



Annual Report to the Project

NEW WAYS FOR OLD WORLDS: DEVELOPMENT AND RESEARCH

A New Approach to the Ethiopian Rangelands Development Project

(Third Livestock Development Project)

March 1981

**The Ethiopian Cooperative Rangelands
Production System Study Programme
Addis Ababa
Ethiopia**

FOREWARD

In May 1980 a Memorandum of Understanding was signed between the Rangelands Development Project (RDP) and ILCA. This memorandum initiated the Ethiopian Cooperative Rangelands Production Systems Study Program which has been to date jointly funded by the RDP and ILCA.

The following report is a summary of the work carried out during the first six months of this program. The report also describes a new approach to the Ethiopian Rangelands Development Project, where-by an integrated production systems study program will provide information and direction to all project activities, and will be the means by which new projects, or intervention programs can be planned.

It is important to understand that the program is essentially one where research and development are integrated activities. The program is a cooperative one, its objectives and target systems are clearly defined, and it operates totally within the context and with the committed involvement of the RDP. It is this aspect which this forward wishes to acknowledge.

N. J. COSSINS
MARCH 1981
ADDIS ABABA
ETHIOPIA

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Best Available Document

NEW WAYS FOR OLD WORLDS - Research and Development

During the last fifteen years a great social and technical experiment has been on trial in Africa. This experiment, the development project concept, was seen by planners, politician and technocrats alike as the way to usher in a new era. In the event, this view was clearly one sided. Slow and tedious evolutionary or action - response changes were to be superceded. Groups or whole societies were to be propelled from an 'undeveloped mode' into a 'more developed mode', by one, or a series of dramatic quantum jumps. Nothing of the sort has happened particularly with livestock development projects, and more often than not, quantum jumps if they have occurred have been backwards.

To begin with, the two modes, 'undeveloped' and 'developed', were almost always defined in terms of economic and physical achievement factors which are measureable, while ignoring essential social or fundamental 'happiness factors' which are not. Even as development projects were first being implemented there were a few forward thinkers, such as Koestler¹, who warned of the dangers of reducing complex phenomena to simple elements accessible to quantitative measurement in that specific characteristics, particularly man, may be lost in the process. In so many cases, in so many development projects, man has indeed been lost.

We are also beginning to realise that the basic 'more - better - quicker economic approach is not necessarily the key to a better life. Things which make people happier and more satisfied are more important than those that simply make them richer. Growth really only makes sense if it is set in the context of real social objectives. Maintaining the balance and integrity of a system may be more important than stimulating its growth and change.

And what is a system, what is a society? These are questions the development project concept has also glossed over. It is increasingly clear that the worlds in which different societies live are distinct worlds and not merely the same world with different labels attached. Not only may languages be different but the ideas behind a language may also be different. The basic assumption has been made that societies will have to adapt to technologies when it is almost always the case that technologies must adapt to societies, unless dangerous or deteriorating situations are to result. Almost always we know what can be done, but we seldom know what should be done.

¹ A Koestler: The Ghost in the machine 1967

Pastoralists in Africa, generally live in a borderline world where errors of judgement or climatic variations can and do result in a far more prolonged and serious situation than would pertain say for agriculturalists. Pastoralists are neither simple nor fools. They know, intuitively if not consciously, that new decisions cannot be taken lightly. The risks of simply living in a pastoral system are high, and experimentation is a dangerous luxury. Change is naturally resisted, and an evolutionary 'stubbornness factor' may even have evolved as part of a pastoralist's psychological make up.

The results of pastoralists intuitive reactions to development and change has been universally the same throughout Africa. Governments and development agencies have come to regard them as difficult intractable people, who selfishly refuse to allow their apparently large livestock holdings to be regarded as a national rather than a societal asset, and who insist on retaining an introverted self-sufficient mode of existence, rather than change to an interdependent market mode of existence.

