

SECOND CARNEGIE INQUIRY INTO POVERTY
AND DEVELOPMENT IN SOUTHERN AFRICA

Historical, Political and Socio-
logical factors affecting land use
in the Transkei today: An ecological
interpretation

by

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HISTORICAL, POLITICAL AND SOCIOLOGICAL FACTORS

AFFECTING LAND USE IN THE TRANSKEI TODAY:

AN ECOLOGICAL INTERPRETATION

Many of the ecological problems such as overgrazing and erosion experienced in Transkei today are the result of a complex of pre-historical, historical, political and sociological factors. It is suggested that the present distribution of grassland and woody vegetation is indicative of the vegetation pattern during the Iron Age. Furthermore, it is proposed that it is only very recently that stock numbers have increased to the extent that they are causing overgrazing and acceleration of erosion.

INTRODUCTION

Livestock, especially cattle, are an integral part of Nguni lifestyle. Their importance for bridewealth, draft, food, trade and ceremony cannot be underestimated (Wilson, 1969a). Numerous reports suggest that Transkei has twice as many large stock units (LSU) than would be accepted in a well managed western system (Wood and van Schoor, 1976; McKenzie, 1982). Livestock are generally of poor quality and various sources attribute this to the stockowners' primary desire for quantity (Van Wyk, 1967; Wood and van Schoor, 1976).

Transkei today supports some two million LSU (Anonymous, 1980), a stocking rate which has varied little over the past fifty years. Despite this high stocking rate, much of the Transkeian grassland still has surprisingly high basal cover and contains an abundance of the grazing/fire climax grass species (Acocks, 1953; McKenzie, 1982). Grassland is dominant on the interfluves and shallow river basins of the interior above 500m. Woody vegetation (tall forest, scrub forest, bushveld and thornveld) is mainly restricted to the coastal zone below 500m and to river valleys, areas of scarp retreat and dongas. The majority of dongas are found in the interior and are probably of recent origin, the nickpoints having been initiated as a result of increased utilisation of the grasslands in recent times.

HISTORICAL FACTORS

The earliest date for Iron Age settlement in the geographical area now known as Transkei is about AD 700 (Cronin, 1982). It has been suggested by Derricourt (1974) that tribes of Iron Age farmers were concentrated mainly in the coastal zone between the Umzimvubu and Kei Rivers. The inland areas and interior basins were the domain of the nomadic hunter-gatherer San. The Nguni people who inhabit Transkei today may be the descendants of these Iron Age farmers, although it is possible that their ancestors moved south into Transkei from Natal (Wilson, 1969a). They were concentrated in the coastal zone at least until the end of the 18th century (Derricourt, 1974).

Early Iron Age Ecology (before AD 1000)

Acocks' (1953) monumental work on southern African vegetation and his projections of climax vegetation in AD 1000 have, until fairly recently been accepted without much criticism. He regarded Transkei as having been dominated by either forest or scrub forest a mere 600 years ago. However, Mentis and Huntley (1982) consider the grasslands to have been fairly extensive even before this time. Their conclusion is based on fire activity, soil development,

remains of typical grassland animals that have been dated as far back as 8000 years B.C., and the fact that today some typical grassland animals have their distribution centred in what Acocks regarded as some kind of forest only 600 years ago. King (1978, 1982) discusses the geomorphology of southern Africa and refers to the worldwide phenomenon that grassland is dominant on older geomorphological surfaces where the soils are very old. Tinley (1982) also refers to this phenomenon and states further that woody vegetation only invades when the soil is disturbed, for example by erosion. Tinley (1982) also suggests that under climatic conditions similar to those of today, tall forest was probably not much more extensive than at present, ie. mainly restricted to scarp zones and surfaces of young geological age.

Hall (1981), on the basis of his archaeological work in the uplands of Natal, suggests that the landscape was either open grassland or wooded grassland well before AD 1400. He states that the early part of the Late Iron Age occupation was hardly long enough to substantiate removal of extensive forest, especially as he found no Early Iron Age sites in the uplands of his study area. Archaeological work in Transkei by Derricourt (1974, 1977) implies a similar pattern for the uplands. Derricourt's work (1977) indicates that Early Iron Age farmers were absent from the interior, the area being the domain of the San. Although the San probably used fire for game drives (Derricourt, 1977), it is difficult to believe that these fires could have been responsible for the destruction of woodland. Firstly, fire alone is not an efficient or successful method for control of woody invasion today (Story, 1952; Pienaar, 1959; Trollope, 1982) and secondly, the most common tree of the bushveld and thornveld areas is Acacia karroo, a species which coppices readily after fire.

