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Tension is predictable but the desirable appropriately tied to their style of life.

Pastoralists and modern high-energy technology are in confrontation in Kenya. outcome is less obvious. Given the pastoralists' fragile semiarid environment, the future of human habitation may be more

PASTORALISM IN KENYA

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by David J. Campbell and George H. Axinn

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Reports

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PASTORALISM IN KENYA

Obsolete Societies En Route to Extinction, or Appropriate Technologies for a Fragile Environment?

The resilience of pastoralists and the technology of the outside world are in confrontation in Kenva. On one side is the full force of modern highenergy technology. It is supported by specialized large-scale organized political, economic, and military power. It is also in league with the international development assistance community. On the other side is the less differentiated low-energy technology of nomadic pastoralists. The rural people who tend moving livestock survive with small-scale localized cultural patterns, tuned by time to a semiarid ecosystem. Tension is predictable.

On the surface, the evidence of the recent past suggests that the world may have no place for pastoralism in its future. What chance does the relatively simple, undifferentiated pastoralist clan-with its symbiotic mix of cattle, sheep, goats, donkeys, and sometimes camels, along with human beings, the natural wildlife, and the grasses, shrubs, and trees what chance does this clan have when confronted by the "modern sector" of its "dual economy," with its overwhelming technological, economic, and organizational strength? The skyscrapers, the airplanes, the diesel-powered tractors and lorries, the electric lines and the telecommunication systems, and the mystique of "scientific agriculture" approach the pastoralist with awesome domination.

But further analysis suggests that the semiarid environment is extremely fragile; that the ruminants who convert the scarce vegetation into human nutrition may be both more effective and more efficient than the alternatives of the outside world; and that the future of humanity may be more appropriately allied to the perspective of the pastoralist than that of the others.

Pastoralism in Kenya

Pastoralists in Kenya number between 800,000 and 1,000,000 or between 5.5 and 7 percent of the nation's people, and it is estimated that their population is growing at around 2.5 percent each year. There are many different pastoral groups, each with their own particular customs. They tend to identify with specific regions (Map 1), each with different ecological characteristics. The varied grazing and water resources available to different groups are reflected in the composition of the herds and in the spatial organization of their economies. In the drier areas of northern and northeastern Kenya, where resources are more scarce and unevenly distributed, the herds have more camels than cattle and more goats than sheep and the people are more mobile. They are forced to move regularly in order to maintain access to water and grazing resources. In western, southern, and eastern Kenya, the proximity of relatively well-watered upland, swamp, or riverine areas enables herders to practice more restricted movements and the more favorable ecological conditions are reflected in the herd composition; more cattle and sheep and fewer camels are kept. More recently in some of these areas a mixed economy has developed as herders and immigrant farmers have begun to cultivate foodgrains and other crops. Generally, it is the women who are the cultivators.

The Somali graziers of the North East and Maasai pastoralists of the Rift Valley area along with the Boran, the Rendille, and the Gabbra seem typical of other rural systems

with a basic subsistence economy. They produce their own inputs and they consume their own outputs. They are relatively unspecialized, carrying on such functions as production, supply, and marketing within each clan, along with governance, health care, personal maintenance, and learning. And all this is done within a distinctive physical, cultural, economic, and political environment. They are self-sufficient clusters of people who have learned to balance their own level of specialization and energy transformation with what their ecosystem will sustain over time?

Like other such groups, they tend to recycle materials and energy within each cluster of families, rather than exchange it with outsiders. Groups which recycle, rather than exchange on a market, are called subsistence groups. Our rough estimates suggest that Kenyan pastoralists tend to recycle approximately 90 percent of the materials and energy with which they deal. Although they will sell livestock when there are special needs, or in conditions of drought, they typically milk cattle and camels, bleed cattle, eat the meat of sheep and goats, and use camels and donkeys to help them carry their homes and communities from place to place in search of grazing and water. In this type of situation, numbers of livestock represent "savings," and are symbols of status and prestige, much the same as a large house, an automobile, or a bank account are for urban dwellers in industrialized areas. Large numbers of domestic animals are not necessarily an indication that livestock production for market is feasible. This false assumption has misled many.³

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EAST AFRICAN GEOGRAPHY AND DEVELOPMENT

While different ecological conditions encourage diversity between groups, the pastoral economy has as its main objective the provision of subsistence for the population dependent upon it. The livestock provide milk, meat, and blood in amounts that vary according to environmental conditions. During the annual dry periods and at times of recurrent drought or disease, food production declines. Pastoralists attempt to maintain a herd large enough to support the population even under such difficult conditions.

Although the provision of subsistence is the primary goal of the pastoral economy, trade is also important. Trade between different pastoral groups affords the opportunity of improving the breeds. Trade with neighboring farming peoples enables sharing of the resources of each economy; grain is exchanged for various animal products. More recently, opportunities for the sale of livestock for cash have become more available and many herders have responded positively to them.

Some herders have also taken up cultivation, particularly since the major droughts of 1960-1961 and 1972-1976. The majority of these suffered severe livestock losses during the droughts and they see cultivation as a means of diversifying their source of food, thus reducing the risks associated with the impact of drought. Not all areas afford the opportunity for cultivation, however, and this response is most frequently observed among the Maasai.

Ecological Constraints

The pastoralists of Kenya have developed a management system enabling them to cope with the ecological constraints associated with the arid and semiarid areas they occupy, namely seasonal availability of water and pasture and recurrent drought and diseases.