The development project concept has failed to understand that the 'real world' of the pastoralists bears little relationship to the 'world' in which development planning is carried out; it has ignored the fact that pastoralists actually behave in a sound and logical manner in the context of their own world; and has failed to recognise until now, that only by understanding that world will we ever understand how pastoral systems work and why development projects generally do not.

If we assume that development and change in Africa is inevitable and has already affected pastoral systems to varying extents, often in a negative way, and that contemporary ethics, and economics, will not allow us to simply leave pastoral systems to sink or swim, depending on their strength and adaptability, then we need a new approach to development. Intervention programs, and I use this term deliberately, will have to take into account the system to be developed and not just technological feasibilities, and include not only national level aims and objectives, but those of the society involved.

To answer the above we must reverse the existing process and start thinking from the inside out, and not from the outside in. We must place ourselves within a society or system, and develop ideas and plans on the basis of real needs and capacities. We have to find out not only what we need to do but how it can be done, and we may well find out in so doing that there are much better ways of effecting change and improvements than through development projects. Or we may not, for it may not be the method that is at fault, but the approach.

It is at this point that production systems studies can be seen to be utterly essential but only if these studies are freed from the constraints of limited objectives. Where production systems studies are based on existing projects, as they are in Ethiopia, the studies must be designed not so much to measure how the project is working, but to use the project as a means of determining how a society works, and the effect on that society of the project and other interventions. Production systems studies when integrated with project implementation can be the means by which the standard static project with its time-fixed planning - preparation - implementation process which may have been a direct contributor to the failure of the project concept, can be converted into a dynamic process which is able to react to or pre-guess changes in the system as they occur.

To be of any relevance and use we must, at specific points in time in the future, be able to describe why certain interventions have been accepted and others not; why some have had either positive or negative effects and some no effect at all; and just what is happening to the society or system under study and why. To do this we must be able to describe the processes, not just the results. Only then will we be in a position to make judgements about the aptness, effectiveness and impact of any project, and the way in which future development should be undertaken. For a project may meet all or some of its objectives, and still utterly fail the target society.

This then is the basic philosophy behind the proposed approach of linking the project implementation process with a basic research and study program in the Rangeland Development Project in Ethiopia. The objectives of the approach are two fold

- to provide information and direction with respect to the effects of past and existing interventions; the likely effects of any projected interventions, and the manner and style of interventions which are likely to most assist the system under study to achieve its objectives.
- to provide a dynamic and ongoing information series which at any point in time will serve as take off points for new or expanded development programs or interventions.

The following pages outline the detailed thinking behind the proposed approach, using as a practical example a proposal for linking systems studies research and project implementation in two of the three pastoral systems included in the Ethiopian Rangeland Development Project, the wild northern Afar or Danakil, and the Borana husbandmen of the south.

THINK WHAT YOU ARE DOING: Systems Studies and Project Implementation

For most systems either an equilibrium or a 'state of the nation' exists which is determined by some of the factors which a project will seek to eliminate. When these factors are altered or eliminated by interventions a new equilibrium or a new 'state of the nation' will result with a whole new set of limiting factors. A project thus operates in and even creates a dynamic situation and must be in a position to respond dynamically.

Project implementers thus must not be satisfied with merely achieving time limited physical goals established by a project plan but should be continually adjusting and tuning their input to adjust to the changes in the system under development.

In order to do this, project implementers must be constantly provided with a stream of information regarding the status of the system under development, as well as recommendations regarding action alternatives. At this point the stage is set for the entry of production systems studies which will provide those who are charged with planning and implementing projects the capability to think realistically about what they are doing.

No one has yet produced or described a 'best' way of approaching production systems studies, and various ideas and methods are still in the melting pot. My hypotheses however, are that:

- Every production system is unique and requires an original and individual approach.

Although the components may be the same (water grass - livestock - people) each pastoral production system is fundamentally different in the manner in which these components are put together and inter-related.

- This approach must start with an intuitive analysis by a skilled and experienced production systems analyst.