If the above ideas are accepted then the interior regions of Transkei, above the 500m contour line, would have been dominated by grassland; with bushveld and thornveld restricted to the deeper river valleys, and tall forest to the scarp zones and mountainous areas of high relief. The San used the interior plateaux for

hunting in the spring and summer months, and the coastal forelands in the winter (Derricourt, 1977). Cronin (1982) had indicated that Iron Age economies were present on the coast by circa AD 700, but the extent of their distribution is unknown. The work of Maggs (1980) suggests that in the Early Iron Age smaller villages were situated on the coast, while larger settlements were found further inland, mainly near the valley floors a few kilometres upstream from the coast itself. Maggs (1980) has indicated that cattle were present in the Early Iron Age period in Natal, but Cronin (1982) found no evidence of cattle in his excavation on the Transkeian coast. Stock may not have been important in the economy, but only future excavations can confirm this. Woody vegetation would have been cleared for fields by the Iron Age inhabitants and used for grazing when left fallow. The major clearance of woody vegetation would have been bushveld, thornveld and scrub forest, rather than tall evergreen forest.

Late Iron Age Ecology (AD 1000 - AD 1800)

During this period the San exploited the interior districts of Transkei (Derricourt, 1977) and the Iron Age settlers moved further up the river valleys perhaps as far as the hills (Derricourt, 1977; Maggs, 1980). Livestock were definitely an important component of lifestyle during this period (Derricourt, 1977), although agricultural activities were probably more important in the economy. Bushveld and scrub forest were opened up for cultivation and on abandonment, used for grazing.

Reports by survivors of shipwrecks (Theal, 1902; Boxer, 1959) during this period, indicate that the livestock were fine animals and the communities well supplied with milk. Peires (1981) reports that the Nguni southwest of the Transkei burnt the grass to keep it short and sweet and it is highly likely that the same pattern of management operated in Transkei. Derricourt (1977) reports that the Nguni were seasonally mobile, although apparently within a permanently fixed territory, no doubt in search of fresh pastures. Wilson (1969a, b) also describes the Nguni as skillful cattlemen, shifting their stock from one pasture to another, while the Mpondo oxen were regarded amongst the best draft animals, even in the mid-19th century (Beinart, 1982).

There was still plenty of land available for cultivation and grazing during this period. Livestock were well cared for, and even in times of drought grazing and water were sufficient to maintain the herds in good condition (Peires, 1981). Survivors of shipwrecks provide further evidence that large areas of the interior were open grass-land during this period, describing large areas of the interior as 'deserts', obviously referring to the lack of woody vegetation, or people, or both (Theal, 1902).

In the second half of the 18th century, there was pressure to the west of Transkei in the form of Cape Colonial farmers looking for grazing land. In 1778 the Cape Governor declared the Fish River to be the eastern frontier of the Colony. This boundary gradually shifted eastwards, reaching the Kei in 1847. Nguni resistance to dispossession of their land on the eastern frontier led to a series of wars with Colonial troops between 1779 and 1879.

The Period up to annexation (AD 1800 - AD 1900)

The first clash between the eastward expanding colonists and the Nguni people was reported in 1775 (Saunders, 1974). According to Peires (1981), the Nguni were reasonably content at the time as: "everyman had a ridge for his homestead and did not fear that his sons would not find land". The colonists and the Nguni both claimed the Zuurveldt, the important grazing land between the Fish and the Bushmans Rivers. The series of wars which followed gradually reduced the land of the Nguni people. They were driven across the Fish River in 1812, out of the Kat River in 1829 and past the Keiskamma River in 1847. By this time none of the land west of the Kei was secure (Saunders, 1974). The effect of Shaka's raids from Zululand and later the expansionism of colonists to the south from present-day Natal (Le Cordeur, 1974), as well as the influx of people into Transkei during the Mfecane, changed the whole scenario of Nguni life in the region.

In the 1820's, groups of Natal Nguni fleeing southwards from Shaka's Zulu impis provided pressure from the east. These refugees, some of whom formed the Mfengu tribe, disturbed settlement patterns in Transkei, for example, their pressure caused the split of the Thembu tribe and the migration of Thembu northwards and westwards (Derricourt, 1977). After the Frontier War of 1835-6 the Mfengu moved south of the Kei at the instance of the Cape Governor, and settled on land which had formerly been occupied by Xhosa (Wilson, 1969 b). In 1865 they were moved back into southern Transkei and settled as 'buffers' between warring tribes (Hammond-Tooke, 1975).

By this stage summer pastures were no longer adequate to guarantee the well-being of cattle as some chiefs had settled permanently in summer grazing areas, homesteads came close together, everyone could no longer establish a homestead near a river, and droughts became major calamities. Before this pressure whole communities in times of drought could pack up and move to areas less affected, and herdsmen could drive livestock to areas where water was available even if this meant confrontation (Peires, 1981).