First, they have a strategy of movement. Pastoralists are always looking up at the sky to see where the clouds are moving and where rain is falling. Then they themselves move—along with their herds, their families, their houses, and their worldly possessions.

Second, pastoralists have excellent control and discipline of their

animals and of relationships between human members of the clan and those animals. The sight of Maasai herders moving their flocks of sheep and goats and their agegraded groups of cattle back and forth to a water point is a magnificent demonstration of training and communication, exemplary for animal husbandry anywhere.

Further, pastoralists have developed their own supplementary water schemes. Dug wells, sometimes relatively small, with ropes to pull up buckets of water, and sometimes quite large, with steps around the outer perimeter so that a person can walk down and bring water up, are common even in desert places. Beyond these, pastoralists have cooperated with outsiders in the development of small windmills and hand pumps.

Pastoralists have also exercised careful management of the mix of the various classes of livestock they keep-cattle, camels, donkeys, sheep, and goats-to take maximum advantage of the forage and water, avoiding excessive stress on the ecosystem. And pastoralists have demonstrated careful management of the size of each herd to provide sufficient human food to sustain their families and clans and also to regenerate their herds to sustain them over the years.

The climate of Kenya is such that rainfall has a marked seasonal pattern, with periods of rainfall alternating with long dry periods. Pastoralists inhabit areas which receive less than 800 mm. of rainfall each year and the majority live in areas where rainfall is less than 500 mm. (Map 1). Herders, therefore, have to adapt to a situation in which water and grazing are abundant for some months and scattered in others. A number of strategies are used to cope with these seasonal differences.

The survival of the pastoral economy is dependent upon access to water and pasture during the dry periods. In the wet season these resources are abundant but during dry periods they become geographically restricted to relatively small scattered areas such as hills and swamps. Mobility of the herds permits the pastoralists to graze their animals in different areas from season to season. The distance over which people move depends upon the ecological characteristics of the area they occupy. For example, the Rendille and the Boran of northern Kenya move over long distances during their annual migratory cycle. Norman Miller⁴ has written of their need to leave the plains during the dry season to seek pastures around Marsabit Mountain, the Huri Hills, and the forests of Mount Kulal. In contrast, the Maasai of Southern Kenya move less frequently and over shorter distances. Their dry season resources are found in the swamps at the base of Mount Kilimanjaro, on the slopes of that mountain, on the Ngong Hills, the Chyulu Hills, the Loita Hills, and on the Mau and Soit Ololol escarpments. In the wet periods, they descend to the surrounding plains. The greater proximity between wet and dry season resources reduces the necessity for long distance movements among the Maasai.

The nature of the physical environment also affects the productivity of different animals. Camels are hardier than cattle and goats are hardier than sheep; thus herders tend to select among animals according to environmental conditions. In the north and north-east of Kenya, Somali, Rendille and Gabbra herds tend to be composed more of camels and goats than cattle and sheep. Among pastoralists of the same ethnic groups occupying semiarid rather than arid lands, cattle replace camels and sheep are mixed in with the goat herds.

The capacity of the pastoralists of Kenya to select livestock best suited to the environment is not limited to the choice of animals but to the selection of specific breeds and even, as Finch and Western have written,⁵ to the selection of cattle with darker and lighter coats according to the environment; darker coats are associated with cooler upland regions and lighter coats with warmer lowland areas.

While the seasonal differences in resource availability call for relevant strategies on a continuous basis, herders also have to be able to cope with the effects of recurrent but unpredictable events such as drought and disease. Drought is a major problem for the pastoralists of Kenya. During the present century, droughts have been recorded in 1933-1935, 1943-1946, 1948-1949,

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1952-1953, 1960-1961, and 1972-1976. The magnitude of losses during these periods can be demonstrated with reference to the Maasai of Kajiado District: in 1933-1935 losses were estimated at 40 percent of the herds, in 1960-1961 at 50 percent and in 1972-1976 at 38 percent.

Losses of such a magnitude threaten the ability of pastoral societies to provide the subsistence needs of their population. A number of strategies are adopted by pastoral societies to reduce the threat to their food supply. These strategies are similar to those practiced to cope with the seasonal availability of resources and include resource management, herd management, and social interactions defined specifically to reduce the effects of drought.

Resource Management. Within those areas reserved for dry season grazing are resources which may not be needed during the normal annual cycle of wet and dry seasons but which are prized for their value during times of drought. These are often the forests high on the hills or

escarpments, riverine locations, or the interior of the lowland swamps. Should access to these areas be denied, the pastoralists' vulnerability to drought would be increased and in the past access to them was carefully controlled.

Herd Management. In periods of drought herders often split up their herds into smaller units so that they are more mobile and more able to utilize the resources afforded in isolated locations where a thunderstorm has enabled plants to grow and where standing pools may temporarily afford water.

The lack of resources and the increased mobility needed to find them places increased stress upon the livestock. The hardier animals will survive, and thus the herder's ability to select appropriate animals becomes very important. Within a herd, however, special attention will be given to the cows, which provide milk and represent the breeding stock, the potential for the herder to rebuild in the postdrought period.

Boranland, semipermanent encampment near Marsabit, northeastern Kenya.

Boran camels being led along track paralleling new Kenya-Ethiopia road.

Boran cattle receiving inoculations as part of government's plan for upgrading herds and encouraging better herd management.