There can be no universal 'cook book' approach where a standard set of questions or methods can invariably be applied, and which will provide the answers which describe a system and how it functions. A catalogue of common constraints and problems which beset pastoral systems can in fact be drawn up, but different groups of these will be assembled in different orders of importance for different pastoral systems.

- The Study of any Production System is itself a dynamic rather than a fixed process.

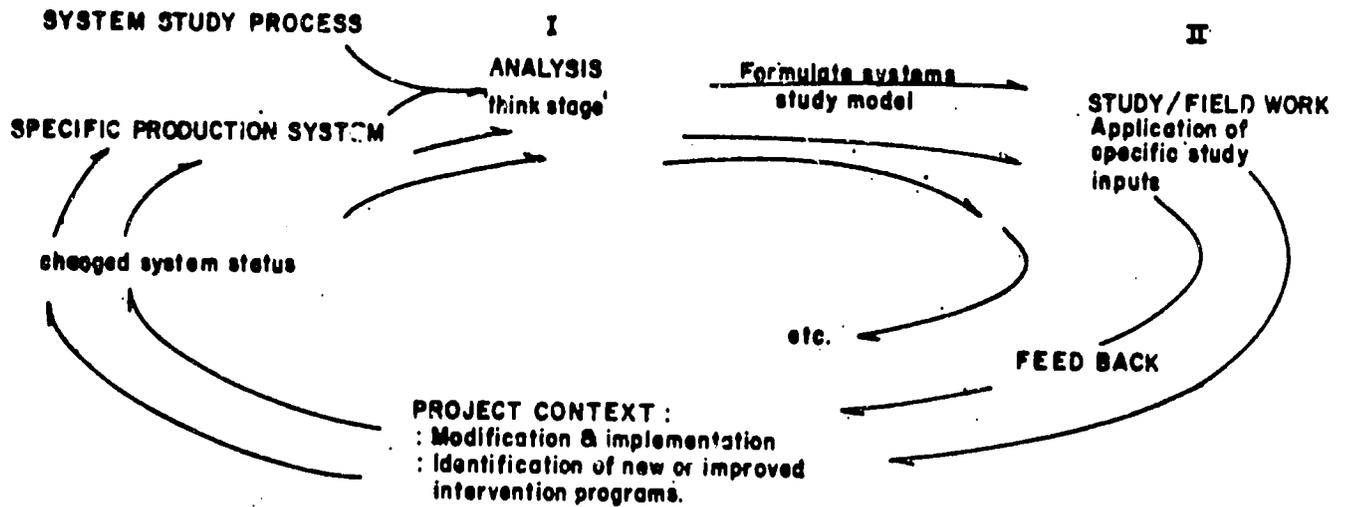
Just as societies and production systems are continually changing and evolving so must the processes of studying such systems be dynamic and responsive and not static or related to a set of time fixed and outdated data, or pre-determined methods.

If the uniqueness and individuality of every production system is accepted, then production system studies in the context of development projects can be described as a two phase cyclical input. The first phase is a thought process rather than a study of qualitative or quantitative factors, where the system is confronted with an intuitive and analytical input. The end point of this phase is a description in the broadest sense of how the system works, the formulation of a study framework and the elaboration of descriptive hypotheses.

Once the manner in which a production system is to be studied has been identified, then an action and intensive study phase should follow. Specific and interrelated sections of the study framework can be singled out and examined in detail using the method which will most effectively provide the answers we believe we are looking for. These may be drawn from a 'library' of proven functional and analytical methods. At the present time such a 'library' of methods does not exist and one of the functions of this study will be to begin to assemble such a library from all the various and disparate sources available.

As the study progress, and data and information begin to describe how the system is working, how it is coping with various interventions, and those aspects of the system which can effectively be manipulated, the study framework should be reviewed, modified and updated so that the process reflects the same dynamism as the system under study. This process can be described by the diagram on the following page.

