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PASTORAL DEVELOPMENT NETWORK

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**A COMPARISON OF TWO SURVEY METHODS ON PASTORAL
TURKANA MIGRATION PATTERNS AND THE IMPLICATIONS
FOR DEVELOPMENT PLANNING**

by

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INTRODUCTION

Development projects in arid and semi-arid East Africa aimed at assisting pastoral nomads have encountered difficulties which have too frequently resulted in failure (U.S.A.I.D. 1980; Goldschmidt 1981).

One reason for the low success rate is that projects tend to be planned and implemented without an adequate understanding of the pastoral system. Projects are frequently based on the assumption that Western ideas and behaviours form appropriate models for the pastoral situation or that what pastoralists say they do ('ideal behaviour') and what they have been observed to do ('actual behaviour') are accurate representations of the pastoral system. In the first case, the local social system has been ignored; in the second case, the knowledge of pastoral behaviour is insufficient for effective planning. These assumptions are often reinforced by the results of the studies on which development planning is based.

In general, two types of studies are conducted among pastoralists: the macro-level or broad geographical survey usually carried out by a development project¹, and the micro-level or intensive local study conducted most often by researchers. While the data collected by the two types of studies are not completely discrete, the nature of the two approaches tend to produce rather different results. Macro surveys tend to produce information resembling ideal behaviour by collapsing incomplete data sets into generalized patterns of action whereas micro studies tend to result in detailed accounts based on the actual behaviour of a limited number of individuals.

People everywhere have a conceptual idea of what they would do if conditions permitted. Although the ideal may vary among individuals of a group, a general achievement goal is discernable. The problem, however, is that conditions rarely allow for ideal behaviour to be realized and as such this concept alone provides a weak basis on which to build development programmes. Actual behaviour is usually determined by observing or inquiring about peoples' actions over a relatively short period of time and is directly related to conditions as they exist at that time. To a development agency, a knowledge of actual behaviour is useful only if it can be implemented as a predictor of future actions, an assumption which may not necessarily be

true. For planning purposes, then, neither approach as such is completely adequate.

To illustrate this point, we have examined the results of two studies concerning the movements of pastoral Turkana of Kenya: a macro-level study commissioned by a development agency, The Turkana Rehabilitation Project, and a micro-level study funded by the National Science Foundation for social science research. The following discussion describes the two studies, their inherent differences, and what implications these differences may have for development.

BACKGROUND

The Turkana District of northwestern Kenya covers a semi-arid region (Pratt and Gwynne 1977) of approximately 66,887 square kilometers. The District is bordered by the Ugandan escarpment in the west, the Sudan and Ethiopian borders in the north, Lake Turkana in the east, and the Kenya Districts of West Pokot, Baringo, and Samburu in the south (Figure 1).

The environment is harsh and unpredictable with high ambient temperatures and an unreliable two to three month 'wet season' when precipitation is most likely. The advent of the rains, however, is not a guarantee of equal rainfall distribution throughout the District. Typically, precipitation is sporadic and scattered resulting in differential vegetation growth, the pattern of which changes yearly (Little and Johnson 1985). After the brief rainy period, the land becomes increasingly arid as the 'dry season' progresses, vegetation becomes scarcer and water resources more scattered until almost drought-like conditions exist by the end of the yearly cycle.

Of the estimated 232,740 Turkana in the District, 72 per cent are pastoralists (EcoSystems, Ltd. 1985) subsisting primarily on the milk, blood, and meat derived from their mixed herds of sheep, goats, cattle and camels. In general, all animals and people of an extended family will joint together in the wet season in a particular 'ere' or 'home area'. If forage resources are abundant many families and their herds may live in close proximity to one another forming a neighbourhood

association or 'adakar'. As the dry season begins families or segments of families start to separate and livestock herds are partitioned into species-specific and production-specific categories (McCabe 1983). This partition is designed to balance the nutritional and water requirements of the livestock with the nutritional needs and the availability of labour. Once separated, each herd, usually managed by a young adult male will pursue a movement orbit independent of the location of the major 'awi' or 'homestead' which consists of a herder-owner, his wives, and children. Typically, satellite herds will rejoin the major awi in the following wet season.