Social Linkages. In order to reduce the risk of any one herder losing all his stock, many pastoralists practice the reciprocal sharing of livestock such that no one herder will have all his animals in one herd. As resources are more unevenly scattered during the drought, the splitting of herds and sharing of animals between members of families, clans, or age sets increases the probability that some animals belonging to each herder will survive. The ability to reach available resources is also enhanced by the reduction in the restrictions imposed upon movement of stock between areas regarded as the territory of specific subgroups.

While pastoralists have adopted many mechanisms for coping with drought, their ability to deal with the effects of disease was limited until recent times when vaccination became available. Major outbreaks of disease severely reduced herds in the late nineteenth century and only active veterinary work has enabled losses to be kept under control.

Prior to the availability of veterinary responses, diseased herds were restricted to specific water holes to limit contact and so reduce the chance of disease spreading. Also, herds were removed from areas where wildebeest were calving to reduce the risk of contracting contagious bovine pleuro-pneumonia. While these actions may have reduced mortality, only the availability of vaccines and chemicals for dipping has effectively reduced overall losses associated with diseases.

Livestock Numbers

Livestock play a variety of roles within pastoral societies. Animals are valued for their contribution to food supply, for social needs, as a form of currency, and as sources of raw materials such as leather and hair for ropes. The value of livestock varies from time to time according to prevailing ecological characteristics. In years of adequate rainfall and range resources, herders attempt to build up the number of animals to increase the subsistence production of the herd. They do not build up numbers indiscriminately in pursuit of wealth (measured by the size of herd), as is often claimed, but carefully with a view to minimizing the risks associated with the inherent uncertainties of environmental conditions.

Most herders nevertheless attempt to maintain large herds, not only to provide for their economic and social needs, but also to contribute to the welfare of the whole community. It is often argued that a situation whereby livestock are owned by individuals but the pasture resources upon which they depend are owned communally is inherently dangerous as it encourages overgrazing and rangeland degradation. While it is true that animals are owned by individual families. it is not true to say that they have no communal value. Among many pastoral societies the wealthythose with most animals-are expected to assist the poorer members of the community by lending animals to them. There is communal benefit, therefore, in building up individual herds, as this increases the communal livestock resource.

With the improvement of health facilities, however, there has been an increase in the human population in the past 50 years and attempts to maintain a corresponding increase in livestock numbers has increased the danger of stock numbers exceeding the capacity of the land to support them. Such a situation is not a result of irrationality on the part of the herders, but is a consequence of the response of a subsistence-oriented economy to the greater demands of a growing population.

The question of environmental degradation resulting from overstocking of the rangelands is one that has perplexed the Kenyan government since the 1930s. The issue received major prominence during periods of drought when rangeland resources declined in quality and quantity and widespread livestock losses occurred and also during periods when national economic policy was under renewal. While most pastoralists anticipated losses during drought and developed strategies for coping with them, the government focused its attention on the negative processes of land degradation and wasteful herd management and rarely considered the long-term capacity of either the environment or of pastoral systems to accommodate such short-term stresses.

The failure of the government to attempt a more considered review of pastoral economies may in part be explained by the repeated coincidence between drought and reviews of government economic policy. Table 1 shows that the four major reviews of policy conducted since 1930 all coincided with periods of drought and its attendant effects both upon the environment and the pastoral societies. In view of the rebetween peated coincidence drought and policy-making, the policy-makers' assumption that the livestock economy was inherently wasteful and destructive may be forgiven. However, the negative attitude toward the pastoral economy was seldom questioned and provided a sympathetic context for those who wished to eradicate the pastoral way of life and replace it with a rangeland economy based on commercial assumptions rather than upon those of the pastoralists themselves.

A more relevant approach to the pastoral system would examine the question of overstocking relative to both the subsistence needs of the community and to the long-term carrying capacity of the environ-ment. While periodic droughts may significantly reduce the carrying capacity, resulting in temporary overgrazing, the livestock population might not be overstocked relative to the long-term needs of the human population. When overgrazing becomes a problem, in times of drought, pastoralists see it as a consequence of drought, not of overstocking. In the past, when official activities designed to reduce overgrazing have coincided with drought, the reaction of herders has not been positive, for they viewed the cause of the problem differently. Only when the demands of the herd approach the long-term carrying capacity is overgrazing likely to be a problem appreciated by the herders.

For example, at the time of the onset of the most recent drought in Kajiado District in 1972, the Maasai population of the Loitokitok area was greater than at any previous time, as was the size of their herds. Yet, few herders had significantly more stock than was needed for subsistence. Indeed, over 20 percent of those surveyed by Campbell⁶ had fewer animals than they needed, only 10 percent had twice that num-

Table 1

Periods of Drought and Review of Agricultural Development Policy Affecting the Livestock Sector - Kenya 1930-1980

Policy Review	Drought
1933 Carter Commission	1933 - 1935
1946 African Land Development Programme ALDEV	1943 - 1946
1955 Swynnerton Plan	1952 - 1953
1963 Creation of Livestock Marketing Division and Range Management Division within the Ministry of Agriculture	1960 - 1961
1979 Arid and Semiarid Lands	1972 - 1976

Development





ber. By the end of the drought, over 90 percent had fewer animals than they needed to provide an adequate subsistence. Thus while it may have appeared that the Maasai were overstocked prior to the drought, when viewed relative to the strategy of providing for subsistence throughout the drought, this was not the case. If the issue of overstocking was not appropriate during this most recent drought, then it is even less likely to have been appropriate in the past when both the human and livestock populations were smaller.