ETHIOPIA : System Study Process

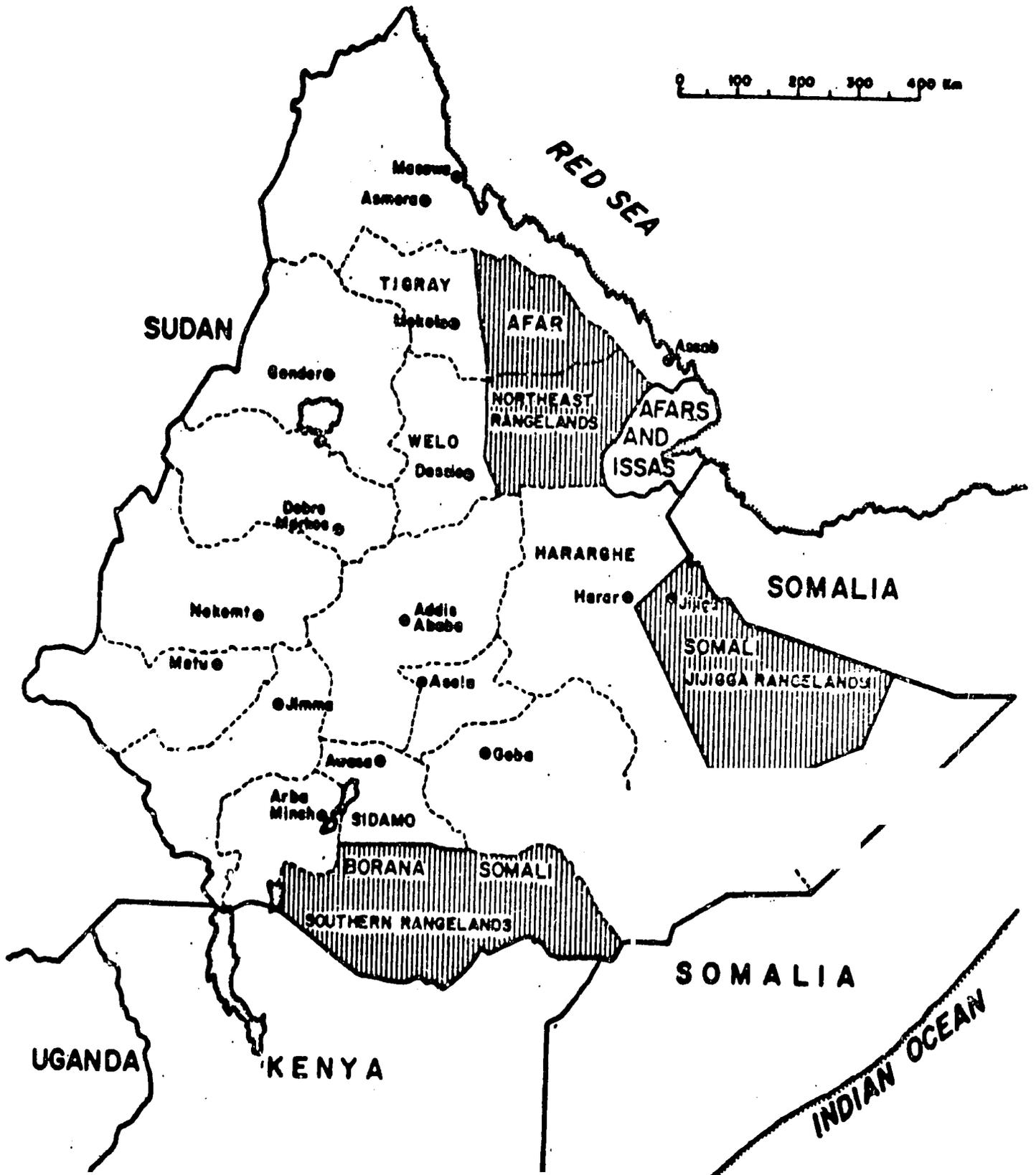


In essence the system described is one of perpetual and dynamic motion where the interaction between production systems analysis, production systems study - and project implementation is thus not separated out as an introverted and isolated entity and an end in itself, but becomes part of an integrated process which may eventually become an integral part of the production system it is seeking to improve.