Frontier farmers in the early 19th century themselves owned many cattle (ironically many had been acquired from the Nguni) and would take possession of Nguni pastures in times of need (Anonymous, 1837; Beinart, 1982). For example many frontier families crossed the Kei in 1834 in search of pastures (Anonymous, 1837).

In 1854 Sir George Grey, the Cape Governor, urged that the whole area across the Kei River right through to Natal should be brought under white rule (Saunders, 1974). Extension of control across the Kei began in the early 1870's, although the first territory was only annexed in 1879. A series of annexations followed, that of Pondoland being the last in 1894. By this date all present day Transkei had thus been annexed as a consolidated region administered by the Cape, and the pressure on land and social organisation became even more acute among the Nguni.

At the beginning of the 20th century, the type of village council established in 1894 in the Glen Grey District was gradually extended throughout Transkei, and a General Council (Bunga) was established. In 1956 the Bunga was replaced with the Transkei Territorial Authority, and a Legislative Assembly and Executive were established in 1963 (Wilson, 1975). In 1976, Transkei became an "independent republic".

Estimates of livestock numbers and human population figures for the late 19th century are not readily available. Colonel Collins in 1809 put Hints'a's herds at twice the number of his followers. While Bannister in 1829 estimated that the Xhosa, west of the Mbashe who numbered about 100 000, kept 360 000 cattle (Peires, 1981). According to Brownlee (1923), 16 000 Mfengu settled in Peddie in 1835 and brought with them 30 000 head of cattle. In 1848 the average homestead among the Xhosa consisted of between eight and 15 beehive dwellings, with an average of 10 cattle per homestead, although some had more than 100 (Peires, 1981). The population of Transkei was probably in the region of 100 000 in the mid-19th century and had reached 600 000 towards the end of the century (Beinart, 1982). Assuming an average of two LSU per person, the number of LSU would have been in the region of one million towards the end of the nineteenth century. This is roughly the figure quoted as being the carrying capacity for Transkei if livestock were managed to western standards (Wood and van Schoor, 1976).

Even if it were assumed that stock numbers were higher at times during this period, setbacks occurred from time to time that drastically reduced stock numbers. Epidemics such as the lungsickness of the late 1850's, redwater of the 1880's, and the rinderpest of the 1890's decimated the herds (Beinart, 1982). Besides epidemics thefts of cattle between tribes, clans and even homesteads were frequent (Wilson, 1969 a). This was an indirect method of affording the grass time to recover and maintain vigour. Major wars were also responsible for the removal of livestock from the grasslands. Shaka's army of 1828 swept through the eastern districts of Transkei as far as the Umngazi valley, carrying off virtually all the livestock (Wilson, 1969 a). Even incidences such as the great cattle killing of 1857 afforded the grasslands a rest (Wilson, 1969 b). Undoubtedly there were more diseases, large-scale thefts and other factors not docu-

mented which would have periodically caused a reduction in stock numbers and thus an indirect method of veld resting.

A system of loans worked well at the beginning of the 19th century. Livestock were frequently loaned out to people who needed animals, eg. as draft animals or lobola. This ensured that a large number of livestock owned by an individual were widely distributed. This was not only a safeguard against local overgrazing, but also limited the spread of disease among the individual's herd (Wilson, 1969 a; Beinart, 1982).

Ecological reasons were not the only ones for the wide distribution of livestock. It was essential for the chiefs to distribute stock to the homesteads if they were to maintain their following and services of their subjects (Beinart, 1982). Cattle were also traded with the colonists of Natal in the second half of the 19th century, thousands having been traded from Pondoland (Beinart, 1982). It is unlikely that such large numbers would have been traded if the quantity of cattle was the major yardstick of the Nguni.

Thus at the end of the 1800's the land was well populated. However, large areas of the interior were still not settled as Steedman (1835) describes the landscape between the Mbashe and Mtata Rivers as being uninhabited, and also states that trees were found only along the river banks. Even as late as 1865 large areas are described as void of people and trees (Callaway, 1912).

The coastal belt at the end of the 1800's was similar to what it is today (Sim, 1907). The major destruction of forests during the 19th century was the work of woodcutters, either Khoi or European, while the indigenous Nguni were mainly responsible for removing poles for hut construction, leaving the forest physiognomically intact (Sim, 1907). There is no direct evidence that soil erosion was a major problem at this stage, although fears were expressed of certain areas being overgrazed (Beinart, 1982). The system as a whole was ecologically stable at this time, with the grasslands able to maintain vigour when livestock numbers were reduced.

