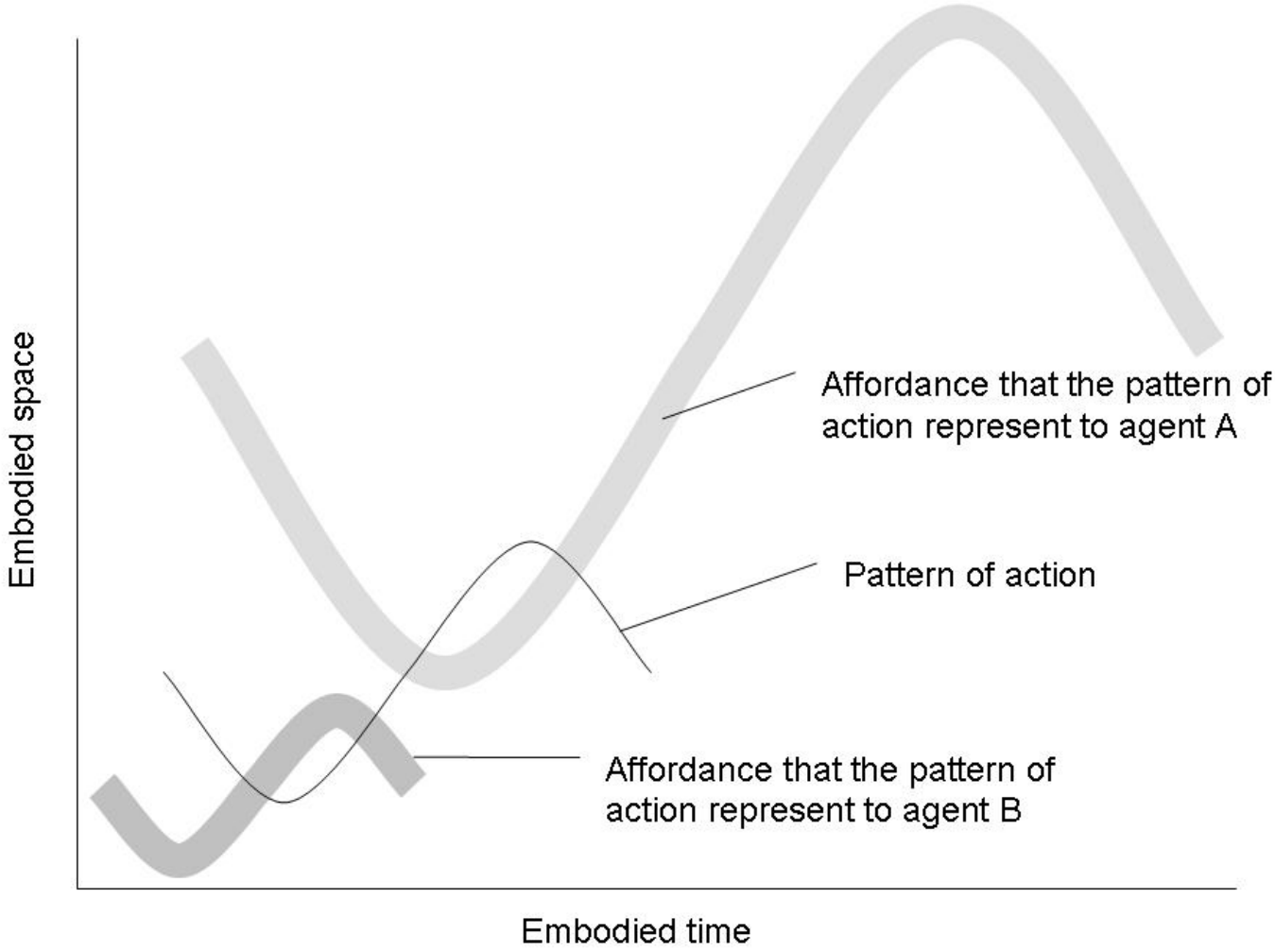

Figure 6.9: Diagrammatic representation of the emergence of various temporal and spatial scales from a single pattern of action as a result of the affordances the patter presents to other agents in the environment. The range of possible scales to emerge from a single pattern of action through the affordances it presents, is as wide as the range of agents in the environment.