Theory often sounds fine until it is put to practice, and so the next step is to see how the above stands up when applied to two real and very different pastoral production systems, the Afar and the Borana.

ETHIOPIA

AFAR and BORANA PASTORAL SYSTEMS : LOCATION



ETHIOPIAN RANGELANDS

Area : An estimated 500 000 km² or 42 % total land area
Provide : Subsistence for pastoralists: Milk and Animal Products
 Livestock and Livestock Products for Highlands : Oxen, Meat, Butter, Hides etc.
Value : Are the major suppliers or potential suppliers of Livestock in Ethiopia

<u>Populations:</u>	Human	Million	% of Total
	Cattle	2.5	9.5
	Sheep	5.5	21
	Goats	4.5	18
	Camels	2.5	15
		1.0	100

SOUTHERN RANGELANDS

Total Area : 160 000 km² Borana Plateau : 95 000 km² Probably 75 000 families Major Societies : Borana, Somali
 At present we have access to the Borana System : 30 000 km²
 Rainfall Bimodal : March - May 50 % of total 500 mm in lower SE to 700 mm in NW.
 Oct - Nov. 40 % of total but very unreliable

BORANA SYSTEM : Probably 30 000 family units 800 000 Cattle 80 000 Sheep 22 000 Camels
 Cattle herds constitute more than 60 % of total herd in the entire project area
 Good grasslands Moderate temperatures Net water deficit

NORTH-EAST RANGELANDS

Total Project Area : 75 000 km² Sub Project Area: 12 500 km² Major Society: Afar
 At present we have variable access to a study area of 5 500 km² No. of family units probably 4 000 - 11 500
 7 Clans in area own probably :

Cattle	Sheep	Goats	Camels
196 000	270 000	285 000	63 000

But great variation in the number of these utilising study area and in total Nos. Plentiful water, Net feed deficit

Potential drought effects on total Nos.

	1972	1974
Cattle	355 000	65 000
Sheep/Goats	585 000	362 000
Camels	100 000	64 000

Sub project area

Rainfall : Corridor of existence Far out desert Bimodal March / April : Small rains Great Very hot
 600 mm — 400 mm 250 m > July / Sept : Big rains variability Av. Max. 39°C

SURVIVAL OR SUPLUS: The North East Desert Afar and the Southern Rangelands Borana

For perhaps a thousand years the Afar have maintained a nomadic pastoral way of life in their unknown northern deserts, one of the harshest of all arid African pastoral areas. Pruned and hardened by a desperate aridity and immured to a life of extreme hazard and fragility, the Afar tenaciously live at the lower end of the pastoral social and husbandry spectrum.

Cloaked in myth and savage legend their outlook is conditioned by the land in which they live. They had to be hard and harsh, essentially independent and utterly flexible merely to survive. It was also essential that sharing be absolute within defined social limits, and animosity be absolute without. In the simplest of terms, life for the Afar can be defined as a continual fight. When it is not with the southern Issa, the western Oromo hill farmers or each other, the fight is one simply to survive. In recent years it is a fight the Afar are beginning to lose, and the society may now be backed right up against the survival wall.

Far south, on the great savannah plateaux and drier eastern lowlands, live a composite of pastoral micro-states of varying dynamism and sophistication. Among these, two micro states predominate with the historically retreating introverted but culturally superior Boran Galla, clearly counterpoised by the temporarily checked but still dynamic Somali clans. The Boran Galla are without question the social and economic centre of the southern pastoralists, and their intact and sophisticated society has developed pastoralism to perhaps its highest form in traditional Africa.