POLITICAL FACTORS

Until the 1870's the people of Transkei still lived in independent chiefdoms. These chiefdoms were territorially organised and decisions were binding on all the people within the chiefdom. Authority was not solely in the hands of the chief, as a group of councillors assisted him and actual decision making was based on consensus (Hammond-Tooke, 1975). Tribesmen could withdraw their support for an unpopular chief and proclaim loyalty to another. It was not unusual for a chiefdom to split, and to prevent a severe loss of subjects the chiefs had to be sensitive to popular feeling (Lawrence, 1976).

After annexation administrative areas were set up by the Cape Colonial authorities and a white magistrate appointed in each district (Lawrence 1976). Direct rule through the magistrates, as opposed to indirect rule through the chiefs, became a major objective. The policy was to use commoner headmen as paid officials of the Cape and later the South African Government, in place of chiefs of royal lineages (Wilson, 1975). The power of the chiefs was radically reduced because administrative areas cut across the boundaries of traditional chiefdoms, and the headmen, being civil servants, had to obey the orders of magistrates in the business of administering his allocated area (Hammond-Tooke, 1975). Decision making thus lay in the hands of the government officials and although they sought the advice of traditional leaders, they were not obliged to follow it (Hammond-Tooke, 1975). The task of the traditional leaders became difficult, as they had to meet the demands of their people and yet follow the orders of the magistrates.

The exclusion of the traditional chiefs from the administrative system failed to eliminate the institution of chieftainship, and the people still respected their traditional leaders (Lawrence, 1976). The appointed headmen never achieved the prestige of the hereditary chiefs and became more and more dependant on the support of the white administration (Wilson, 1975). The fact that the chiefdoms survived direct rule has been attributed to the democratic process

which allowed interaction between the chief and his subjects (Hammond-Tooke, 1975). In the case of direct rule from Cape Town or Pretoria, the power flowed from the top downwards with the magistrates and headmen enforcing the will of the white government (Lawrence, 1976). This distinction of rule and its consequent difficulties had a marked effect on development, especially with the introduction of 'betterment schemes'.

One other problem with regard to the annexation of Transkei was that the territory was not fully incorporated into the legal and administrative system of the Cape (Saunders, 1974). The main reason for this was that the great bulk of the Transkeian population was black and living on their own land. Remarkably little land was set aside for whites after annexation (Saunders, 1974). According to Saunders (1974) the reason for this was that land for whites was allocated in the Ciskei, Transkei being used as a place to send unwanted Africans, many having been sent across the Kei in the 1870's and 1880's. The different treatment of Transkei was in the interests of the whites for a number of reasons. Firstly, it meant that the proportion of whites to blacks was less in the Cape Colony and secondly, it was easier to turn Transkei into a labour pool if it had separate status (Saunders, 1974).

The institution of the Bunga was a further step in the direction of a separate administration. It provided a sounding box for local opinion, but its composition ensured National Government control. The Bunga consisted of delegates from each magisterial district (some elected and some nominated), certain hereditary chiefs and all the magistrates. The chief magistrate was 'ex officio' chairman. Although important decisions were taken, the Bunga lacked the power to implement them (Wilson, 1975).

With the institution of the Territorial Authority the magistrates lost their seats in the local government, but the hereditary chiefs gained far greater power. In the Bunga the ratio of 'ex officio' members (chiefs and magistrates) to elected members had been 30:78. In the Transkei Legislature of 1963 the ratio was 64:45, all the 64 'ex officio' members being Government-paid chiefs (Wilson, 1975). It was this government body which negotiated

'independence' with the South African Government.

SOCIOLOGICAL FACTORS

The settlement pattern prior to annexation and developments thereafter have important ecological consequences. Derricourt (1974) has attempted to reconstruct the settlement pattern prior to the contact and conflict period of the 19th century. He used earlier historical sources and archaeological information to prepare a model of settlement.

This model proposes that there was a territorial distribution of villages into political and environmental units which were equivalent to clans of more recent times. Large tribal units were separated from others by a large area which was used for hunting expeditions. According to historical records distances between the centres of these tribal units were 14 days journey or less (Derricourt, 1974). Village location appears to have been related to major rivers and their tributaries, with homesteads a couple of hundred metres away from the water (Derricourt, 1974).

The major uses of land under the traditional system were residential, arable, grazing and hunter-gathering. An individual would not obtain land rights until he was accepted by the community, and he obtained these rights not as an individual but because he was an integral part of that community (Wilson, 1975). Grazing and hunting areas were vested in the tribal cluster, and the individual homesteads each had a portion of arable land (Derricourt, 1974). A regular pattern of fission occurred as groups either became too large for the hunter-gathering zone and pasturage, or because tribesmen withdrew their support for a chief (Derricourt, 1974; Lawrence, 1976). There was sufficient land to accommodate fission as well as migration which occurred as a result of population growth or political conflict.

