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PASTORALISM AND STRATEGIES: SOCIO-ECONOMIC CHANGE IN THE
PASTORAL SECTOR OF BARINGO DISTRICT, KENYA

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ABSTRACT

This paper outlines a proposed research plan for examining socio-economic change in the pastoral economy of the lowland region of Baringo District, Kenya. Specially, it focuses on changes which are occurring because of (1) a deterioration in the "terms of trade" with the agricultural sector (i.e., Tugen Hills) and (2) increasing demographic pressure. It is suggested that to understand socio-economic change in a pastoral society a regional approach which includes neighboring agriculturalists must be adopted. This study should contribute to a better understanding of East African pastoralism through investigation of production strategies among pastoralists, especially decisions concerning agricultural production and specialization in livestock in relation to both trade relations with agriculturalists and a changing land/people ratio. Moreover, by examining social organizational changes which are taking place because of transformations in the pastoral economy attention will be given to the manner in which the developmental cycle of the household economy interacts and sometimes constrains the pastoralist decision-maker's ability to pursue certain economic opportunities. It is hoped that the proposed research, with its focus on production alternatives to pastoralism, will provide a valuable data base for the current Baringo Semi-Arid Area Development Project.

INTRODUCTION

In spite of the increased interest in African pastoralism, especially as a result of the recent Sahelian drought (cf. Dalby et al, 1977; Newman, 1975; Swift, 1977), few studies have been made which view the pastoral sector as a sub-system of a larger regional economy, of which agriculturalists are also an important component. While it is generally recognized that agricultural products form an important part of the African pastoralist's diet (Scudder, 1971), little attention has been given to the significance of changing trade relations with agricultural populations. With few exceptions (Bates and Lees, 1977; Dupire, 1962; Schneider, 1970), the effects that changes in the agricultural sector (e.g. an increase in grain prices) can have on pastoralism have not been adequately described. Thus, as a consequence of this restricted perspective, many studies of pastoral economic adaptations are only of limited value--the most noteworthy example being Dahl and Hjort's (1976) otherwise excellent analysis of African livestock economies in which they conclude that revisions in their thesis would be necessary "if means existed of converting some of the produce of the herd into agricultural goods by trade or barter" (1976: 178).

Criticism can also be made of the manner in which demographic factors have been treated in the context of pastoralist production strategies. Generally speaking, it has been shown for agricultural societies in Africa that there is a causal relationship between human population density and intensification of land use (cf. Baschart, 1973; Cleave and White, 1969; Lagemann, 1977). As population increases, the added labor in agricultural societies is absorbed by such modifications as more careful cultivation methods. Nevertheless, despite a concern for demographic factors, the manner in which pastoralists adjust to increasing human population, other than out-migration (Caldwell, 1975) and keeping more livestock of the same kind (Brown, 1971), has not been investigated. That pastoralists are capable of shifting the composition of their herd in response to decreasing land availability has only been considered by a few scholars. Recent research in the Sahel, for example, has suggested that the pastoral Tuareg have responded to the loss of traditional grazing lands by concentrating more on small ruminants as opposed to large stock (James Riddell, personal communication).

be leading to a decline in the agriculturalist's dependence on the pastoralist, and a consequent increase in the price of grain relative to the price the pastoralist receives for his products.¹

Secondly, and closely following from the previous point the role of livestock as a "means of exchange" in Baringo seems to be on the decline. In the past, the convertibility of livestock into other goods, as was the case in other regions of East Africa (Schneider, 1964), was probably universal. As Maher (1945: 118) notes, the value of livestock as a currency and store of value outweighed its role as a commodity (food) to such an extent that an individual would go through severe hunger deprivation before he/she slaughtered it for food. Yet, from what has been noted, there appear to be restrictions on the use of livestock as a "means of exchange". A preliminary survey of the Njemps location (Baringo District) which I conducted in March, 1980 reveals that the agricultural Tugen from Loboï and the highland regions are in most cases no longer willing to accept goats as payment for grain.