This seasonal variation in people and livestock concentrations is clarified in the results of the EcoSystems survey. In the wet season of 1982, people were concentrated in 26 per cent of the District and livestock in 42 per cent while during the dry season of 1984 people and livestock had expanded into 46 per cent and 56 per cent of the District, respectively (EcoSystems Ltd. 1985).

Various problems continually plague the Turkana and their animals throughout the year: the constant search for forage and water, recurrent droughts, sporadic epidemics, and persistent hostilities with neighbouring tribes. Individuals and families who are unable to survive as pastoralists move out of the District or to the settlements to become agriculturalists, fishermen, wage earners, or recipients of famine relief.

FIELDWORK METHODS

The broad geographical or macro survey was conducted throughout the northern half of Turkana District for 6 weeks in 1984 as part of the 'Turkana District Resource Survey' carried out by EcoSystems, Ltd. for the Kenyan Ministry of Energy and Regional Development and the Turkana Rehabilitation Project (EcoSystems, Ltd. 1985). One aspect of the survey was to collect demographic information including human and livestock migration routes. Pastoral Turkana were interviewed about these movement patterns. Questions focused on a) the seasonal locations of awis and livestock under conceptually ideal conditions: sufficient forage, water, and peaceful relations with neighbouring tribes,

and b) the actual wet and dry season locations during the previous year (1982-83). When differences between the conceptual ideal and actual migration routes were observed, reasons for these variations were solicited and recorded.

Questions concerning the ideal behaviour are important not because they represent reality as suggested by Johnson (1969) but rather because ideal patterns can provide the base-line model necessary for interpreting the phenomena associated with actual behaviour. Short term studies such as Gulliver (1951) can result in a situation where observed behaviour is assumed to represent a stable migration pattern. Because these observational patterns are based on a season-specific reality and not a conceptual ideal they are inadequate as models for the explanation of subsequent yearly fluctuations in behaviour.

Fieldwork in South Turkana consisted of an intensive micro study during a 28 month period, 1980-82, with the Ngisonyoka subsection in conjunction with the South Turkana Ecosystems Project, an interdisciplinary research project composed of anthropologists, ecologists, and physicians. Specific information concerning the moves of the major awi and the satellite camps was collected through interviews and by moving with the awis. Each move during the study period was mapped and factors affecting the herders' decisions on locations, timing, and frequency of moves were determined and recorded.

THE SAMPLE

North and South Turkana

For the purposes of this paper only one subsection in North and one in South Turkana will be examined.

The Ngikwatela live in the northwest corner of the District (Figure 1). The Lotikipi Plains, located in the centre of this area is a flat, open expanse bordered by four mountain ranges: the Lokwanamoru in the northeast, the Pelekech in the southeast, the Songot in the southwest, and the Mogila in the northwest (Figure 2). During the wet season the Plains become a lush grassland which deteriorates into iso-