However, during the contact and conflict period of the 19th century, pressure on land restricted hunter-gathering areas and thus areas for potential fission groups. Population expansion within the existing territory occurred, resulting in less buffer space and more conflict, which contributed to the overall change in Nguni society (Hammond-Tooke, 1975).

The end of the 19th century ushered in a new administrative system in Transkei. The boundaries of the region were fixed, suitable land became scarce and Cape Colonial rule had a major impact on the territory. With the new system of administration came taxation. This necessitated the earning of a cash wage and the easiest way to obtain cash was to work outside Transkei. The deterioration of Transkeian agriculture can be linked with the growth of capitalist economic relations in South Africa, in that the latter encouraged and required migrant labour (Yavitch, 1981). With many men away the division of labour of the traditional society was disrupted and this had an adverse effect on agricultural production. The disruption of the tribal society and the shortage of suitable land led to the deterioration of the landscape. Migrant labourers would return and use their earnings to pay taxes and buy more stock. Consequently, erosion increased in areas where stock numbers became too high.

The system under stress (AD 1900 - AD 1980)

From the end of the 19th century the population increased rapidly. The control of livestock diseases by the introduction of dipping tanks, and legislation restricting livestock movement, ensured a rapid increase in livestock. In addition numbers of small stock increased substantially: woolled sheep in Pondoland quadrupled to 200 000 between 1900 and 1909, while the number of goats doubled to about the same number (Beinart, 1982). Despite the effect of East Coast Fever in the early 1900's, the LSU population stood at two million at the beginning of the 1930's (Kockott, 1933). The commonages, which were actually shrinking due to increased

cultivation, became heavily grazed. The initiation of erosion in many of the vleis must have commenced during this period, and by 1933 the seriousness of the erosion problem was highlighted in a powerful memorandum by a magistrate (Kockott, 1933).

The large numbers of livestock and the rapid increase in proportion of small stock kept the grasslands extremely short, so much so that it became impossible to fire some of the grasslands in winter. At present LSU numbers have stabilised, but the ecology of the system is extremely sensitive and the growing human population requires more ground for cultivation. The condition of the stock is so poor that only some 2% of cattle sold are classified as Grade 1, while over 40% sold are Grade 4 (Wood and van Schoor, 1976). Drought is today the major factor causing fluctuation in animal numbers, but these recover fairly rapidly to around the two million LSU mark after a drought.

'Betterment' schemes were introduced in an attempt to alleviate the increased pressure on the land. These schemes have their beginnings at the end of the 19th century when the Glen Grey Act of 1894 was extended to Transkei (Wood and van Schoor, 1976). This act provided for surveyed plots under individual tenure and resulted in the one-man-one-lot system. These 3,5 hectare plots were inadequate for subsistence purposes (Southey, 1981) and thus further advanced the dependence of the people on migrant labour. Ten of the twenty-eight districts of Transkei fall under this system of land tenure. The other form of legal ownership is the certificate of occupation which follows more closely the traditional tenure rules, where the land is owned by the nation and the individual is granted the right of occupation (Southey, 1981).

The above systems, although different in terms of the conditions under which the deed is issued, have very similar effects in practice. The principle of one-man-one-lot is strictly adhered to: land cannot be used as security, use of the land is assured for the individual for life provided he pays his taxes, makes beneficial use of the land and is a law abiding citizen. Inheritance is assured and individuals are entitled to the fruits of their labour (Southey, 1981). Traditionally the land had belonged to the past, present and future members of the community and was administered by the

community through the chief (Wilson, 1975; Southey, 1981). Ownership of land is important for a tribesman to become a fully-fledged member of the community, but the value of production on a smallholding makes farming uneconomical compared to a migrant labourer's wages. Migrant labour currently produces about 75% of the Gross Domestic Product of Transkei (Southey, 1981), and is thus extremely important. Southey (1981) places the blame for poor agricultural performance and overstocking squarely on the shoulders of those responsible for the land tenure system.

Yavitch (1981) states that Proclamation 31 of 1939 made provision for the declaration of any area in Transkei to be zoned for 'betterment'. This was supposedly done after consultation with the community; whereafter stock and ploughing could be limited.

There was tremendous resistance to these schemes, largely due to suspicion of the direct rule approach and because many of the chiefs, through whom the administration chose to work, were very unpopular (Wilson, 1975). An example of such resistance is the peasants' revolt in Eastern Pondoland in 1959-60 (Wilson, 1975).