A third reason why Baringo is important for this study is that among the semi-arid regions of East Africa it has one of the highest human and livestock population densities (Pratt and Gwynne, 1977: 38). Since the advent of early colonial policy access to dry season grazing regions was restricted (Mbithi, 1974: 112). In especially, the loss of the Laikipia area has affected the seasonal transhumance patterns of the district's pastoralists. More recently, the influx of agriculturalists into the traditional pastoral region has decreased the land available to livestock producers. This has led to extreme demographic pressure on Baringo's scarce resources, resulting in severe environmental degradation (de Wilde, 1967: 175; Meyn, 1970: 53-54; McKay, 1970: 346) and, as one ecologist (Brown, 1963) puts it, an "overgrazing end point".

Fourthly, there is some indication that the economy of lowland Baringo is becoming more sedentary. For example, there is an increasing trend towards a more land intensive form of livestock production (small ruminants). While cattle numbers in the district only increased 10% from 1964 to 1975, the number of small stock (sheep and goats) rose 32% (Aldington and Wilson, 1968: 5 - 16; Kinyanjui

1. The best known study that depicts changes in agriculturalist/pastoralist exchange relations to the detriment of the pastoralists is Gulliver's (1962) work. Such a phenomenon has more recently been documented for the Somali (Swift, 1979) and the pastoralists of the Sahelian zone of Niger (Bernus, 1974).

and Ng'ethe, 1976: 19).² Such a transformation in herd composition seems to be related to the decline in range productivity which increasingly favors forage species (i.e., browse) that are amenable to small ruminant production. This has led to Baringo emerging as a district with one of the largest small ruminant populations in Kenya (cf. FAO, 1967; Aldington and Wilson, 1968).

In addition, there is also evidence that the role of cultivation is becoming more important for the district's pastoralists. Interviews with over thirty homestead heads in the Salabani and Ngambo sub-locations of Njemps location reveal that the amount of land under cultivation in the area has been increasing for the last ten years. Greatest increases in hectareage have been in the production of maize.

Finally, lowland Baringo is a suitable geographical region for this project because, despite the existence of exaggerated economic and ecological conditions and the fact that there has been an expressed need for socio-economic data on the area (de Wilde, 1967: 16; Livingstone, 1977: 3; Thom, 1978: 121), there has been very little social science research done in the region. For the most part, publications concerning lowland Baringo have been either highly technical agricultural reports (Knight, 1965; Dougall and Bogdan, 1958) or early explorers' or colonialists' accounts (Dundas, 1910; Johnson, 1902; Thompson, 1885). There are, however, a small number of documents (de Wilde, 1967; Kinyanjui and Ng'ethe, 1976; Thom, 1978), mainly the result of short-term survey work, which will greatly facilitate social science research in Baringo's pastoral sector. In especially, Thom's work (1978) as a part of the Kenya Marginal Lands Pre-Investment Inventory provides the necessary framework for socio-economic research in Baringo. Included in his report are important data concerning population distribution, landuse patterns and the district's livestock economy.

Hypotheses

The data summarized above provide grounds for preliminary hypotheses about socio-economic responses in lowland Baringo. Most

2. Livestock figures for East Africa should be approached with some caution because quite often they are only broad estimates.

importantly, these seem to be related to two factors: the breakdown in trade with the agricultural sector and the increasing demographic pressure. In both cases, the predictable production response would be a strategy that maximizes caloric output per unit of land; that is a shift away from an extensive use of land to that of a more intensive production system. This could be partly responsible for the increased emphasis on small stock and will likely lead to a greater investment in grain production in the near future. With livestock becoming a debased currency and marketing infrastructure in the region at a rudimentary stage of development, there would be a tendency also to view livestock solely in subsistence terms. In addition, the breakdown in trade would seem to lead to a shift towards self-sufficiency which, in turn, would necessitate greater diversification of the domestic economy.

The deteriorating environmental conditions and increasing population pressure in Baringo seems to have led to a labor intensive form of pastoralism which appears to be somewhat unique in the East African context. The pastoral system which appears to be evolving in Baringo relies heavily on added labor to cut tree branches for cattle feed and even in some cases to paddle out into Lake Baringo to gather lake grasses for fodder. In the past year, this has become especially exaggerated because of the prolonged drought conditions which have been present in the area. The scarcity of grazing resources, especially in the dry season, often necessitates the herd owner to divide his/her livestock assets into exceedingly small herds or flocks. This further exacerbates the labor situation since it becomes difficult for the herd owner to take advantage of economies of scale in the herding of his/her livestock. In part, this type of "pastoral involution" may help explain the low out-migration rate for Baringo's pastoral sector.