In chapters four and five I have shown that the number of homesteads in Nqabara expanded throughout the period covered in the study, but the most rapid expansion occurred during the 1960s. This was also the only period during which the area occupied by homestead gardens as well as the average size of a homestead garden increased. The average field size increased during this period but the overall area under cultivation declined (cf. figure 6.8B). This decade was also the period when the number of people per homestead (*de facto*) declined most rapidly. Per homestead cattle holdings declined significantly during this period but overall densities remained relatively high (cf. figure 6.8C). The period emerges as one in which the patterns of activities of homesteads, despite reduced access to manual and tractable labour, were maintained and extended into the landscape through the establishment of new homestead sites, the expansion of gardens and fields, and the increasing spatial extent of grazing and resource harvesting through an expansion of homestead spatial distribution. The trends of declining homestead size, cattle holdings, expanding homestead cultivation, intersected with an increase in the frequency and duration of labour migration during the 1960s, and consequently increases in access to cash resources, enabling investments in homestead infrastructure and livestock holdings to recover from drought losses. However, in the implementation of Betterment patterns of actions of wider spatial extent intersected locally

to bring about fundamental changes in the affordances available to a homestead in its environment. Betterment and resettlement produced new social institutions overnight whereby the practices of land tenure and small-scale shifts in cultivation was rendered rigid, and the spatial extent of homesteads' patterns of activities in the landscape was severely contracted.

In the space of a number of years the effective cattle density in certain places in the landscape increased significantly despite an overall reduction in cattle numbers. Conversely, in some parts of the landscape cattle densities declined significantly as a result of the relative distance of these areas from homesteads, and their infrequent utilisation by grazing cattle. The same argument goes for the spatial aspect of patterns of forest and grassland resource harvest and use by human agents. Thus, although resettlement may not have changed the type of grazing practices and resource harvesting practices, it changed the spatial frequency of these practices. These changes in the spatial frequency of natural resource use practices, intersected with the changes in cultivation practices in the two decades subsequent to Betterment, when the combined area of homestead gardens and extensive fields declined by more than 68%. Homestead-based practices grew spatially more clustered, as a result of the altered spatial distribution of homesteads and the shift towards homestead gardens away from extensive fields. The sudden absence of many patterns of homestead activities in the wider landscape represented a dramatic increase in the spatial and temporal frequency of the affordances that abandoned homestead sites, abandoned fields and underutilised grazing fields represent to woody plant species such as *Acacia karroo* and other species considered invasive. This of course set in motion the proliferation of patterns of establishment and growth by these woody plant 'agents'. Nevertheless, the effect of these increases in spatial and temporal frequencies of patterns of establishment and growth on the part of woody plant species, only became fully noticeable a decade or two later when the individual plants reached significant sizes.

On their part, the patterns of actions of invasive woody vegetation, represented affordances for human agents in that they constrained and made rigid possible future land use of these areas. The labour costs of clearing patches of encroached vegetation for fields or homestead sites were too high for most homesteads to muster. The patterns of actions of the initial invasive woody species further represented affordances for shade-loving and forest-margin species to establish in favourable micro-climates, and form dense forest-like woodland over time. Furthermore, the increased woody vegetation in grazing lands 'structured' future fire agency in the landscape by fragmenting grassland patches and thereby lowering the probability of fires starting in any patch, and spreading from patch to patch. This resulted in lower frequencies as well as lower intensities of fire.

Intersecting with these altered spatial characteristics of patterns of actions of human agents, woody plants and fire, during the 1970s and early 1980s, homesteads in Nqabara grew increasingly involved in labour migration, and patterns of income earning and investment increasingly unfolded over spatial extents linking the rural economy with regional centres and urban areas. Through an increased dependence on remittances from labour migration and increased expenditure on purchased infrastructure and commodities from regional centres such as Idutywa and Gatyana, the patterns of livelihood activities that were already spatially concentred grew further isolated from patches in the landscape distant from

homesteads. The increased access to wages enabled homesteads to overcome the rigidities that remained after the implementation of Betterment.

However from the mid-1980s another set of patterns of affordances, emerging from the patterns of actions of national and global actors, in the form of national economic downturn and reduced employment opportunities, intersected with the patterns of activities of now extremely vulnerable and wage-dependent homesteads. The spatial distribution of homestead sites and enforced tenurial organisation precluded expansion of homestead gardens as a response to the impoverishment. The invaded abandoned fields and old homestead sites meant that many of them were unsuitable for cultivation. The most dramatic cattle losses of the entire period covered in the study in the drought of 1993/1994 meant that tractable labour was severely limiting. The period since the mid-1980s must have been one of greatest hardship for many homesteads in Nqabara. Co-incidentally (or maybe not) this period was also the one with the most rapid expansion of woody vegetation and contraction of grassland.

Nevertheless, even in this period of extreme impoverishment and vulnerability, homesteads have managed to exercise a degree of agency in making a living. The lifting of formal institutions on local trade, the wider access to government grants and pensions as well as shifting intra-homestead power relations in terms of control over the use of cash resources represent affordances for individuals in many homesteads who have consequently undertaken the starting up of local small businesses or the provision of local services. The Nqabara Development Committee exercised agency and vision in seeing potential for development in the very landscape that has closed-up and become filled with heat and disease, the landscape where the forest is encroaching the homestead. This comes in the shape of plans for ecotourism ventures, based primarily on the attraction that the coast and coastal forests of Nqabara present to tourists.