A number of processes affecting land use and the demand for grazing resources are nevertheless beginning to create a situation whereby grazing demand may soon exceed the carrying capacity of many areas even under average range conditions. A major process is the increase in the *human population*. Pastoral populations are growing at approximately 2.5 percent per annum, but the national growth rate is around 4 percent

The available grazing resources are diminishing as a consequence of competition with alternative land uses such as the wildlife industry and crop agriculture. Large areas of Kenya have been reserved exclusively for use by wildlife as national parks and reserves⁷ which are vital to Kenya's tourist industry. A successful national park or reserve must provide a concentration of wildlife, and they have been delineated in order to enclose dry-season grazing and water resources that attract vast numbers of animals. Prior to their designation as reserves, however, such areas were shared by both wildlife and domestic livestock. The promotion of the tourist industry has entailed severe costs to the pastoral communities adjacent to the parks and reserves.

Further losses of dry season resources have resulted from the influx of farmers from the overcrowded areas of high agricultural potential to cultivate the wetter margins of the rangelands, the hills, and around swamps and along the rivers, areas previously valued by herders as dry season resources.

Gabbra herdsman's family with some of the young camels grazing nearby under near-desert conditions. The interface between crop agriculture and pastoralism has thus shifted into the pastoral zone.

Initially, such migrations were spontaneous, a response of the landless farmers to their situation of land shortage, often caused by the alienation of land for European settlement. More recently, however, spontaneous settlement has been augmented by planned migration to government-sponsored irrigation schemes such as the Perkerra River and Tana River Settlement Schemes.

In most areas such cultivation represents a competitive land use with pastoralism. However, given the seasonal pattern of use of the dry season grazing areas, whereby herders use them only in the dry season and farmers would be able to produce crops only during the wet season, a potential may exist for encouraging multiple land use. Farmers could grow crops during the rains and herders could graze their animals on the stubble and fallow areas during the dry season. Such compatibility between herding and farming activities is charac-teristic of many areas of West Africa and could expand the productive potential of the dry season grazing lands in Kenya if an institutional framework acceptable to both farmer and herders could be devised. At present, however, such a situation appears unlikely to develop.

The combined effect of the loss of grazing resources to farming and to wildlife (see map) at a time when the demand for them from a growing pastoral population was increasing has created a situation whereby the needs of the pastoral economy may be approaching the capacity of the environment to meet them. In a 1979 review of government policy toward arid and semiarid lands⁸ it was suggested that, given prevailing conditions of competing land use in which pastoral resources were being appropriated for alternative uses, the carrying capacity of a number of districts would be exceeded by the minimal subsistence demands of their pastoral populations in the very near future (Table 2).

Given this dynamic and fragile situation, what programs have been advanced by the international development assistance community?

Table 2

Date at which Pastoral Population will Outstrip the Capacity of the Land to Support it at a Subsistence Level under Different Patterns of Land Use - By District

District	All Land Available	Herders Excluded From Land of Highest Agri- cultural Potential*
Baringo	2000	before 1969
Kajiado	1999	1993
Nakuru	2063	1975
Narok	2044	before 1969
Samburu	1992	before 1969
Turkana	1982	1974

Source: Kenya 1979, Appendix 10, Table 8.

*In Kenya land has been classified into Ecological Zones based upon its ecological potential (Pratt and Gwynne, 1977). It is assumed in this column that areas in Ecological Zones II and III are unavailable to herders as they are likely to be reserved for forests or occupied by farmers who are increasingly moving into such areas.

Outside Interventions

"Outsiders" have been considering interventions in livestock production in Kenya for many years. The present projects there have many different international "donors. The projects themselves are based on a series of questionable assumptions. The first, and perhaps the most serious, is the simple one that the commercial production of cattle could and should be increased in the arid and semiarid lands. This assumption appeared in the report of the Kenya Livestock Conference of 1967, which had examined the report of the East African Livestock Survey conducted in 1964-as a general survey of "opportunities and problems confronting the livestock industry in Kenya, Tanzania, and Uganda." That mission con-cluded there was an "enormous potential for expanded livestock development throughout the region."

Other similar assumptions were that increased production would be good for producers, that rangelands could be managed according to a scheme for increased cattle production by adding water points and managed grazing blocks; that a marketing system would absorb the increase in production; that prices would be set free; that credit, if made available, would help; and that a variety of high technology gadgets would be workable in the area. The latter category includes submersible electric pumps, diesel generator sets, foreign-manufactured, lightweight pickup trucks, and large foreign earth-moving equipment.

During the past 14 years, time has demonstrated that none of these assumptions was warranted.

First, the outsiders did not consider that the main cattle product valued by Kenyan pastoralists was milk (and to a lesser extent blood). Pastoralists who maintain cattle for milk production are not likely to make the transition to maintenance of those animals for meat production easily. Furthermore, if those same pastoralists keep sheep and goats for meat production, and also keep camels and donkeys for transportation and for other reasons, any change in the management of their herds will depend on the total mix of their activities, rather than a simple shift in any one of them.