Nevertheless, micro-level research is needed to evaluate the labor absorption capacity of the domestic units. For if, as Upton (1973: 125) claims, the potential to incorporate increased labor in any form of pastoralism is limited, then the logical result would be for the surplus labor to seek employment, if it exists, outside the pastoral sector.

In sociological terms, the consequences of changes in the livestock economy can be described as follows: With readjustments in the allocation of land and labor, transformations are likely to occur in the domestic domain as well as in residence patterns. The emphasis on more labor intensive uses of land is likely to lead to the development of household forms and residence patterns which can more easily mobilize large amounts of labor. In cases where grain production has become important and there is a need for seasonal labor mobilization for such activities as planting, weeding and harvesting added pressure may be put on young married males to locate their households in a location where they will be able to provide seasonal labor for their father's fields. Similarly, it would be expected that the increased labor intensiveness of the Baringo pastoral system would necessitate stronger ties among kinsmen to assist in agricultural and pastoral enterprises than is usually the case in pastoral societies.

The ability of a household to respond to economic opportunities such as increasing grain production is often determined by the particular stage the domestic unit is in the developmental cycle. Drawing upon Fortes' (1958) discussion of the concept, the stages of the developmental cycle are usually divided into three phases: (1) the expansion or growth stage, (2) the fission stage and (3) the replacement stage. The first phase (1) refers to the period in the developmental cycle of the domestic unit when the unit's size is increasing through natural reproduction. This is the time when the independent household is beginning to acquire the needed family labor for expanding economic enterprises. The second (2) and third (3) stages, in turn, indicate respectively the periods in the cycle when the domestic unit begins to break up due to the marriage of offsprings and the final stage when the dissolution of the unit is complete with the death of the mother and father and the replacement of the unit by the families of their children. A household's capacity to pursue a certain economic option which involves increased use of labor is likely to be greatly enhanced if the particular unit is at the latter part of the expansion stage when it has immediate access to more labor than at other stages in the cycle. Stated inversely, a particular household or other appropriate unit which is in the waning stages of economic viability is likely to be constrained in the particular choices it can make regarding economic opportunities. A common complaint today of many of the Ilchamus "Mzee" of Baringo is that if they had had sufficient manpower in the past year in the form of herdboys they could have avoided disastrous losses in cattle because they would have been able to send the animals to the hills in the eastern part of the location. Consequently, since it is at the domestic unit

level where decisions concerning the allocation of the most important factor of production in a pastoral economy (labor) is made, careful consideration of the interaction between the domestic unit's developmental cycle and production strategies will be an important component of my research.

Methodology and Field Sites

Since my investigation will be concerned with socio-economic strategies, there will be a heavy reliance on analytical methods that deal with decision-making processes. Specifically, this will entail the analysis of production functions using linear programming techniques. The production function, a method which illustrates the "technical relationship between resource inputs and the product output" (Upton, 1973: 21), will be used to examine the relationship between the independent variables, land and labor, and their relationship to output. Importantly, this will allow for certain evaluations to be made about the labor absorption capacity of particular types of production systems, as well as the shift in labor requirements as land becomes more of a limiting factor. Such an approach also will make it possible to see the relationship between factor (land and labor) requirements and domestic organization, as well as the viability of the pastoral domestic unit under increasing demographic stress.

As Heyer (1967), Delgado (1979) and Upton (1976) have shown, one of the most operational techniques for examining factor/product relationships at the micro-level is linear programming. Such an approach, which assumes a linear relationship between the exogenous and endogenous variables, allows the investigator to examine optimal resource allocation given various constraints on resources (e.g., land, labor and capital). Although it is usually unrealistic to expect optimal resource allocation among small-scale farmers, especially given the uncertainties (e.g., weather) they face, linear programming nevertheless provides an important tool for evaluating the costs of one strategy vis-a-vis another strategy (i.e., opportunity cost). In other words, it permits the researcher to compare normative models of resource allocation (what the decision-maker should be doing given the assumptions of the model) with descriptive models (what the individual is actually doing). Furthermore, by

The second phase of the intensive research will concentrate on the more heavily pastoral region of Eastern Njemps. Specifically, the research site which has been selected is the Nosuguro area where there is low population density, very little cultivation and where the pastoral economy seems to be more intact than in the Western region. Homestead surveys will be conducted there during the dry season from November, 1980 - April, 1981 when there is much movement of cattle from Western to Eastern Njemps.