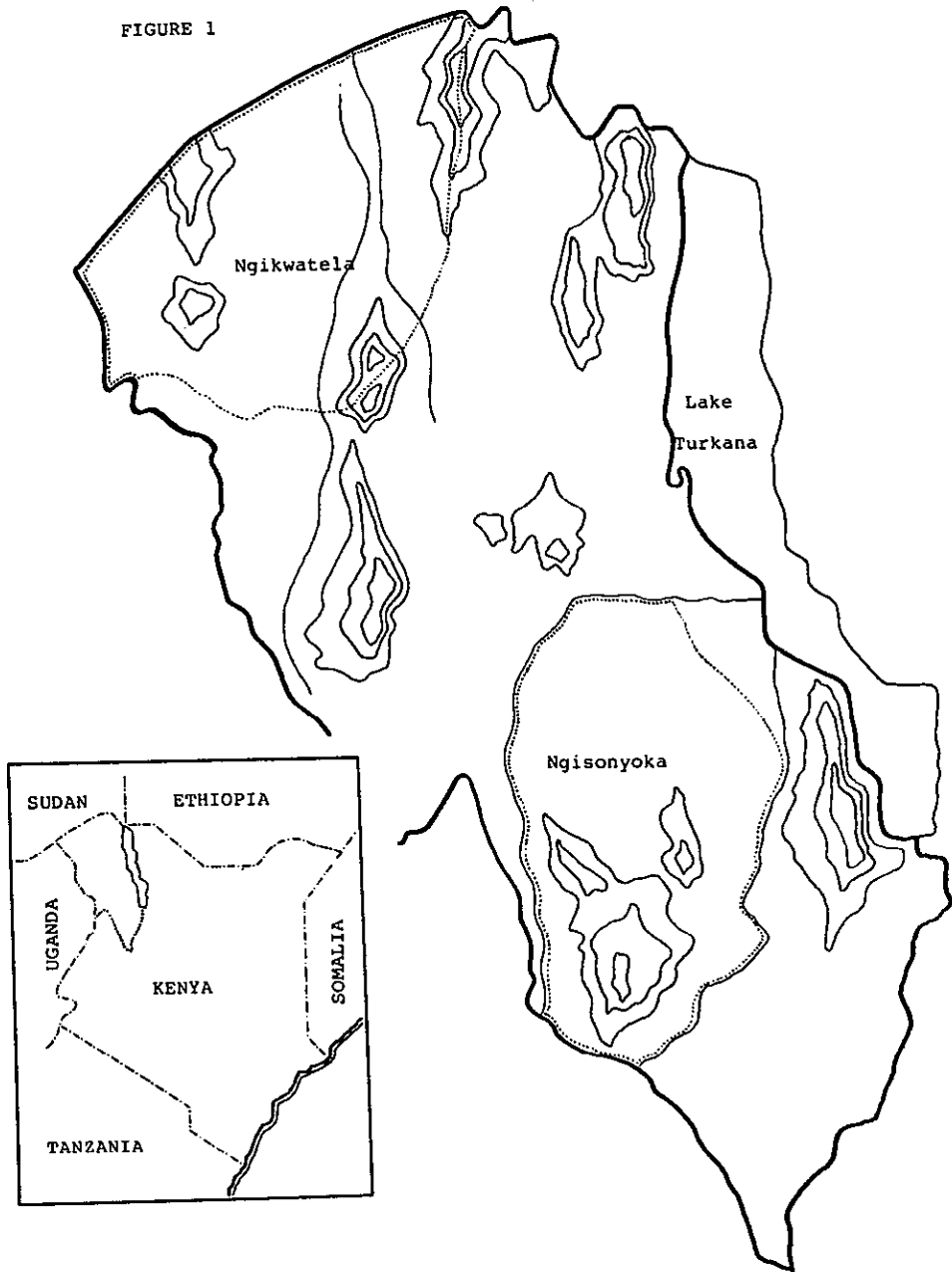
lated pockets of parched vegetation as the dry season progresses. Trees and bushes are found only along the banks of the two major rivers, the Nakalale and the Tarach; rivers which may only flow for a few days a year.

In the Ngikwatela subsection area, like elsewhere in the District, some Turkana are pastoral and some are settled. The Turkana of this area number approximately 24,517 in the pastoral sector and 4,311 in the settlements (EcoSystems, Ltd. 1985). Some of the settlements are relatively new, others date back to colonial times, and most have served as centres for food distribution since the 1979-81 drought/disease crisis.

The migration data presented in this paper for North Turkana are based on the interviews of 89 Ngikwatela herdowners.

The Ngisonyoka subsection is located in the southwestern portion of the District (Figure 1) which is bordered by the Katigithagiria Hills in the north, the Kerio River in the east, the Turkana District boundary in the south, and the Turkwel River in the west. The area is bisected by a range of basement complex mountains. Volcanic hills and plateaus are scattered throughout the northwestern and southeastern regions and the two large plains, the Toma and the Naroo, are situated in the western portion of the section. Shrubs and bushes are common in this area but like herbaceous plants their growing season is limited due to the short duration of the rains. Only trees growing along the major river systems remain green all year (Ellis et al. 1982).

FIGURE 1



In the Ngisonyoka area pastoralists (estimated at 24,517 in 1984, EcoSystems Ltd. 1985) subsist almost solely on their livestock (Galvin 1985) while the settled population of approximately 15,734 (EcoSystems Ltd. 1985) earns a living from agricultural and wage earning pursuits.

The migration patterns for this area are based on information provided by a detailed study of two pastoral herdowners.