This short narrative has so far described the intersection among patterns of actions only with respect to material outcomes. But material outcomes are always inherently meaningful to the actor embedded in her or his environment. Consider in this light people's descriptions of the expansion of *umnga* (*Acacia karroo*) and other woody vegetation in abandoned fields (*amafusi,* sing. *ifusi*) (cf. plate 6), abandoned homesteads (*iinxiwa,* sing. *inxiwa*) (cf. plates 8, 14, 16 and 18) and grazing fields (*amadlelo,* sing. *idlelo*).

When the old lady from Nqabarana responded emphatically to my question whether the view from her front door looks the same as when she first married to the homestead, "No! It was beautiful back then: it was ploughed!", it is a signification that emerge directly from her practical involvement over the course of her life with that particular landscape. In the descriptions of the landscape as closing-up, being filled with heat and disease, or being a manifestation of poverty, people draw implicit correlations between the increasing economic poverty of many homesteads since the mid-1980s, the decline in extensive field cultivation as well as the spread of woody vegetation in *amafusi, iinxiwa* and *amadlelo.* These descriptions of the landscape are examples where the affordances of the landscape as experienced in the practical consciousness of people's day-to-day lives, become such all-encompassing features of life, that they enter into discursive consciousness. Fay (2003) argues that the intense changes in experience of

place associated with forced resettlement has resulted in the entrance into discursive consciousness of many places that theretofore had been experienced without entering verbal discourse.

From the perspective of human agents then, the landscape is at once material and meaningful. The meaning incorporated in the experience of landscape, is directly associated with people's practices in the landscape. It is from such a perspective that it is possible to interpret people's statements regarding landscape. When people describe the landscape and its named places, these primarily refer to present and past actions of humans in the landscape. Landscape elements are perceived as *locales* of land use. Furthermore, land use is perceived with the emphasis on the person using the land and the history of social relations the perceiver has with this agent. In this way, places come into being; it is constituted through social action and is conceived primarily in terms of social relationships (Fay 2003a). A homestead (in the sense of the tenurial site, not the people) is never perceived in isolation from the members that inhabit that homestead and from the day-to-day activities that become embodied in the material structures of the homestead. Such a view enables a fuller understanding of the contention that an open grassy landscape with a cool fresh breeze, is a place of health for people and livestock alike, for the view that a landscape filled with cultivated fields is a landscape of wealth and prosperity, the notion that forests that are full of medicine, timber for construction and game for hunting, has a beautiful smell in them, or people's experience as struggling to contain the advancing forest. All these perceptions of the landscape arise directly from people's practical involvement in the production of the landscape. Thus, engaging with a landscape through patterns of cultivation practices, and social occasions of consuming the harvest, the landscape that emerge from all these activities, incorporates within it associations of wealth, health and prosperity.

This meaning of the landscape arises from the active engagement of human agents with their environment in their day-to-day lives. For other agents in the landscape, meaning similarly comes into being through the direct engagement with their environment, and like with human agents, from the affordances that the environment provide them for perception and action. Such meanings are not symbols or signs that are transmitted, received and decoded by agents in their environment. Rather, the meaning is inherent in the action-perception of agents in their movement and dwelling in their environment. Meaning for non-human agents in the environment, as for human agents, exists in the practical consciousness of their embeddedness in the environment. When meaning is conceived of as rooted in the direct relational involvement of the individual with his or her environment, there is no longer a need to distinguish whether changes in ideology precede or follow changes in behaviour (cf. Nyerges 1997).

Resonance

Since the preceding discussion of landscape transformation in Nqabara with its focus on resonance among intersecting patterns of actions has been highly exploratory, some notes of reflection may be required. In the discussion I have aimed to treat processes and interactions as historically contingent intersections among a diverse range of processes. Through the notion of 'mutual affordances' among agents whose patterns of actions intersect, the analysis has purposed to preserve 'a heterogeneity of causes and complexity of interlinkages' (Taylor and Haila 2001:527).

Traditionally this is what social-ecological theory regards as feedback loops between social and ecological systems. The Millennium Ecosystem Assessment (MA 2005) categorises these feedbacks or drivers as direct or indirect referring to each driver's particular chain of causation in influencing ecosystem services, and endogenous (when human management is part of the cause) or exogenous. This categorisation is however often misunderstood to mean drivers which are outside or inside respectively of the 'social' or the 'ecological' domains. What is important in the notion of a complexity of mutual affordances, and is equally emphasised by the MA, is that chains of causation are necessarily complex and occur across a range of temporal and spatial scales, and therefore these chains are not always immediately apparent.