By spending time in two different settings, I will be able to better evaluate the factors affecting change in both production strategies and domestic organization. That I will be residing at the homestead-level in these two areas also will allow me, in addition to employing more formal survey methods, to utilize what the anthropologists call "the participant-observation approach". This will be helpful in understanding certain aspects of social organization which are not easily revealed through questionnaires.

Relevance to Kenya Development

The economic changes which are occurring in lowland Baringo are taking place at a time when much emphasis in Kenya is being given to the development of the country's marginal lands (i.e., Ecozones IV, V and VI) (Pratt and the Range Research Staff of the Kenya Ministry of Agriculture, 1975; Republic of Kenya, 1979), Kenya recently has embarked on an ambitious program for the development of its arid and semi-arid lands (ASALs). Among the initial ASAL districts to begin planning the implementation of development projects is Baringo. Importantly, the ASAL program emphasizes a far more integrative approach to the development of Kenya's marginal lands than has been the case in the past. Rather than focusing on a mono-sector program such as Kenya Livestock Development Projects I and II, the new orientation recommends a package that includes inter alia transportation infrastructure, social services, group ranches, rural industries, soil conservation, rain-fed agriculture and small scale irrigation.

It is regarded in an almost axiomatic fashion by development specialists. that the key to the development of the pastoral sector of Baringo District is to reduce the local dependence on livestock. This implies in the Il Chamus case an integration of more agriculture into the local economy. That my research focuses heavily on shifts from pastoralism to rain-fed agriculture should therefore be of considerable interest to those concerned with the development of Baringo's semi-arid lands. Moreover, as Norman (1977:63) and Pratt et al (1975:32) recommend, an examination of indigenous resource allocation and decision behavior is necessary in order to determine the practicality of proposed changes in either cultivation patterns or pastoralism. That most decisions concerning both the allocation of resources and the acceptance or rejection of proposed changes are made at the domestic unit level makes the investigation of the household economy and family organization that much more of a prerequisite to any proposed changes.

There are at present three group ranches proposed for implementation within the next year or so in the Njemps location. These are in the Ngambo, Mukutan and Arabel areas. That 68.3% of the Il Chamus favor individual land registration, as opposed to 28% for group adjudication (Thom, 1978:117)³,

3. There is a discrepancy in Thom's report (1978) as to the receptiveness of the Il-Chamus to the notion of group ranches. In one place, he notes that "among the Il-Chamus 93.6 per cent of those interviewed thought group ranches were a good idea (pp. 103-104)"; on a latter page (p. 114) he refutes this by saying: "Significantly the Il-Chamus favoured individual title by 68.3 per cent to 28 per cent for group registration". He goes further to say (p. 114): "This may suggest additional investigation before adjudication on a group basis gets underway".

implies that some socio-economic research is needed in relation to the proposed group ranching schemes in Njemps location.

The three designated group ranches cover two very different ecological zones which are both essential to the transhumance patterns of the Il Chamus and to some extent the Loboï Tugen. The more elevated Arabel and Mukutan areas are used extensively by the lowland pastoralists as dry season grazing during the months from December to April, when the grass dries up in the lower areas, such as Ngambo. Many of the pastoralists send cattle camps or loan cattle to stock associates in the Mukutan and Arabel areas. During the rains, on the other hand, the transhumance pattern is reversed and much of the large stock moves from East to West; that is, from the higher altitude areas to the Ngambo and Salabani sub-locations. It is well known by many Il Chamus that tick borne diseases and tsetse fly are more prevalent in the Arabel and Mukutan areas during the wetter times of the year.