RESULTS OF EACH APPROACH

Macro-level Study

The results displayed in Table 1 show a clear disparity between the conceptual ideal and actual behaviour. The model situation according to 91 per cent of the herders is to utilize the plains in the wet season and the mountains in the dry. The majority of those interviewed said that under ideal conditions they would return to their home areas near the Tarach River in the wet season and with the advent of the dry season they would leave the plains and go to the mountains: 57 per cent to Mogila, 14 per cent to Songot, 8 per cent to Lokwanamoru, and 3 per cent to Pelekech.

TABLE 1: IDEAL AND ACTUAL (1982-83) HOUSEHOLD MIGRATION ROUTES OF NGIKWATELA PASTORALISTS

| <u>ROUTES</u> (WET TO DRY SEASON) | <u>% IDEAL</u> | <u>% ACTUAL</u> |
|---|----------------|-----------------|
| Tarach River area to Lokwanamoru Mtns. | 08 | 04 |
| Lokwanamoru Mtns. to Tarach River area | 03 | 02 |
| Tarach River area to Pelekech Mtns | 03 | 02 |
| Pelekech Mtns. to Tarach River area | 06 | 16 |
| Tarach River area (year-round usage) | 03 | 47 |
| Tarach River area to Mogila Mtns. | 57 | 00 |
| Tarach River area to Nanam and Lopuorin | 06 | 13 |
| Tarach River area to Songot Mtns. | 14 | 07 |
| Kalobeyei to Nanam | 00 | 02 |
| | 100 | 100 |

N=89

A major determinant in route direction is water accessibility; wells in the mountains are usually owned by a family and their location influences these dry season movements (McCabe 1983).

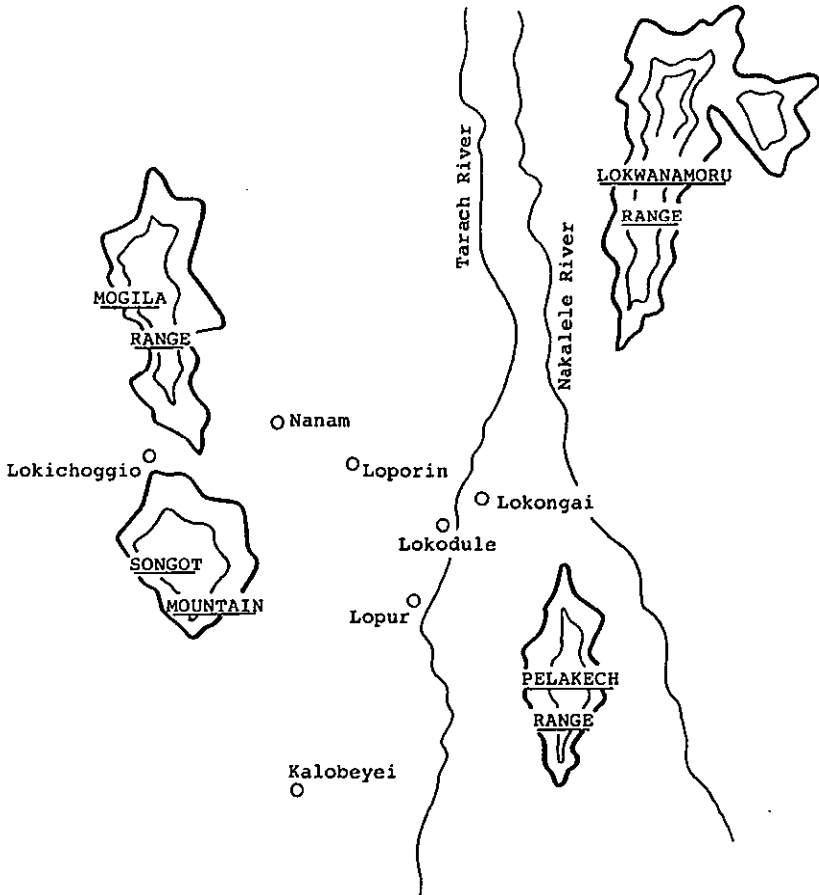
The actual migration patterns for 1982-83, as mentioned above, bear little resemblance to the ideal. Only 27 per cent of the herders moved from the plains to the mountains in that year and while 16 per cent of these went to Pelekech none went to Mogila.

The observed differences between the ideal and the actual migration patterns were determined to be due to two factors: the presence of raiding and settlements.