In the preceding discussion I have attempted to overcome the misconception created by the MA's categorisation of drivers. By labelling drivers as direct or indirect, endogenous or exogenous, or arising from one scale and influencing others, such ventures emphasise only the causes of landscape or ecosystem transformation, and not in the interaction among components in the linkage (cf. Taylor and Garcia-Barrios 1995). Although the MA succeeds in revealing how drivers effect change, it fails to account for the emergence of the driver in the first place (MA 2005). I have attempted to show that a search for the specific configurations of resonance among patterns of actions of multiple agents during periods of landscape transformation, may be a more fruitful avenue to open up the 'originating drivers' that catalyse and shape this transformation.

Furthermore, by proceeding from an ontology of the embedded or situated agent, perceiving her or his environment through the affordances it presents, I have attempted to show that the framework of resonance among patterns of action, does not presuppose analytic separation of nature and society, of matter and of meaning, object and subject. Rather, it proceeds from a monist ontology of the organism embedded in its environment.

I have shown, in the case of the landscape of Nqabara, that the configuration of resonance among patterns of actions may result in periods in which affordances for agents capable of transforming land cover patterns, may be amplified disproportionately relative to change in other patterns of action. For this reason the consideration of landscape transformation cannot simply be an aggregation across the multiple patterns of actions of multiple agents in an environment. Affordances play a significant role in increasing or reducing the spatial or temporal frequencies of patterns of actions as well as the spatial and temporal extent of the affordances they represent to other agents in the environment. The configuration of resonance or the 'composite of past [and present] conditions' (Taylor and Haila 2001:526 parenthesis added) may thus be said to create conditions which result in the speeding up, slowing down, exploding or imploding of patterns of actions. The exploration of the transformation of landscape and livelihoods in Nqabara, suggest that not only changes in patterns of action, but importantly also changes in the spatial and temporal frequency and duration of these patterns, as well as the spatial and temporal extent of the affordances they represent to other agents in the environment, may be critical in determining periods of landscape transformation.

The analysis of resonance among intersecting processes that I have presented here, is intrinsically in search of multiple contributory causes and distributed causality and agency (cf. Garcia-Barrios and

Garcia-Barrios 1990, Taylor 2000). However, in search for causality, I have placed the emphasis on historically contingent configurations of resonance, emerging from intersecting rhythms of multiple patterns of action of diverse actors, and thereby opened up the analysis to a fundamental criticism. Put candidly, the notions of intersecting rhythms, or resonance, among patterns of actions and the unpredictable outcomes to which they lead, although providing interesting descriptions of what otherwise could simply be termed events, may not be providing any conceptual tools to unpack the complexities of these evenemental black boxes. Since an event arises from a unique combination of retentions from the past, it may be inherently unpredictable, with degrees of similarity with previous configurations of resonance being the only guide to prediction.

The question is thus whether a progressively more detailed description of the configuration of resonance among patterns of actions at any instant in time, together with the possible affordances it presents to all other actors in the environment, will lead to more accurate prediction or anticipation of the outcome. The framework as developed and applied in the current study is of necessity exploratory and cannot hope to provide a complete answer to this question. Nevertheless I have used the word 'anticipation' in the phrasing of the question, deliberately since I perceive part of the pathway towards an answer, or towards better questions, therein.

Situated agents actively perceiving their environment, do so actively engaging with the affordances of their environment. Each agent becomes perceptually enskilled by learning to be attentive to not only single affordances presented it by its environment, but multiple and intersecting patterns of affordances. In quality, the perception of her or his environment by the situated agent, is no different from the perceptual engagement of the researcher that is embedded in her or his topic of study. One can thus argue that the situated researcher ought to be able to become progressively more skilled in the perception of her or his topical environment, becoming more attuned to the manifold affordances the environment presents to the researcher, as well as to the other agents in that environment.

However, one elemental obstacle threatens to entrap the researcher in the process of perceptual attunement, and that is to disregard her or his own embeddedness. As long as the researcher remains unaware of her or his own historically contingent perceptual pathway through and active and positioned engagement with the subject matter, enskillment in and understanding of the configurations of resonance remains stunted. The researcher is required to follow what Latour (1999) calls the circulation of reference - the manifold mediations and transformations of phenomena and their meanings through the process of research.

Latour (1993) has shown that the phenomena treated by scientists follow networks that cross the boundaries between subject and object and between facts, power and discourse, numerous times in the process of science. He terms such phenomena quasi-objects or quasi-subjects, since they exist not as objects, processes, nor concepts, but as confusing entanglements, imbroglios, of a network of hybrids. In the present study, although alluding to the epistemological concerns of combining sources from diverse discursive contexts, I have not yet rendered explicit my own situated encounter, or pathway of

engagement with them, and specifically of the transformations undergone by phenomena at various stages in their treatment in this study.