The second assumption, that increased production alone would be good for producers, is also unwarranted. Increased production of agricultural commodities is often a goal of urban elites, who are concerned about low cost of food in the cities, and the potential of agricultural exports for gains in foreign exchange (as was the case in Kenya). From the perspective of small-scale subsistence agriculturalists or pastoralists, however, the goals are to sustain the family and enhance its conditions of life. Sometimes increases in certain aspects of production are consistent with these goals—and sometimes they are counterproductive. Increasing production of cattle for a meat market under Kenyan conditions during the past 15 years is unlikely to have been seen as "good" from the perspective of the pastoralists themselves.

While it might have been possible to set prices free, and to develop a marketing system which would absorb the increase in production, the fact is that official prices of beef, in particular, have remained controlled and low during the past 15 years in Kenya. Thus, rather than becoming an incentive to production of beef, they have continued as a disincentive.

The assumption that rangeland could be managed according to a scheme for increased cattle production by adding water points and managed grazing blocks was also unwarranted. If the pastoralists had maintained only cattle, and not sheep, goats, camels, and donkeys, that might have been feasible. Since the other classes of livestock were altered also present. grazing schemes should take them into account. Also, the idea of confining pastoralists to relatively small "managed" grazing blocks will work only if sufficient rainfall is present within those blocks, and if large herds of wildlife are not likely to compete. In Kenya, with the spotty rainfall patterns, often completely missing particular areas for several years, the small-size grazing blocks are probably never going to be satisfactory. Further, with open grazing for certain "protected species" of wildlife-wildebeest, zebras, and various types of gazelles and antelopes-restricting pastoralists to grazing blocks creates additional hazards in the environment which are not manifest when pastoralists have equal freedom to roam with wildlife species.

The idea that credit is a desirable input fits the large-scale specialized and market-oriented commercial production of livestock products found in some parts of the world. It does not fit the relatively small-scale subsistence type of pastoralism in which most production is also consumed by the same clan which produced it. In this type of subsistence pastoralism, in which most materials and energy are recycled within the clan, rather than exchanged with an outside market, credit from outside may have little relationship either to productivity or to the general "wellbeing" of the pastoralist. Instead. outside credit in exchange for the collateral of land and animals can result in the loss of basic resources to the pastoralists, reducing rather than enhancing their levels of living.

Perhaps the most obvious example of unwarranted assumptions had to do with the high technology mechanical gadgets which were introduced, particularly in the semiarid and arid regions. Submersible electric pumps, for example, inserted in deep tube wells in places which are remote from any supply of electricity require diesel electric generator sets. But these, in turn, remote from the supply of diesel fuel and spare parts, add up to a gross example of inappropriate technology. Where dug wells and windmills might have been effective on a small scale, the large-scale and capitalintensive technology of the outside world simply has not had any impact because its own "weight" has caused it to fall.

In some instances, large-scale imported earth-moving equipment has been used successfully in the construction of pans and dams to supply water for livestock. However, the positive impact of this type of intervention has been diminished by the inappropriate design of the water points, problems of heavy siltation, overgrazing in the vicinity of the water points, and lack of feasible supplies of spare parts for the heavy equipment. (Recently questions of health implications of these grazing area ponds are being raised, as the pools of water harbor disease vectors.)

How then could the international development assistance community—and particularly the professional agriculturalists and livestock management specialists—have made the assumptions they did? And how could they have developed the type of programs they attempted? The answer to these questions may lie in the wide differences between the goals, assumptions, science, and technology of the outsiders and those of the pastoralists themselves.

The stated goals of the outsiders are to increase or improve the quality of life of the pastoralists. The assumption is that everyone is on a market economy, and that the way a family can acquire more to consume is to produce more, sell it, get cash money, and use that to buy something else. The science available to the outsiders is highly sophisticated, and has been applied over the past several decades to the problems of their own countries. In most of those countries, there has been a shortage of labor and ample supplies of capital. Thus that science applied to those problems has developed the technologies of scale in agricultural and particularly livestock production. Large-scale units with heavy capital investments have been able to develop efficiencies in requiring very small amounts of manpower in order to produce relatively high quantities of food. Also, fossil fuel-based energy has been relatively cheap, and the technologies of the outsiders tend to consume large quantities.

The outsiders approached Kenya believing that the fundamental production systems within the country are no different from those of their own land—and therefore, rather than applying their science to the problems of Kenyan pastoralists, and attempting to invent appropriate technologies, they tended to take the technologies invented in their own lands, and tried to "transfer them" to the Kenyan situation.

Beyond the stated goals, mentioned above, it can be inferred that each of the international development assistance agencies has the goal of transferring both capital and technology to its target country. Thus such organizations as the World Bank, the U.S. AID Agency, and the aid agencies of other involved governments (such as Canada, the United Kingdom, and Sweden) had a real need to move both cash and their own mechanical technology into Kenya as part of the program. This may explain, in part, the willingness to transfer readily available technologies rather than apply science

and attempt to invent appropriate technologies. It also may explain why those involved were willing to encourage rather large cash flows into a newly contrived producer credit system for pastoralists, rather than to wait and follow changes in both production and marketing with appropriate programs. Impatience for "results" is characteristic of international development assistance.

What are pastoralists accepting from the international development community?

Pastoralists have been cooperating with veterinary officers in disease control. When the veterinarians from outside have something to offer that actually works, and is not excessive in cost, pastoralists are willing and able to work with them. Hand spraying for ticks, for example, is being performed by many pastoralists. More expensive and site-specific dip arrangements are also used when financed from outside.