Various acts replaced the 1939 legislation. The Agricultural Development Act of 1966 made provision for the improvement of all agricultural activities and the protection of natural resources in Transkei (Wood and van Schoor, 1976). The occupants of an administrative area could apply to the government to have their area planned. The plan provided for the creation of one or more residential areas, the separation of grazing and cultivated land, roads, woodlots and water supplies. Unfortunately, many of the facets associated with these plans have not been successful: eg. cultivation is still attempted on steep slopes and fencing has often been removed, allowing unrestricted grazing. Although the majority of the homeland has been planned as above, the problems of population increase, a high stocking

rate, increased erosion, and lack of suitable agricultural land still remain. An outline of the land use today highlights the problems which the homeland faces.

LAND USE

An Ecological model of land use.

From the above it is possible to construct a schematic model of the utilisation of the Transkei landscape from the Early Iron Age period up to the present day. Figure 1 shows the possible changes that have occurred from the Pre Late Iron Age period to the present, indicating that the major changes have taken place this century.

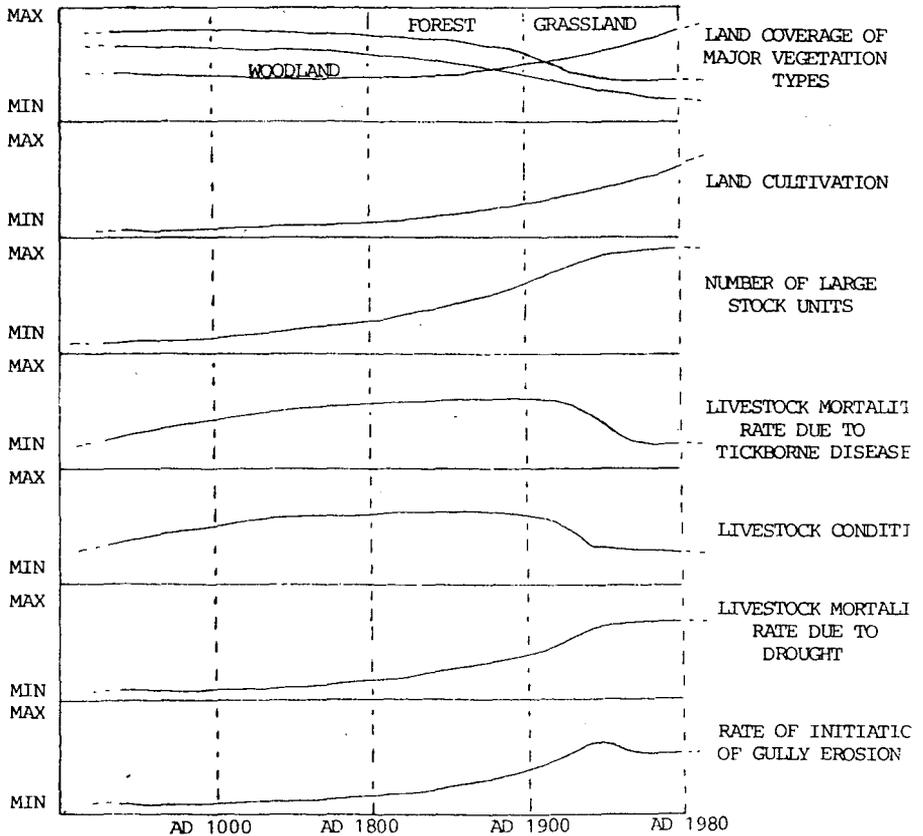


Figure 1: A model of the impact of people and livestock on the Transkeian landscape.

The model indicates that the Early Iron Age had little effect on the landscape. Woody vegetation would have been cleared for cultivation and livestock numbers would have been low. From the beginning of the Late Iron Age up to the 20th century, livestock became more important, increased areas of woodland (ie. bushveld, scrub forest, thornveld) were cleared for cultivation, livestock condition was good and soil erosion not a major problem. Obviously the numbers of indigenous herbivores decreased during this time period and their relative decline is not included in the model.

Within the brief period since the turn of the century livestock numbers have increased to their maximum, their condition has become very poor and droughts rather than tickborne diseases are the main cause of livestock mortality. More land is now used for cultivation and the initiation of gully erosion reached its peak in about the 1930's.

Land use today

The total area of Transkei is 4 379 812 ha. Some 3 814 816 ha (87,1%) is considered tribal land (Wood and van Schoor, 1976). The remaining 12,9% is divided between government forestry land, other government land, towns, institutions and private farms. 84% of all Transkeians are permanent rural dwellers. This amounts to some 2 550 000 of the estimated population of three million. (Hawkins Associates, 1980). These figures indicate that Transkei's ecological problems are centred around the rural section of the land, and population. The two important facets of rural land use which effect the ecology are the areas under cultivation and the grazing areas.

The main crop planted is maize, which forms the staple diet of the people. According to Hawkins Associates (1980) the average area planted to maize between 1974 and 1980 was some 483 300 ha. The average annual production was some 300 kg per ha, which is well

below the subsistence requirement of 175 kg per person per year. This average yield has changed little over the past thirty years (Hawkins Associates, 1980). More and more land is ploughed each year to try and meet the demand from a growing population.