Inter-tribal raiding for livestock is a common occurrence in Turkana District. The tribes with whom the Turkana are on unfriendly terms vary through time, but the outbreak of hostilities always results in security problems in areas bordering 'enemy territory'. Because of such hostilities Mogila has been insecure since 1981 and the Lokwanamoru route has been the site of sporadic disturbances since 1980. While it is clear that border insecurities have resulted in more people and animals occupying a smaller area, raiding was probably not the only factor involved in the usage patterns of 1982-83.

Many of the settlements on the Lotikippi Plains have been centres for food distribution since the 1979-81 drought. The lower Tarach River area, where the settlements of Lokangai, Lopur, and Lokodule are located (Figure 2), was used year-round by 47 per cent of the herders during 1982-83, but only 3 per cent had listed this pattern as ideal. This increased usage of the Tarach River grazing area and of the route to the settlements of Nanam and Loporin (a new settlement since 1979-81 crisis) has certainly been influenced by the presence of foreign aid and when assistance is withdrawn the importance of these migration areas will probably be reduced.

FIGURE 2



Anomalous and contradictory behaviour are suggested by moves involving only small groups. Frequently macro analyses assume that data of this type represent errors based on misinformation which are then removed from the results, but these apparently irregular behaviour patterns may, in fact, be of key importance to a full understanding of pastoral movement. Two apparently contradictory moves - from the mountains in the wet season to the plains in the dry - are the Lokwanamoru Tarach and the Pelekech-Tarach routes (see Table 1). While it would appear that these seasonal pattern reversals represent errors in the data, further inquiry revealed that some Turkana do use the mountains in the wet season to avoid malarial outbreaks and to prevent the extensive hoof damage to cattle than can result from standing on soggy ground. If wet season migration to the mountains occurs in conjunction with moves to the plains, then the Kalobehei to Nanam route used by several families in 1982-83 may not be an anomaly but rather another example of variation that is normal in the traditional system.

Micro-level Study

The results of the micro-level study revealed a much more complex pattern where pastoralists have no fixed residences nor fixed migration routes. General trends can be abstracted from the data, but the ability to change livestock migration patterns (both among herdowners and between years) may be the key adaptive response of the pastoralists to the unpredictably varying environment (McCabe 1983; McCabe et al. 1986).

Whenever possible families and their animals will be together in their home area in the wet season. As the dry season begins families will start to leave the home areas and as the dry season progresses a herdowner may have separate herds of cattle, milking camels, non-milking camels, milking small stock, and non-milking small stock. An individual herdowner will decide if and when to separate particular herds according to forage conditions, labour availability, and the species mix of his livestock herds.

Although these general statements can be made an awareness of the degree of variation in movement patterns may be as important to development planners as an understanding of the general trends. Table 2 represented below demonstrates the extent that migration patterns vary among years and between herdowners.

TABLE 2: THREE YEAR MOVEMENT PATTERNS FOR TWO NGISONYOKA FAMILIES

| <u>FAMILY</u> | <u>MOVEMENT PATTERNS</u> | <u>YEARS</u> | | |
|---------------|--------------------------|----------------|----------------|----------------|
| | | <u>1979-80</u> | <u>1980-81</u> | <u>1981-82</u> |
| | Total Distance | 159 km | 208 km | 149 km |
| LOP | Number of Moves | 12 | 18 | 14 |
| | Mean Distance Per Move | 13.3 km | 11.6 km | 10.7 km |
| | Total Distance | 122 km | 60 km | 323 km |
| LOR | Number of Moves | 11 | 7 | 19 |
| | Mean Distance Per Move | 11.1 km | 8.6 km | 13.5 km |

The data for these two herdowners suggest very different herd management strategies. Although a detailed discussion about the two families is beyond the scope of this paper (for a more thorough account see McCabe 1985), an examination of the year 1980-1981 illustrates the major points.

The year 1980-1981 saw the culmination of a severe drought which affected all of northern Kenya. Rains had failed two years in a row, livestock were dying in great numbers, and people were hungry. Lop was the household head of a large family (3 adult males, 4 adult females, 4 adolescent males, 2 adolescent females, and 11 children) and substantial stock holding (122 cattle, 80 camels, and 35 small stock). Lor was the household head of a small family (2 adult males, 3 adult females, 1 adolescent female and 4 children) and a correspondingly small livestock herd (45 cattle, 30 camels, and 100 small stock).² As forage conditions deteriorated in the dry season Lop was forced to move frequently in search of food for his livestock. Lor, requiring

less forage for his limited livestock holding, chose to limit the energy expenditure required by frequent moves and to exploit the sparse vegetation remaining in his home area.