It is easy to criticize the group ranch approach because few of them in Kenya are ecologically viable units, but it becomes more difficult to offer an alternative solution. In the Il Chamus case, it might be more feasible to set up a flexible land adjudication process which would allow people from the Mukutan and Arabel areas to send livestock to the lowlands - of course, with the permission of the residents - during the wet season, and the inverse procedure to take place in the dry season. This would obviously create some control problems. Yet, on the other hand, not only would it assure the Il Chamus a more rational, annual exploitation of grazing resources, but it would also institutionalize to some degree what is most likely going to happen anyways.

On a more macro-level, the research proposed here should be of general value to Kenya in its concern for the development of the semi-arid areas. Many of the economic, ecological and demographic variables present in Baringo can be similarly found in parts of Meru, Embu, Machakos and Kitui Districts where respectively Great Britain's Ministry of Overseas Development (Meru and Embu), the European Economic Community and United States Agency for International Development have either begun or are planning to begin development projects in the near future (in February, 1980 the World Bank began its Baringo Project). The emphasis in the project on analyzing alternative strategies to pastoralism in Baringo is one which should have general applicability to many semi-arid regions of Kenya which are, for the most part, undergoing similar changes.

Questionnaire 1: Residential Patterns

Household Head _____ Date _____

Household # _____

Neighborhood _____

1. At What age did you set up an independent household? _____
Was this immediately after you were married? _____
If not, why not? _____

Did you live at your father's household after you were married? _____

2. At what age do you expect your children to marry and set up independent households? _____
When they do, what will you do to compensate the loss of their labor in economic activities? _____

3. Are members of your family leaving the household earlier than in past years? Yes _____ No _____. If so, what are the reasons? _____

4. How long have you lived in this residential location? _____
What was the reason you set up house in this location? _____

5. What are your relations (kin, age-mate, affine, etc.) to your neighbors?

6. Concerning herding and cultivation, have you had to depend on your neighbors more in recent times? Explain

7. After you set up your independent household, did you still depend on your mother's relatives for assistance in herding, etc? Explain

To what extent, do you depend on your wife's relatives for assistance in herding, agriculture, etc?

8. Discuss all your residential moves that you can remember?

9. Do you feel that homesteads are more or less crowded than was the case in the past? If there has been a change, what do you feel the reason is for it?

10. Can you tell me the history of this neighborhood? When did people move in or out? _____

For what reasons do people usually leave? _____

How does one acquire membership to the neighborhood? _____

11. Are the pastures surrounding the neighborhood only for the use of the members of the neighborhood? Yes _____ No _____ How does one acquire access to pastures and water? _____

Questionnaire 2: Herd Management

Household Head _____

Date _____

Household # _____

Neighborhood _____

1. Do you feel that there is sufficient grazing areas in the dry season?

Explain _____

2. Which pastures do you move your animals to when the dry season comes?

Is it the same grazing area which you have been going on traditionally? _____

Where do you graze your animals during the wet season? _____

3. Do you have conflicts with agriculturalists over the use of land? If yes, explain. _____

Has it been getting worse in recent years? _____

Do you ever make arrangements with agriculturalists to herd your animals on their harvested fields? Yes _____ No. _____

4. Are there too many people and too many animals in the area? Yes _____ No. _____

Has the situation worsened in recent years? Explain _____

5. Does your neighborhood ever try to restrict grazing from certain areas until the onset of the dry season? Yes _____ No. _____. If not, did they in the past? Yes _____ No _____. Would you be opposed to any measures which would restrict grazing from certain areas in the wet season? Yes _____ No. _____

If yes, why? _____

6. How many days per week do you water your cows _____ goats and sheep _____
(In the dry season).

7. What factors affect the movement of grazing units? Rank them in importance
(1,2,3, etc.)

- _____ Range productivity
- _____ Climatic factors
- _____ Availability of water
- _____ Access to markets where foodstuffs can be purchased
- _____ Availability of labor to herd animals
- _____ Access to pastures under control of territorial unit or clan group
- _____ The location of homestead's agricultural fields
- _____ Other (Specify) _____

8. Do you herd mbuzi and kondoo separate from ng'ombe? Yes _____ No. _____
If not, what are the benefits of herding small stock with large stock? _____