Even were there no war with the Somali which has closed the areas the Somali pastoralists inhabit, the Boran would still be the focus of attention. Master husbandmen, they have until recent times managed with apparent skill the fragile balance between man, his animals and the environment he inhabits, in part the result of a complex and ordered social system and philosophy, where internal unity, peace and stability is the corner stone.

Although the differences between the Afar and Borana could hardly be greater, they can both still be described as societies where the pastoral mode predominates. Given the limits of available technology and social structure, they are societies which have responded to the environment to create a self reliant introverted land use system, - pastoralists by necessity rather

than preference, unlike the Maasai of Kenya where cultivation was an option in many areas. Neither system to date has been the subject of planned interventions until recently, and most changes and pressures on the systems are the result of natural or evolutionary phenomena. That these evolutionary pressures have reached the stage where planned intervention is essential or inevitable is a fundamental justification for the projects now being implemented

Given that the differences in environment, management of the livestock composite, and social organisation are almost absolute between the Afar and the Borana, the following basically describes both systems and the questions which should be asked with respect to the viability of these systems:

BASIC RESOURCE:	RANGELAND	Can it support the present animal population and pattern of utilisation. Can any improvements be achieved.
PRIMARY USERS:	LIVESTOCK	Can the current herd/flock composite support the human population.
	WILDLIFE	Are these significant.
UTILISATION:	PASTORAL MODE	Can productivity improvements be achieved.
	MARKET MODE	Indirect consumption 100%
	←—————→ Combinations and Permutations	
SECONDARY USERS:	BORAN	How successful are these particular systems and
	AFAR	how adaptable to change.

- For both the Borana and the Afar the pastoral mode predominates. Their economies are introverted and attempt to be self-reliant, less so for the Afar than the Borana. The Afar are probably being increasingly drawn into a market mode of existence because of fast mounting evolutionary pressures on their system. The Borana are not. Both societies are posed as

being ecologically inefficient because they rely on milk production in an arid environment. This is a limited view and ignores the fact that their approach, and resource utilisation emphasis probably supports more people in varyingly difficult and hostile environments than any other comparative production mode.

Development can be seen in a very different context for the Afar and Borana. For the Afar, development means rehabilitating a society which is already in an advanced state of negative productivity, whereas for the Borana, development probably means the arresting of a steady deterioration in a life style which is still positively productive in terms of the pastoral mode. At present, and without outside intervention, the Afar are caught up in a cycle where drought, starvation and death can be expected to occur every few years, while the Borana may go hungry at times, but rarely expect to die. For the Afar we are aiming to create a situation where survival is reassured, but for the Borana there may in fact be a chance of creating surplus production. There is even now offtake from the Afar and this will increase as pressures on their system force the pace, but Afar offtake is converted directly into a means of survival. Offtake in the Borana sense may mean a surplus within the society and this is the distinction between the two systems.

Both systems are under increasing if varyingly critical pressures. The Afar by the highland Oromo, by Awash valley irrigation, and irrigation and agricultural projects in highland and other last resort retreat or 'life belt areas', and by probable eruptive livestock cycles induced by an extremely haphazard, hostile and marginal climate and existence; the Borana by small but increasing agricultural incursions, by pressures from surrounding pastoral groups, by a possible steady long term deterioration in the critical deep well system and probably by a rising human population. Both the Borana and Afar are also affected by a serious security situation which affects the Afar from within the system, and the Borana from without. For both systems the technology exists whereby improvements in animal productivity can be readily made as can improvements in basic range feed status. In the Afar country water is not short but feed is. In Borana large areas of standing feed are under-utilised because of surface water shortages.

For the Afar system, feed can be produced through spate irrigation projects, and for the Borana access to existing feed improved by a planned system of additional surface water sources. The result in either case will be an increased livestock feed supply, although the technological input for the

Borana is probably cheaper and easier. The capacity of each society to adapt to and properly utilize these innovations has not been determined and this is of critical importance. For the Borana there is the very real danger that the development of new water sources may disrupt the highly structured well and water-use based social system, while for the Afar the lack of an encompassing social discipline will be the problem. Social resistance or incapacibilities, if they occur, will probably do so in the Afar case because of anarchic disorder, and for the Borana because of the inflexibility of an already highly complex and efficient system. At least with the Borana there is something to work with whereas the nature of Afar society with its individuality and lack of structure presents a very different situation.