Each year presents a changing mosaic of forage conditions, water availability, security risks, herd sizes, and labour requirements. Each herdowner responds to these changing factors according to his own abilities and perceptions.

DISCUSSION

From the above results it is clear that the macro and micro studies provide very different information on pastoral movements. These differences are directly related to the amount of time spent in each study.

The geographical survey in North Turkana was conducted over a large area in a relatively short period of time. Information from the various interviews was generalized and aggregated in order to produce patterns - patterns which represent modal group behaviour. These patterns also give the impression that the migration routes are stable, that movements only occur between seasons and then in straight lines, and that large numbers of people and livestock move together as a unit. Those routes which in 1982-83 deviated from the ideal migration patterns were determined to be a result of major influences - raiding and settlements - and even then, with only one exception, the actual routes differed from the ideal only in usage intensity and the size of the area utilized, thereby reinforcing the assumption of route stability. However, while these general migration patterns are important to development planners for understanding general trends, their utility for actual scheme implementation is limited. For example, the Tarach grazing area covers a region of approximately 2,000 sq. kms. within which the names of many small localized home areas are known to the Turkana but not to the survey team. The inability to map exact home area locations results in a situation where herders utilizing the 'same' home area may, in fact, be an appreciable distance apart.

The information from South Turkana was collected over a long period of time and focused on a small group. The information is presented by each case study and reveals a large range of individual behaviours. These findings suggest that routes are not fixed, the frequency of moves varies, and that variation may be one of the principal adaptive features of the Turkana subsistence system (McCabe 1983).

Migration patterns differ among herdowners and between years not only because of major upheavals such as raiding, droughts, and epidemics, but also because of yearly fluctuations in forage conditions, water resources, herd sizes, and labour availability.

Implications for Development

From the comparison of the two approaches described in this paper, we suggest that the following problems could arise if development schemes are implemented based on the assumption of stable migration routes.

Development interventions which assume fixed routes will probably be unsuccessful; some projects will be underused by the pastoralists because their potential benefit will frequently be outweighed by other more important environmental considerations. Projects which encourage limiting movement to defined routes may, in fact, reduce the pastoralists ability to cope with environmental conditions. A cattle dip, for example, may be used only in those years when the herds are in that vicinity, therefore limiting the project's effectiveness in disease control, while other projects, such as boreholes, may produce a typical and prolonged concentrations of livestock in small areas, resulting in environmental degradation.

Interventions which reduce the pastoralists' ability to respond on an individual basis may, in fact, reduce the long term survivability of the group as a whole. For example, land alienation can result when areas assumed to be underused are put to 'better use', e.g. agricultural schemes, but the removal of these potential pastures could have severe consequences for pastoralists, especially in bad years.

CONCLUSIONS

Development projects in arid and semi-arid regions are usually based on the premise that pastoralists behave as a group. The geographical or macro approach to data collection reinforces this concept by collapsing incomplete individual behaviour patterns into broad generalized categories which represent collective decisions and collaborative moves. Micro-level studies suggest that this oversimplification can be misleading and may result in basic conceptual differences which influence the structure of development schemes along lines alien to the traditional pastoral system.

Macro-level surveys do not have the time or the personnel necessary for an in depth understanding of the various factors which influence pastoral movement and micro-level studies take too long and are too focused to provide the rapid dissemination of information for a large area that development planning requires. From the development standpoint, an ideal situation would be one where certain aspects of the micro-level approach are incorporated into the questions asked during a geographical survey. The results from this 'hybrid' approach would produce a more accurate picture of the pastoral system and thereby could assist planners more effectively in determining pastoralists' needs, site locations, and operational structures.

While it is unrealistic in most cases for development programmes to use both approaches fully, the employment of one survey at the complete exclusion of the other may be responsible, in part, for a project's failure. We suggest that the most realistic approach for development programmes is to incorporate an awareness of the implicit variation found in the pastoral context into the broad geographical surveys.