The total cultivated area in Transkei, including maize and other crops, was estimated by Wood and van Schoor (1976) to be some 747 592 ha in 1976. The potential arable area was estimated to be 387 683 ha. by Wood and van Schoor (1976). They defined an arable soil as having a minimum effective depth of 600 mm and occurring on slopes not greater than 15%. The arable area for five different geomorphological units is shown in Table 1. The data in Table 1 indicate that the majority of the arable area falls into the talus slope and flooded plain geomorphological element. The 747 592 ha cultivated in 1976 is almost double the area suggested by Wood and van Schoor (1976) as being suitable for cultivation. This obviously means that at least 8% of the land area not suitable for cultivation has been ploughed. This cultivation of unsuitable steeper slopes has contributed significantly to the erosion problems of the Transkei.

Table 1: The total area, arable area and their respective percentages for five geomorphological units in Transkei (adapted from Wood and Van Schoor, 1976)

Geomorphological element	Slope interval	Area (ha)	% of total area	Arable area (ha)	% of total arable	% of geomorphological element
Crest	0 - 5%	345 179	8	39 570	10	11
Escarpment	30%	1 596 503	36	-	-	-
Talus Slope	10 - 30%	1 519 978	35	217 224	56	14
Pediment	0 - 10%	532 273	12	98 709	26	19
Flood Plain	(10%)	385 879	9	32 180	8	8
Total/%	-	4 379 812	100	387 683	100	8,85

The poor yield and increasing population lead to an ever-increasing demand for land. Over 60% of Transkei has slopes greater than 15% and it is understandable that these areas will come under increasing pressure to be cultivated.

The soil conservation schemes and the associated resettlement have brought major changes to the land use system. The arable lands and homesteads which were previously widespread, have been consolidated into blocks and villages respectively. Conservation has improved, but the protection of cropland and rotational grazing systems have been unsuccessful since there is poor agricultural extension back-up (Bembridge, 1980).

The pressure for land rights has increased the proportion of land being cultivated at the expense of grazing areas (Hawkins Associates, 1980). The pressure on grazing areas is thus even greater, because they are a common resource and less easily influenced by extension. Livestock, especially cattle, have always been an integral part of the traditional way of life in Transkei. The large stock numbers have been cited as the main reason for erosion in Transkei, and contribute very little to the economy, as they are inevitably in poor condition (Wood and van Schoor, 1976; Hawkins Associates, 1980; Southey, 1981). Some 90% of the tribal areas are available for grazing. This amounts to about 3 500 000 ha (Wood and van Schoor, 1976). The national herd has changed little over the past 50 years: cattle and goats average around 1 300 000 and sheep around 2 100 000. Assuming that six sheep or goats are equal to one head of cattle, the total number of large stock units has stabilised just below the two million mark (Wood and van Schoor, 1976; Southey, 1981). This figure does not include equines, of which there are about 200 000.

The distribution of cattle is closely correlated with population distribution, which is a sign of their social importance. The highest densities are found in the coastal zones (Hawkins Associates, 1980). Sheep have their higher densities in the drier south western

areas of the country, while goats approach their highest densities wherever thornveld is found (Hawkins Associates, 1980). Stock is largely in poor condition, offtake is extremely low and marketing is relatively unimportant (Southey, 1981). This aspect of resource misallocation, whereby there is a heavy commitment of savings (often originating from migrant labourers' earnings) to stock, is an unproductive form of investment in market economy terms. Southey (1981) emphasises the fact in his report that the land tenure system, and not the attitude of the individual to stock, is the cause of this problem.

One other very significant statistic is that 80% of the rural farmers possess less than eight head of cattle, which is the minimum number required for all the traditional requirements, including ploughing (Tapson, personal communication). This indicates that most of the cattle are owned by only one fifth of the farmers, which means that there is continual effort to obtain more cattle by 80% of the farmers. Therefore, the commonages will always be under pressure as farmers strive to obtain the required minimum number of cattle.