Pastoralists are supporting formal education for some of their children, which will enable them to reach out beyond the immediate environment for future employment. Pastoralists are also sending some clan members outside for urban jobs. And when conditions are right, pastoralists have demonstrated they are willing to enter the commercial market and sell some livestock. Pastoralists have also been willing to participate in programs of land adjudication (official legal cadastral survey and title) when they see such assignment of land as the best alternative to protect their land for the future.

There seems to be consensus among those studying the plight of the pastoralists in their current situation that pastoral cultures are different from those of other groups, and they are under pressure. Every society is under the countervailing pressures of continuity and change. There are forces trying to preserve the old ways-the means of survival and the values, norms and behavior patterns which enable that society to survive in its ecosystem-and there are forces for change, sometimes from inside the group, more often from outside. These are the pressures exerted by those with greater power, and they usually fly the flag of modernization or development.

Reader contrasted pastoralists with agriculturalists in Kenya as follows: "Some figures demonstrate the relative support capabilities of the two life-styles: of Kenya's land area of 569,000 square kilometers, only15 percent is arable and 95 percent of the country's 14 million people live there, which works out to 155.8 people per square kilometer. In the pastoral areas, comprising about 421,000 square kilometers, there are 700,000 people, 1.7 to the square kilometer."**9**

Writing particularly about the North Eastern Province, Helland states that "The meagre resource basis of the area is tapped by a system of nomadic and transhumant pastoralism. We must assume that this system has evolved over time and that it at least has been ecologically viable in the longer term. The regulatory mechanisms that have ensured this long-term ecological viability, however, are harsh."¹⁰

Two relevant phenomena are pointed out by Sanford, as follows:

As a consequence no one has any incentive to adjust the size of his own herd for the sake of ecological equilibrium, since any grazing saved by his reducing his herds will be mainly consumed by the herds of other people.

The low degree of commercialization in pastoral areas, caused in part by the inadequacies of the livestock markets, and the poor availability of consumer goods suitable for pastoralists, and the fact that pastoralists have little possibility of investing in other parts of the economy, mean that pastoralists are more interested in accumulating large numbers of livestock, albeit of low quality, for traditional social use, or as insurance against future losses, than in maximizing the cash value of sales through improvements in the weight and quality of animals sold and in the regularity and reliability of their supply.11

Some pastoralists are more inclined to sell on the market than others but, in most cases, offer up a relatively small portion of animals for sale. As with other rural social systems, it tends to be the well-to-do owners of large herds who are on the commercial market. The lowincome pastoralists, who are the target of outside assistance projects, tend to need all their animals for family food supply.

In light of that situation, the basic assumptions of the foreign supported National Range and Ranch Development Project, and other efforts to "help" the pastoralists, particularly those associated with annual cash "income," seem unwarranted. If the projects succeed, the present cultures of the pastoralists will tend not to survive. In that sense, the impact of the projects upon pastoral societies will militate against continuity and favor change. In other words, such outside international "assistance" will be part of the forces tending to decimate present social systems and replace them with something different.

One might ask what kind of a humanity it is which makes great effort to preserve such "endangered species" as the wildebeest, the zebras, the gazelles, and the impalas...and does so at the expense of human cultures which are thus destined for extinction?

The other side of that question is that all human groups change over time. It is the flexibility and resilience of humanity that has led to the diversity of cultures, and has enabled each to change with the times. As populations grow, as technologies change, and as land resources become increasingly scarce, perhaps the Earth, and one particular nation such as Kenya, can no longer support a nomadic, pastoral society. If that be the case, then gradual, sensitive, and systematic programs of adjustment may be the most humane alternative.

What Should be Done

Regarding the present attempts by the Government of Kenya and foreign helpers, it appears that the marketing systems and credit systems promoted by current projects are not compatible with cultural patterns. The group ranch and grazing block organizational attempts are not compatible with "normal" movements of the graziers. If pastoralists had the economic and social power to do so, they would probably resist such change.12

Sanford states that,

Mobility is now generally, although not universally, recognized as certainly the best, and in some cases the only, possible way of exploiting the seasonally differential availability of the feed resources of drier, hotter, or colder areas. In other areas it can be seen as an appropriate response to political factors.¹³

Turning to social phenomena related to the grazing blocks of the North East Province, Helland puts it this way:

Through modifications of the previously existing ecosystem, the grazing block project has replaced harsh, direct and efficient natural control mechanisms with a manmade, "soft-approach" control system. The dangers inherent in tinkering with the water/pasture/animal balance seem to have been realized but not followed to the logical conclusion of providing the modified system with controls functionally equivalent to the natural ones.

This deficiency stems from several misunderstandings and false assumptions about the area. A pasture-rotation system has been designed for cattle husbandry in an area where camels, with quite different requirements, are at least of equal importance. Grazing blocks have been planned under the assumption that clearly defined, localized groups exist and that such groups are tied together in an orderly hierarchical political system with well-defined authority structures. And finally, a policy of leniency and persuasion has been chosen to control scarce resources in a society where force and politicomilitary power traditionally have been the basic legitimizing principles for access to and use of these resources.¹⁴

It may be possible to have both increased levels of living among pastoralists and more stability. But this stability does not have to be location specific. Marketing services could "float" from location to location. Even schools and health services could be mobile, moving with the pastoralists. The Maasai might have dips or spraying arrangements for their cattle without confinement of group ranches to particular physical locations. And the Somali might produce a bigger offtake of immature cattle if they were free to move in wider patterns than those of the grazing blocks, especially if improved water points and marketing and health facilities were based on this wider pattern of movement.