The development options each system presents are also markedly different. With the initial end point objective for the Afar being survival, given the current environmental and social situation, the only realistic option may be to both change the structure of the livestock composite, and the emphasis of the system from a pastoral to a market mode. Only when survival has been assured can we begin to move to the next phase where the creation of a surplus producing system can be considered. In seeking such a complete reorientation we may be opening a whole Pandora's box of problems for the changes involved are really drastic and may even signal the end of that society as it is now known. These changes cover almost every aspect of living from the food a people eat to the way a society organises itself and its resources, and the degree to which a system is self reliant, or reliant and interlinked with other systems. We must be sure that we are asking them to do the right thing, that these changes really will result in improvements in their style and standard of living, and that the changes are in a form that the social structure can accept and cope with.

While the Afar are on a knife edge of existence which demands an immediate and total re-orientation of their system, the Borana are not. The pressures on the Borana are perhaps more subtle and there is still a considerable productivity slack in the system which can be tightened up to accommodate additional demands. The option exists to pace changes with social acceptability, and to incorporate them within the existing orientation of the system. A milk based subsistence economy plus a meat surplus is a possibility, and there is also the option of an indirect involvement in the market mode, where combined with direct sales, a production superstructure is developed to absorb and fatten immatures.

For either system, change from the purely pastoral mode can be seen as inevitable with the difference between the two systems being one of emphasis. In both systems development projects have been initiated with the above overall long term objectives, but to date experience is limited, and knowledge about the relative systems, the changes which may be occurring, and the reasons for these changes is unknown territory.

THE AFAR PASTORAL SYSTEM: At the Edge of Existence

The Afar have always been a mystery, and until recently few outsiders have ever really known or cared whether they lived or died, so long as they stayed in their lowland deserts. Their system remains enigmatic to this day. Why have they remained in their awful country when the cooler and more fertile highlands were adjacent, been obliged to marry their cousins by intent and so introduced an inbreeding element, and fought bitterly amongst themselves for territory and wells.

Despite the legendary ferocity of the Afar, I believe the highlanders were always the stronger and certainly more numerous, and the pressures have been downwards for a very long time; the Afar married their cousins to keep what limited wealth they had within the family circle; and have fought each other because natural resources have always been critically short.

The Afar operate an essentially enigmatic production system and such the state of this system that it is both difficult and complex to explain. There are however, probably four main hypotheses which describe the situation which the Afar now find themselves in and these are as follows:

The system has reached or has always operated close to Breaking point.

- The Afar system operates now under impossible stresses and reacts to predictable five to seven year rainfall deficit cycles by killing large numbers of livestock and people. This situation has pertained for at least seventy years and one reason for the system's inability to cope with innovations which aim to improve traditional practices is due to the fact that the system is totally and bitterly competitive at all levels in its present form. The issue is one of both survival and food production for at the moment the Afar are net absorbers of food which is badly needed elsewhere in Ethiopia. Achieving a self sustaining survival level and thus releasing a substantial food resource now tied up in Afar survival should be seen as a first step towards an eventual potentially production oriented system.

The principal pressure on the Afar system is the steadily increasing and inevitable downward creep of the lowland Oromo hill farmers.