9. Are there specific range areas where you feel only small stock do best?
If yes, explain _____

10. Which household units do you combine your herd for herding purposes and
what are their relationships to you? _____

- 1). _____
- 2). _____
- 3). _____
- 4). _____
- 5). _____

11. Do you separate your herd from your household during the dry season?
Yes _____ No. _____. If yes, which animals remain at the household (milk cows,
mbuzi na kondoo, etc.) and which go to the herding camps _____

12. If you loan your animals to herders, how many times per week (month) do you visit your herd? _____. (Directed to household head) When deciding who to loan animals to which members of the household do you seek counsel? _____

13. Over the past ten (or five) years have your herds of Mbuzi and Kondoa grown faster than your herds of Ng'ombe? _____ If so, why? _____

Which of the two do you now favor (mbuzi au kondoa)? Explain _____

Discuss approximate herd changes in the past five years:

Date	Ng'ombe	Mbuzi	Kondoa
1975			
1976			
1977			
1978			
1979			

14. Do you feel that investing in livestock is more or less profitable than in the past? Explain _____

15. Which is a better investment land or livestock? Explain _____

If you or your neighborhood could acquire a land title would you be willing to invest in the improvement of grazing areas? _____

16. If you were to lose most of your herd in the near future which options would you consider? _____

When one loses most of his herd today is it becoming more difficult to rebuild your herds? Explain _____

Questionnaire 3: Agricultural Production and Domestic Organization

1. Does labor for crop production ever compete with labor for herding? Yes _____
No _____ If yes, which of the two activities is given priority _____

2. During periods (planting, harvest, etc.) when you need to mobilize much labor, do you depend on _____ agnates _____ affines _____ members of the neighborhood _____ age-mates _____ hired labor _____ other (Specify): _____

3. Do you or members of your household ever help to plant, weed or harvest others' fields? Explain _____

4. Name all individuals who you can depend on during times when you need agricultural labor? Discuss your relationship to them _____

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

others:

5. If there are labor cooperative groups, at the beginning of the agricult. season which farms have ^{first} access to their labor? (Is preference given to the richer farmers?) _____

6. How many years out of five do you expect low rainfall to adversely affect crop production? _____ For each of the major crops, what does a bad year in rainfall do to the yield of each crop? _____

7. When there is a delay in the rains which crops do you begin to plant and which do you not plant _____

Questionnaire 4: Marketing

Household Head _____ Date _____

Household # _____

Neighborhood _____

1. Where do you buy your foodstuffs? _____

Has the location where you acquired foodstuffs changed in the past ten (or five) years? If yes, explain _____

2. Do you buy more grain in the post-harvest season when prices are lower and store it? Explain _____

3. Do you buy more foodstuffs at markets today than in the past? _____
Is more of your cash income going to buy grain? _____

4. How much of your grain do you acquire by exchanging livestock or livestock products directly for grain? _____ Is this practice less common than in the past? Explain _____

_____ If so do you wish it was not? Yes _____ No _____.

5. How far must you travel to livestock markets and how frequently are they held? _____
Do you wish they were held more frequently? Yes _____ No _____ If yes, why? _____

6. Do you sell more livestock and livestock products today than you did in the past? If so, what is the reason:

A). Better price in both formal and informal sectors

B). Need for more cash: 1. to pay taxes, 2. to educate children, and

3. to purchase foodstuffs (Explain others _____)

C). To limit herd size and thus reduce grazing pressure

D). Because of government enforcement or grazing quotas

E). Other _____

7. What was your income from livestock sales in the past year? _____ shs.

8. Do you usually sell livestock to the representatives of the LMD or to private traders? Explain _____

9. Do you ever sell livestock at one time of the year and buy some back at a latter time? Explain _____

10. Do you feel that the markets or agriculturalists afford a secure source of foodstuffs/^{where} food can be purchased anytime of the year? Yes _____ No _____
If no, would you be willing to sell more livestock if you could depend on markets or other sources to supply you with sufficient foodstuffs at a fair price? Yes _____ No _____

11. Approximately how many times do you go to a market or other source and find out that they do not have the foodstuffs you wish to purchase?

- A) 1 out of 10
- B) 3 out of ten
- C) 5 out of ten
- D) 7 out of ten
- E) Almost always

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