It is in this self-reflexive ethnography of the scientific process where Latour (1999) find's the common origin of, and a common way to bypass the ontological (questions about the reality of the world) and epistemological (questions about how the world is known) concerns which this study has treated separately thus far. Similar to Gibson, Ingold, Bourdieu and Merleau-Ponty, Latour argues that the world cannot be anything else than a lived, self-evident and un-reflexive extension of the agent embedded in its environment. For this reason an explication of the embeddedness of the agent, including the path-dependent historical unfolding of its engagement with its world, amounts to a simultaneous addressing of the reality of the world and how it is known. For the embedded scientist, the constructions, inventions, discoveries, conventions and all the other scientific artefacts produced in the course of doing research, cannot be severed from the networks of transformations they have undergone without losing their meaning.

In the next short section I will pay attention to examples of three salient phenomena that have circulated through several data sources, data manipulation and representation during the course of this study. I will attempt to explicate the serial transformations they have undergone from matter to meaning, from fact to discursive signifier and contestation of power. I will necessarily borrow some terminology from Latour (1993, 1999) but with explanations as they are introduced.

I want to make explicit the chain of transformations that these phenomena have undergone in the course of this study, from the point of the identification of their components, through to where they start to be constitutive of knowledge. In this chain of circulating reference, the phenomenon passes through serial transformations involving on the one hand seamless merging of substance into form, and on the other small gaps as form or meaning is mediated into a successive stage of substance, usually with the aid of some methodological instruments. Figure 6.10 depicts Latour's (1999) representation of this chain of mediation which, if specified meticulously, can be followed in both directions, the one representing a reduction in complexity and the other amplification. The accuracy of any generalising statement emerging from the course of the study is related to the traceability of the series of transformations.

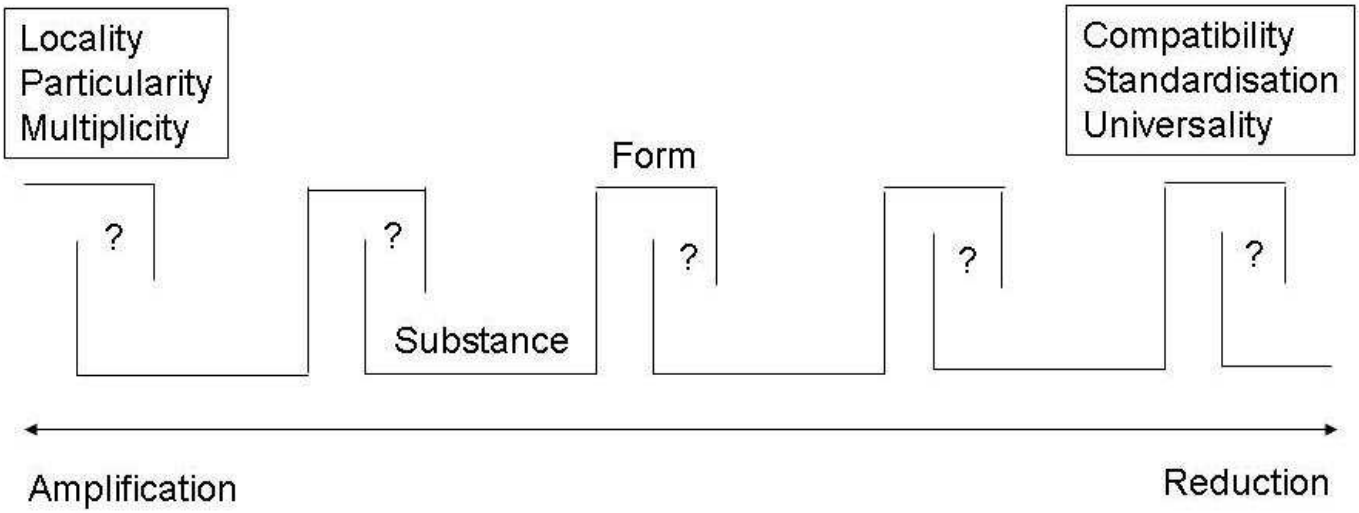

Figure 6.10: Latour's (1999) depiction of the circulation of reference in which phenomena pass through successive transformations of matter and meaning in the course of the scientific process. The accuracy of any scientific statement represents on the traceability of the transformations undergone by the phenomena that constitute the statement. Any such a phenomenon should be seen as a hybrid network in which social, natural and discursive aspects of objects, or rather quasi-objects, cannot be separated. The process of circulating reference can be followed in both directions.