To attain some idea of the carrying capacity of Transkei and to compare that with the present stocking rate, an analysis was carried out for each magisterial district. The magisterial district is used because official census figures for Transkei are calculated according to the same unit. The most useful form of Acocks' (1953) various veld types was calculated for each district, by using a dot grid. The carrying capacity of each veld type was determined using the figures suggested by Wood and van Schoor (1976) and Mentis and Duke (1976). Once the area of each veld type in each district had been determined, the area planted to maize and the area of forest reserve were subtracted, thus giving an area of free rangeland suitable for grazing. Carrying capacity for each district could then be determined by using the carrying capacity classes for each veld type in the district and multiplying this by the extent in hectares of each veld type available for grazing. The numbers of animal

units (AU) which each district could support, according to western management standards, could thus be determined. A comparison of the carrying capacity figures and the average number of large stock units (LSU) in each district, gives an indication of the extent of overstocking. It is emphasised that the percentage of overstocking given in Table 2 is high because animals in the Transkei are usually smaller and in poor condition, compared with animals bred for the market under commercial operation. The data in Table 2 indicate that the Transkei is on average 131% overstocked, with the highest overstocking occurring in the coastal districts and the lowest in the inland districts. The high number of large stock units is obviously an important parameter that needs to be considered in the planning of any betterment scheme.

Table 2: Carrying capacity (AU), average annual numbers of large stock units (LSU) for the period 1975 to 1978 and percentage overstocking for each district in Transkei.

	Carrying capacity (AU)	Average LSU (1975-1978)	% over stocking
<u>Coastal Districts</u>			
Centane	15 823	65 000	310
Gatyana	19 085	77 000	303
Xhora	9 543	54 000	465
Mqanduli	17 845	80 000	348
Ngqeleni	15 272	75 000	391
Umzimvubu	9 725	27 000	177
Lusikisiki	29 729	107 000	259
Bizana	39 606	91 000	129
<u>Midland Districts</u>			
Gouwa	12 829	35 000	172
Nqamakwe	31 922	68 000	133
Idutywa	30 942	66 000	113
Umtata	43 957	112 000	154
Libode	24 615	56 000	127
Ntabankulu	29 770	54 000	81
Siphaqeni	22 331	43 000	92
<u>Inland Districts</u>			
Cacadu	65 077	114 000	75
Cofimvaba	42 217	75 000	77
Tsono	26 018	49 000	88
Xalanga	25 969	45 000	73
Engcobo	67 485	121 000	79
Tsolo	41 119	73 000	77
Gumbu	39 120	79 999	101
Mount Fletcher	66 819	80 000	19
KwaBhaca	49 265	80 000	62
Matatiele	52 616	93 000	76
Maxesibeni	26 005	37 000	42
Umzinkulu	54 940	92 000	68
Total/Average	850 725	1 968 000	131

CONCLUSION

The major anthropogenic influence on the Transkeian vegetation has manifested itself fairly recently: the inhabitants of the Iron Ages generally lived in harmony with their environment. An increase in population, cultivation areas and livestock numbers are the main reasons for the degradation of the landscape in recent times.

Livestock are still an integral part of the Nguni way of life and will continue to be so in the foreseeable future. Various attempts have been made to reduce the number of livestock, but all have failed for one reason or another (Wood and van Schoor, 1976). The increase in the human population will lead to an ever increasing demand for livestock.

It would appear that the system can support a maximum of two million LSU, as numbers have stabilised around this mark. This increase is not necessarily a result of quantity being more important than quality, but rather a consequence of the demand for livestock from an ever increasing human population. The problem is not unique to Transkei, as most other states in southern Africa also have a stocking rate estimated at twice that which would be expected by western standards (Tapson, personal communication). It is only fairly recently that animal condition has become very poor and this is a result of human population increase, shortage of commonage and the introduction of western controls (eg dipping tanks), rather than a desire for quantity at the expense of quality.

The fact that over 80% of the Transkeian population is rural and that rural areas account for 87% of the total land area means that major emphasis will have to be placed on agriculture, if Transkei is to advance economically.

Various resettlement programmes and conservation schemes have been implemented for the purpose of alleviating the problems of land pressure, but, because of the limitations of the current land tenure system, these have not been very successful. Although the objectives are to enforce beneficial use of arable land, reduce stock and introduce rotational grazing, they do not meet the short-term aspirations of the individuals. Coupled with this is the fact that the schemes make it difficult to accommodate the increasing population, as there is an ever increasing number of landless people. The possession of land is still of paramount importance. It appears that a migrant labourer may plough his land and then let it lie fallow, so that he seems to be using his allocation, which will prevent expropriation. The piece of land remains as a security for later life.

Continued demand for land and stock has resulted in the extension of cultivation areas at the expense of grazing areas and the stabilisation of stock numbers, rather than their reduction. This extensive investment in stock and continued use of poor arable soils, causes major ecological problems. The heavy commitment to migrant labour, which yields substantial returns when compared to a subsistence livelihood, means that the traditional division of labour has been upset, resulting in poor agricultural production.

There is no easy solution to the problem of the poor condition of the livestock, which will remain as long as livestock retain their importance in the Nguni lifestyle. The system of a common grazing resource allows the individual to use as much grazing as possible, since the cost is borne by the community as a whole. Also, for an individual to benefit from the common resource, he must have stock.

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