But the creativity and flexibility necessary to design programs uniquely and appropriately suited to the pastoralists of Kenya are not likely to come from outside donor agencies like AID, nor even from the various ministries of Kenya's own government. These kinds of program modifications are most likely to emerge through the voices of the pastoralists themselves, when arrangements are made for the others to listen to those voices-to listen carefully and in depth, with respect for the wisdom that comes through experience.

The long-run objectives—like higher levels of living and an improved quality of life for the pastoralists themselves-tend to be shared goals between pastoralist's families and the outsiders who try to work with them. The discrepancy in objectives comes at the level of the short run and immediate projects and programs designed to achieve the long-run objectives. Each has different perceptions of the world, and there are few examples of convergence of objectives between the pastoralists and the outsiders. One example would be the short-run goal of keeping livestock healthy. Both pastoralists and the outsiders are willing to take up activities designed to achieve this objective. But even in this case there are different perceptions of which diseases are significant. Anything which will increase productivity and keep more animals alive will be seen as desirable by the pastoralists. Disease control programs designed to keep African diseases out of Europe are less significant from the local perspective.

Further, the international development community is not interested in many things the pastoralists see as crucial. For example, the outsiders tend not to be interested in milk production among pastoralists; tend not to be interested in production and marketing of camels and donkeys; and tend not to be interested in sheep and goats as major meat and hides production and marketing opportunities. Special watering arrangements are needed for camels-but none of the outsiders' programs takes that into account. Also, outsiders' programs tend not to focus on floating or traveling facilities such as schools for children, health care facilities for humans, and portable sprays instead of permanent dips for livestock. One goal of the outsiders, and the representatives of the Government of Kenva, is to keep track of the pastoralists by keeping them within confined grazing blocks or group ranch areas. Since one of the most effective strategies for survival of the pastoralists is to move-and move as widely as necessary to find grazing and water-the counterproductive nature of these arrangements is obvious.

What policy considerations might be usable by outsiders?

First, both domestic and international price policies could be used to strengthen the pastoralists' position. If meat prices were allowed to rise with demand, and if prices of dairy products and hides were similarly free, the position of the pastoralist, *vis-à-vis others*, would be improved.

Another policy has to do with the export of live animals. If pastoralists were allowed to sell live animals cattle and camels particularly—at water or seaport facilities—their incentives to become more commercial and enter the marketplace would be significantly increased.

If animal disease policy focused on Kenya and its problems, rather than on the protection of Europe, and the aspiration for an international market for Kenya meat products, the total cost for health care for livestock would probably drop significantly, to the pastoralists' advantage.

Further, protection of dry season pasture from the encroachment of settlement with irrigation and cropgrowing schemes along the rivers would enhance the position of pastoralists. There could even be affirmative action programs to enlarge the portion of such dry season water points and pastures reserved for pastoralism, instead of allowing them to come into crop production.

Kenya's pastoralists are in the process of adapting their way of life, developed over centuries, to the altered conditions imposed by

changes in the social, political, and economic forces with which they interact. Over the past hundred years they have declined from being an imposing political force to a marginal position within the emerging national political body. This reduction in political prestige is reflected in several ways. They have a minor role in the economic life of the nation. They are confronted by increasing encroachment upon their resources by land uses associated with wildlife, cultivation, and forestry at a time when their own population growth is creating an increasing demand for these resources within the pastoral economy.

Recent changes in migration patterns, diet, and in attitudes toward the sale of livestock, cultivation, and wage employment, and the readiness to accept such innovations as veterinary care, the provision of artificial water sources, and the concept of land adjudication, indicate that the pastoralists of Kenya are actively responding to the constraints and opportunities of the contemporary process of national economic development. Adaptability remains an important characteristic.

Many of these responses are initiated within the pastoral systems themselves but often are clearly promoted by governmental agencies, often acting upon the advice of international bodies. A primary objective of government-initiated development activities in pastoral areas is to encourage the integration of the pastoralists into the national pattern of development. The facts that pastoralists are politically weak, together with the prevailing attitude that they are "backward" people in need of assistance, have led to the acceptance of current policies. These are not based upon the emerging patterns of development evident within the pastoral societies. They are based upon the objectives of technically biased range managers who see the existing system not for what it is, a very successful subsistence system, but for what it might be, a commercial ranching enterprise.

Many of the strategies being implemented for rangeland development by the government are aimed toward improving the animal husbandry systems, but they are too

often based upon misconceptions regarding the pastoral systems they seek to alter. A fundamental misconcepton is that pastoral societies are not changing, are not adaptive, and are merely attempting to maintain an outdated, unproductive, and environmentally unsound way of life. Were it to be recognized that, first, pastoralists offer a major national resource in terms of their livestock holdings, their range management expertise and in their capacity to maintain large numbers of people in areas which would oftenwise be unproductive; that second, they are aware of the need to change to adapt to changing conditions imposed by population growth and economic processes; and third, that they are devising new strategies within their own system, then the potential for dialogue between herders and range managers concerning appropriate development strategies might be realized.