The phenomena and their pathways of reference I want to consider here is firstly, the cessation of the cultivation of extensive ploughing fields, secondly the changing nature and importance of homestead garden cultivation and lastly the spread of *Acacia karroo* in the landscape. In the path-specific course of this study I first encountered the concepts of *intsimi* (pl. *amasimi* - extensive ploughing field) and *igadi* (pl. *iigadi* – homestead garden) in the regional academic literature of mostly anthropological and geographic content. The treatment of *amasimi* and *iigadi* in the literature renders it easily identifiable as a quasi-object (cf. Latour 1993), neither natural nor social, since they are at once material productive entities, forms of tenurial organisation and symbols of cultural identity.

The first transformation which both myself as researcher and *amasimi* underwent (Latour argues that both inquirer and the object of inquiry become anew through each successive transformation) occurred during my first view visits to Nqabara and my encounters with *amasimi* in people's active engagement (verbal and non-verbal) with *amasimi*. In this transformation, *amasimi* was translated into something new, a place of action, a social place from which social relations come into being, while retaining some of the characteristics it had had prior to the transformation, its material-productive aspects. Similarly, *iigadi* were transformed into social arenas where members of a homestead enter mutual patterns of activity and rest. Both *amasimi* and *iigadi* gained in dimension as I came to see the various considerations such as the sometimes fierce and rapid desiccation brought about by wind and sun, destruction caused by trespassing livestock and the cruciality of proper fencing, zealous weed growth, all of which influence and inform what is planted, when, where in the garden and what is required to secure a successful harvest.

However, through progressive attunement to the ways in which *amasimi* is referred to in everyday conversation, it was already in the process of undergoing a further transformation. I increasingly came to see *amasimi* as a mnemonic entity, infused with sometimes deeply emotional and spiritual memories of people with whom intimate relations had been fused in and around *amasimi.* I also increasingly became

aware of a particular version of *amasimi,* namely *amafusi* (abandoned ploughing fields). These were pointed out often by fellow travellers as we moved through the landscape, the people who used to plough there were identified, their relationship with the observer described and sometimes also the reason for their absence. *Amasimi* thus underwent a transformation in which I started to see it fundamentally as an absence rather than a presence. I was what ought to be but, as a result of circumstances, could not be. By undergoing a transformation from a presence into an absence, I first started to pay attention at the vegetation visible in *amafusi.* They had been there all along, I had seen them but not paid specific attention to them. Now *iminga* (*Acacia karroo*) emerged as a phenomenon to me. I saw it everyday in old cultivated patches, in abandoned homesteads, on the margins of forest and scattered in grazing fields. I became attentive to people's active involvement with *iminga*: its importance as a source of fuelwood, its relative uselessness in construction, the perceived fight against its steady march upon residential areas and grazing lands, its influence on the cool, breezy and favoured resting spots of livestock and the perception of it as a harbinger of heat and disease.

Throughout the period of participant observation, I remained involved with the regional literature and in it encountered several slightly diverging conceptualisations of *amasimi, iigadi and iminga* especially with regard to the causality which different scholars inferred to account for the processes of abandonment of *amasimi*, increasing importance of *iigadi* and expansion of *iminga*. *Iigadi* was now not only a place of higher diversity of crops and more regular labour investment than *amasimi*, through the lens of other observers, it became to me a risk minimising and labour spreading strategy. *Iminga* gained ambiguous qualities in the literature. Its spread was associated with too much grazing, too much trampling, too little browsing, too cold and too infrequent fires, yet diverging environmental conditions in different localities caused the trajectories of its expansion to vary widely.

A week spent in Cape Town's archival repository and being drawn into official policies affecting and day-to-day correspondences with the inhabitants of Nqabara in the early twentieth century, and I became aware of the radical alteration of agriculture through the adoption of the plough and the early, almost golden era of cultivation in the Transkei. I then came to see *amasimi* and the actions associated with them as dynamic entities, continuously changing as people adjusted to and capitalised upon changing contextual conditions. I started to regard the absences of *amasimi* and abundances of *amafusi* as manifestations of people's engagement with multiple concurrent contexts extending divergently into space and time. The distribution of *amasimi* and *amafusi* could not be understood without regard for labour migration, for land tenure organisation, for within-homestead decision-making processes.

At this time I attempted the most disjunct transformation yet, translating and pruning the manifold dimensions of *amasimi* and *iigadi* presented thus far, into a combination of colour, texture, shape and size and identifying them upon aerial photographs produced up to four and a half decades ago. This stage in the circulation of reference represented a significant reduction and was aimed at producing standardised measures that could be compared with similar ventures by other researchers. *Amasimi* and their abandonment now became expressible as surface areas, percentages and rates of change. The actors and social relations, day-to-day material-productive dependence and cultural identity shifted out of focus as polygons and shapefiles came to dominate the constitution of *amasimi.* During this transformation, the

pathway of reference travelled by *iigadi* and *amasimi* in the research process became more and more intimately linked with that of *iminga*. Their articulation centred around specific places and actions of people. I came to regard all three phenomena as varying manifestations of the same processes. The transformation of three phenomena with the aid of remotely sensed images and geographic information software, resulted in a perspective viewing them as emerging from the same situated social practices, changes in patterns of practices, and articulations with contextual conditions.