To accomplish this a knowledge of ideal and actual behaviour and how they interrelate is essential. Ideal behaviour does not represent a model of reality because conditions varying between area, among individuals, and through time severely limit the achievement of this conceptual goal. Actual behaviour, since it is directly influenced by conditions existing during the observation period, cannot serve as an

adequate predictor of future behaviour because as conditions vary, actions will change as well. While neither ideal nor actual behaviour alone is sufficient for development planning, the interaction between them can serve as a predictive model -- the formula: ideal behaviour + conditions = actual behaviour. If the ideal behaviour is approached as an achievement goal, then actual behaviour is not randomly distributed but based on the closest attainment of the goals given current conditions, then planners have a base-line model with which to predict behaviour. That is, if condition x exists then behaviours a or b are most probable.

Field work involved in the hybrid approach would consist of cataloguing ideal behaviour, assessing the types of intervening conditions, and determining the range of actual behaviours as they relate to each type of condition. Due to the existence of individual variation in behaviours, an adequate sample size (one large enough to determine general patterns and to include behaviours at variance to the modal) would be essential for planning the type and location of development projects in order to assist the largest number of people and livestock. The extra time and effort spent in using this hybrid approach would therefore directly improve a project's chances of success.

NOTES

1. Macro-level surveys referred to in this paper concern ground surveys not aerial surveys. Data collected by aerial surveys consist of the actual behaviour of people and livestock at the time of observation.
2. The cattle were not at the awi, but herded by Lor's half-brother.

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The views and interpretations in this article are ours alone and are not meant to represent the views of the above mentioned agencies.

REFERENCES

- EcoSystems Ltd. 1985. Turkana District Resources Survey 1982-1984. Final Report to the Government of Kenya, Ministry of Energy and Regional Development, Turkana Rehabilitation Project Nairobi Kenya.
- Ellis et al. 1982. 'Aspects of Energy Consumption in a Pastoral Ecosystem: Wood Use by the South Turkana,' IN Wood Use in Kenya, C. Barnes and P. O'Keefe (eds.), Scandinavian Institute for Anthropological Studies, Uppsala.
- Galvin, K. 1985. Food Procurement, Diet, Activities, and Nutrition of Ngisonyoka Turkana Pastoralist in an Ecological and Social Context. Ph.D. Dissertation, State University of New York at Binghamton.

- Goldschmidt, W. 1981. 'The failure of Pastoral Economic Development Programs in Africa,' IN Future of Pastoral Peoples. J. G. Galaty, D. Aronson, P. C. Salzman, and A. Chounard (eds.), Proceedings of a conference held in Nairobi, Kenya, 4-8 August 1980; I.D.R.C., Ottawa.
- Gulliver, P. H. 1951. A Preliminary Survey of the Turkana. New Series Comm. School of African Studies.
- Johnson, D. 1969. The Nature of Nomadism. Research Paper No. 118, Department of Geography, University of Chicago.
- Little, M. A. and B. R. Johnson. 1985. 'Weather Conditions in South Turkana, Kenya,' IN South Turkana Nomadism: Coping with an Unpredictably Varying Environment. R. Dyson-Hudson and J. T. McCabe (eds.), Appendix I, HRAFLEX, New Haven, Connecticut, in press.
- McCabe, J. T. 1983. 'Land Use Among the Pastoral Turkana,' Rural Africana. (15-16), pp. 109-126.
- McCabe, J. T. 1985. Livestock Mangement among the Turkana: A Social and Ecological Analysis of Herding in an East African Pastoral Population. Ph.D. Dissertation, State University of New York at Binghamton.
- McCabe, J. T., R. Dyson-Hudson, P. W. Leslie, P. H. Fry, N. Dyson-Hudson, and J. Weinpahl. 1986. 'Movement and Migration as Pastoral Responses to Limited and Unpredictable Resources,' IN Ecology of Nomadic Turkana Pastoralists. Proceedings of the Conference 'Arid Lands Today and Tomorrow,' Tuscon, Arizona, 20-24 October 1985; in press.
- Pratt, D. J. and M. D. Gwynne. 1977. Rangeland Management and Ecology in East Africa. Hodder and Stoughton, London.
- U.S.A.I.D. 1980. 'The Workshop on Pastoralism and African Livestock Development,' A.I.D. Program Evaluation Report, No. 4, Washington, D.C.