Among the areas of concern that might be given attention in such a dialogue are:

-- the need to reach a compromise between the requirements of the herders for access to dry season grazing and water resources and those of farmers who are increasingly bringing such areas traditionally used by herders under cultivation. The diversion of highly productive rangeland to marginally productive crop land may be very wasteful to the nation in the long term, as it may reduce the ability of the indigenous livestock producers to respond to the meat shortage that is predicted by the turn of the century. The short-term political considerations in which the volatile issue of landlessness is being resolved by encouraging resettlement of farmers in marginally productive areas should be evaluated in terms of their longer term economic, ecological, and social implications.

-- the need to view the herder's livestock not as a potential contributor to desertification and rangeland degradation but as a productive resource capable not only of meeting the food needs of a large number of people, but also of providing the raw material for livestock-based industries that might contribute to the government's strategy of decentralization of economic activity and reduce the dependence of people upon wholly subsistence-related livestock production. In this context the emphasis upon large stock at the expense of small stock in most development proposals demonstrates a lack of understanding of the diversity of the resources available in the pastoral economy.

-- the need to reach compromise between government officials and increasing numbers of pastoralists who recognize the value of services such as schools, health facilities, artificial water sources, and veterinary programs. Provision of such services is, however, too often thwarted by a direct conflict over the method of delivery. Most government proposals emphasize the need for fixed locations at which the services are to be provided, locations which themselves are readily accessible to the providers. The consumers (the herders) are also locationally constrained, however, by the need to move periodically in order to ensure access to water and grazing for their stock. The veterinary department vaccination campaigns might provide a model for this in that the vaccination teams move from area to area, remaining in one place for a week or two at a time. During that period, pastoralists in the vicinity bring their herds to the vaccination site. Services which do not need to be continuously provided-such as banking, livestock sales, dipping-might well be more efficient were they to adopt a more mobile strategy. Where fixed facilities are imperative, such as schools and dispensaries, then a location maximizing access to consumers, perhaps at an intersection of major migration routes, or at local trade centers, might be appropriate.

The achievement of greater interaction between planners and pastoralists demands, however, that a situation of genuine dialogue be created. Planners should be aware not only of the value of their own expertise but also of that of the science of the pastoralist. Policy formulation, implementation, and evaluation requires not only interaction between local people and planners, but also between the planners associated with different ministries and between local and national offices within ministries. It may be a hopeful sign that the Government of Kenya has recently appointed an Inter-Ministerial Committee to oversee the development of arid and semiarid lands and that it recognized the important role of the DDC in development planning and implementation. However, the problems of improving local participation and of recognizing and building upon the wealth of experience and expertise that is the science of the pastoralists must also be tackled if national and local planning efforts are to be relevant within the target communities.

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The struggle between *continuity* and *change* among the pastoralists

NOTES

1. Edgar Owens and Robert Snow, *Development Reconsidered*. D.C. Heath and Company, Lexington, MA, Toronto, London, 1972.

2. George Axinn, *New Strategies for Rural Development*. Rural Life Associates, East Lansing, MI, and Kathmandu, Nepal, 1978.

3. Kenya Livestock Development Conference, Nairobi, March 1967. FAO, p. 2.

4. Norman N. Miller, "Boran Herdsman," *Faces of Change*, American Universities Field Staff, 4 W. Wheelock Street, Hanover, NH 03755.

5. V.A. Finch and D. Western, "Cattle Colors in Pastoral Herds: Natural Selection or Social Preference? *Ecology*, 58, 1977, pp. 1384-1392.

of Kenya is not an isolated phenomenon. In a larger sense, it is typical of other cases throughout Asia, Africa, and Latin America. As one illumination of the nature of the larger changes in the contemporary world, it is an example of the clash between continuity and change which characterizes the human condition as social systems move through the development cycle. This cycle, described elsewhere by one of the authors,15 has a place in it for every human group of the surface of the earth - and suggests that each moves, through time, to alter-

6. D. Campbell, "Response to Drought in Kenya Maasailand: Pastoralists and Farmers of the Loitokitok Area, Kajiado District. *Discussion Paper*, 267, Institute for Development Studies, University of Nairobi, 1979.

7. National Reserves in Kenya are under the control of county councils which control land use within them. Non-wildlife related activities are prohibited in National Parks but could be permitted within reserves by order of the county councils. In practice, however, access to reserves by herders is severely restricted.

8. Arid and Semi-Arid Lands Developing in Kenya. The Framework for Implementation, Programme Planning and Evaluation. Nairobi Government Printer, Kenya, 1979. native periods of increasing specialization and increasing intensity of energy transformation; through periods of decreasing specialization and decreasing quantities of the transformation of available energy resources. In this larger context, the pastoralists represent an excellent case illustrating the difficulty, the pain, the resistance, and the renewal,...the attempt at achieving "balance"...which are part of the nature of the human condition.

(July 1980)

9. John Reader, "Microcosm of a Continental Force: Tribalism in Kenya." *Smithsonian*. May 1979, p. 46.

10. Stephen Sanford. *Pastoralism Under Pressure*. Reprinted from *ODI Review*, No. 2, 1976.

11. *Ibid*, p. 50.

12. Devres, Evaluation of the Kenya National Range and Ranch Development Project (AID Project No. 615-0157), prepared by George H. Axinn, James W. Birkhead, Allan W. Sudholt. Devres, Inc., 2426 Ontario Road, N.W., Washington, D.C., 1979.

13. Sanford, op. cit., p. 54

14. Helland, op. cit., p. 48, 49.

15. Axinn, op. cit., p. 185.