The final transformation that all three phenomena were subjected to, was transformation into text, figures and tables. The current thesis represents an attempt to outline a coherent and structured oversight and sterilisation of the complex, chaotic and hybrid network of the quasi-objects of *amasimi, iigadi* and *iminga* that it had had to follow in the process of research. And here Latour's (1999) remarks on the choice of the word oversight is of relevance, since by summarising the confused mess of trails followed by *amasimi* in the course of the study into a structured and coherent body of text, the complexity is indeed overlooked or ignored. These phenomena are hybrid networks since they are simultaneously real, narrated and social, they simultaneously naturalise, socialise and deconstruct. Science aims to purify these hybrid networks so that they can be treated separately by the positivists, the constructionists and the hermeneuticians. The practice of science therefore purposes to remain ignorant of the fact that the bulk of what happens in and to *amasimi*, *amagadi* and *iminga,* occurs in that unthinkable, non-existing space between the things themselves on the one hand, and the speaking, thinking subjects, values and signs on the other.

In each transformation undergone by *amasimi*, *amagadi* and *iminga,* new configurations of the ways in which fact, power and discourse articulate have been brought into being. Latour (1993) draws attention to the importance of considering the importance of mediators in this chain of transformation. In the case of the above three phenomena, their differential conceptualisation in each successive transformation constitute the mediators. In every transformation, some elements of the mediator are retained in order for it to keep in continuity with previous transformations, while most of its aspects (including its substance and form, its matter and meaning) undergo significant change. The mediators and their position in networks of transformation of knowledge, makes it possible to study the world of being and the world of meaning in the same venture (Latour 1993).

My engagement with *amasimi, iigadi* and *iminga* have been relatively distant, less intimate and less sustained than that of the actors who make their living in the landscape of Nqabara. I have taken these phenomena through networks of transformations through the aid of scientific literature, archival resources and spatial analysis which actors in their day-to-day actions do not do. Their engagement with the phenomena is far more direct and intimate. And yet I have represented these phenomena in the present study from a perspective which aims to imitate the engagement of the situated actor actively perceiving and appropriating its world. For the actor living in the landscape, each repeated pattern of action becomes as much part of her or his body, as it does of the landscape. I have however moved and acted less extensively in the landscape than the people of Nqabara, and I have extended my pathways more dispersedly through the landscape of academic literature, electronic resources, statistical and spatial software, historical sources and remotely sensed data. My engagement with these elements of the academic landscape has as much resulted in the emergence of this thesis and the re-emergence of

myself, as the engagement of people of Nqabara with their landscape, have produced and reproduced themselves and their landscape.

This leads me to a reconsideration of figure 3.1, depicting the relationship between epistemology and ontology in the course of doing research. The preceding discussion has prepared the soil for a dissolution of the separation between triangulation and representation. In the practice of engagement with data sources, but not only the data themselves, also the technical and electronic resources required to manipulate them, as well as the social situations in which this engagement takes place, inherently produces representation. Rather than two separate stages of triangulation and representation, there is a continuous and serial chain of reference, whereby the transformations undergone by phenomena could be followed ad infinitum in both the direction of reduction and amplification (cf. figure 6.10). Furthermore, the phase of reading, or interpretation, by the reader of the text emerging from a chain of reference I have followed, enters a chain of reference in which the reader has already been involved. Ontology and epistemology becomes subsumed into the embedded actor's path-dependent history of engagement with and embodiment of the world. The history of experiences of moving through, making a living in, and dwelling in the landscape, becomes embodied in the habitus of the actor, while simultaneously becoming embodied in the habitus of the landscape. The world is known through (epistemology) and comes into being through (ontology) an embedded and path-dependent history of engagement with the world.

Having now neared the completion of the circle which started in chapter one with a consideration of an alternative ontology to study human-environment relations, progressed in chapters two and three respectively with a contextualisation of the study area and an appropriate methodology to respond to the epistemological dilemmas involved in such an inquiry, sketched the unfolding of historically contingent events in the human-environment relations in Nqabara in chapters three and four, and having brought this history under the scope of the alternative ontology in the present chapter, it is necessary to return briefly to the policy and management context which was mentioned in the introduction to chapter one.

Practical implications of the embodiment perspective applied to the landscape and livelihoods of people inhabiting Nqabara

The present inquiry's ontological focus and concern with developing a research approach for and explanation of landscape and livelihood change, have up to now prevented it from attending to the many applied questions of landscape and natural resource management, policy and implementation issues of rural development and alleviating livelihood vulnerability and increasing people's future livelihood options. The emphasis has been on historical description of landscape and livelihood change, and value judgements on the desirability of landscape states and livelihood practices have been deliberately avoided. In this emphasis, the study has traced the patterns of restructuring of rural agriculture and rural livelihoods, as well as the expansion of woody vegetation including forests in the landscape. This study adds to a growing number of case studies of detailed environmental histories (most notably Fairhead and Leach 1996 and the collection by Nyerges 1997) which, if overlooked have lead in the past and could lead in the future to widely inappropriate government policies of development and natural resource management.

The implications of an understanding of 'trans-ecological systems' from an embodiment perspective, in terms of intervention in landscape management and the improvement of livelihood security, have not been central to this study, but it is of too great importance to discount it entirely. Considering that the approach presented in this study is greatly dependent on historical and contextual data of patterns of day-to-day activities from a diverse range of organisms and processes, what possibility is there to move management and intervention beyond fatalistic description of change. Is there any scope to influence landscape and livelihood change in a pro-active manner? Maybe more importantly, if there is scope for intervention, where should management intervene if the distinction between social and ecological subsystems is dissolved?

In the current case study, it is relatively clear that the transformation of the landscape has resulted in many structures that constrain livelihood strategies in the environment. Many potential cultivated field sites and residential sites have been more or less permanently taken out of use and occupation, since the labour and investment costs of clearing encroached woody vegetation presents too much of a barrier for people to apply for these sites. Furthermore, and of especial importance, the continuing reduction in the extent of grassland areas is making the potential contributions of livestock husbandry to livelihoods progressively more marginal. As livestock health and reproduction decline due to the reduction in valuable grazing area, the disincentives to invest in livestock rise. The manifold attempts at livelihood diversification should be seen as direct responses of some homesteads to the disincentives provided which a transforming landscape provides them with.

The transforming landscape has provided many enabling affordances to people in Nqabara. The spread of *Acacia karroo* provides an abundance of fuelwood which had not existed forty years ago. Over the longer term, the abundance of leguminous plants and previously cultivated lands or grasslands may improve soil fertility by increasing soil-nitrate concentrations through the activities of rhizo-bacteria. Furthermore, the increased woody cover is likely to lead to higher levels of carbon sequestration, since many of the plants that are establishing, are long-lived species. Nevertheless, the costs of landscape transformation to livelihoods is immediate and local, whereas potential benefits through tourism, increased access to forest products, long-term increases in soil fertility and increased levels of carbon sequestration through woody vegetation expansion are removed in space and time from residents of Nqabara.

Also apparent from the current case study, is that the changes in patterns of actions that resulted in the emergence of a transforming landscape, had not been catalysed only by a single agent. Instead, all agents (local people, agents of the state, ecological processes, institutional processes) have played some role in the unfolding of the process as agents of change. Of central importance to policy and management interventions, should be the addressing of power inequalities between local and state actors, so as to improve the capability and knowledgeability of local actors to be able to be pro-active and reduce their risks to political, economic and environmental shocks.

Nevertheless, the reorganisation of political and social structures in Nqabara in the era of democracy, specifically with regard to development projects regarding natural resource management, natural-resource based development and eco-tourism, does point out that the transformation in landscape may not have

caused a loss of access to all valued resources. Apart from the abundance of fuelwood and construction wood, people from Nqabara have started to realise that the transforming landscape may be a future valuable asset to them. They are not unaware that the changing patterns of actions of national and international tourists may intersect with patterns of actions of dispersing forest plant and animal species, to be embodied in new structures of affordances for livelihood activities. The legal preparations and capacity building practices currently being undertaken in Nqabara, represents an anticipatory restructuring of community structures for potential livelihood opportunities.

What are the implications of the case of Nqabara for pressing debates regarding legislation on communal land rights and land titling, for rural agricultural policies, for policies on social welfare and entrepreneurship? These questions are relevant, but too complex for one-paragraph conclusionary remarks. The history of Nqabara shows that people have been resilient and inventive throughout periods of impoverishment and hardship. It also shows that periods of reduced livelihood options, reduced flexibility in land management, and reduced access to off-farm incomes, have been the periods of greatest struggle and the most significant transformations in landscape and in livelihood. Furthermore, government policies and the actions of government agents rarely have the outcomes which they intended. If anything, the current inquiry shows that the complexities of historically contingent processes as they emerge from the intersection of the actions of multiple actors, requires the constant monitoring and reflexive reorganising of practices, which people who are thoroughly embedded in their landscape, have been so good at. Intervention should as a first principle avoid any erosion of people's range of options and the knowledgeability and capability necessary to sustain such options.

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