- Fifty years ago much of the area now cultivated by farmers was open to access by Afar grazing groups. The Oromo farmers themselves also rely

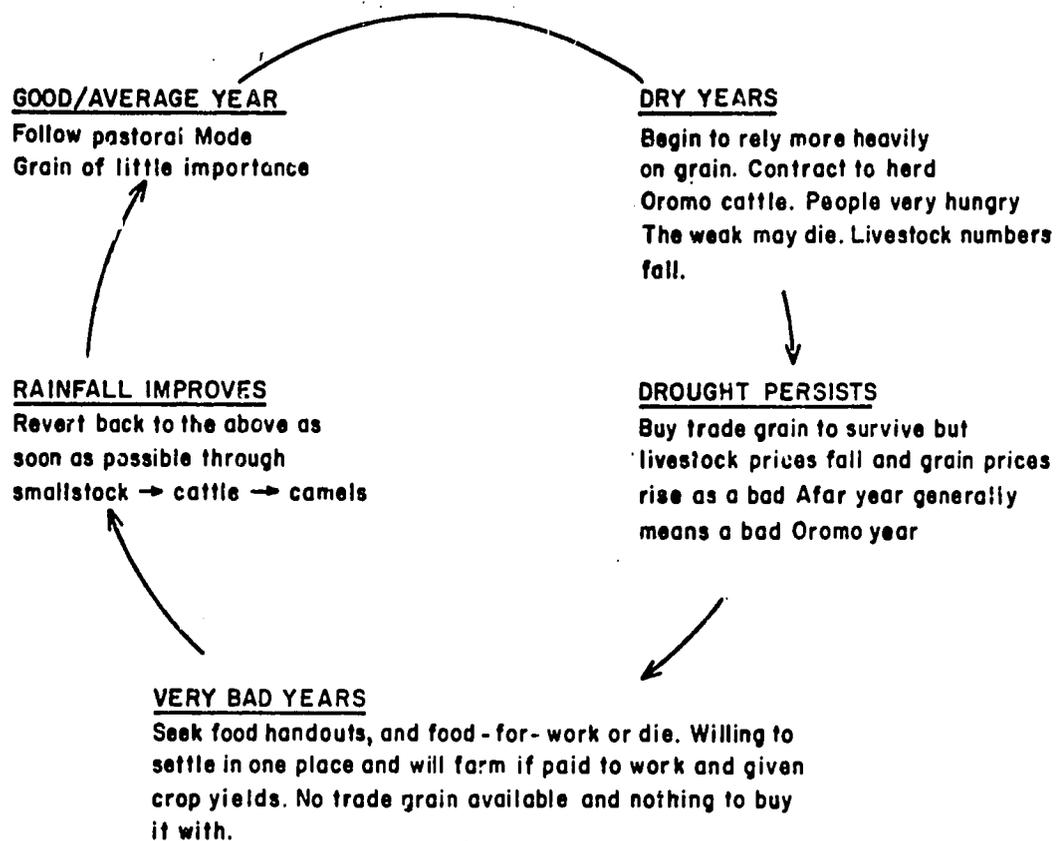
on livestock as a bridging element in their farming system which anticipates an annual subsistence crop short-fall of from 1-3 months food. These animals are being increasingly herded by some Afar, who may be following the example of some of the West African Fulani groups, in becoming virtual livestock servants of the Oromo. This study and increasing pressure from the highlands has reduced the ability of Afar livestock to move upwards under stress, and increasing numbers of Oromo cattle are moving down into Afar territory. There are also well established trade and exchange linkages throughout the altitude gradient where the mainstream movement is oxen and small-stock upwards and heifers and grain downwards. The Afar may thus be of importance to highland farmers as a source of oxen. The key conclusion is that the Afar should no longer be viewed as an intact and separate system but must be studied as part of an entire interrelated altitude gradient system, from sea level to the top of the east-west watershed.

The pressures induced by the Awash Valley Irrigation Schemes should be seen as of secondary importance.

- This factor has been overrated in the past, but the various schemes certainly have the potential to contribute more to the Afar system than they have in the past.

The Afar remain locked into a direct reliance on livestock more out of inertia than preference.

- The Afar operate a system which oscillates between direct reliance on livestock products and direct reliance on drought relief. This can be described as follows:



The question is how to break this cycle and what will happen if this occurs. The market mode is the only alternative, for the pastoral Afar simply will not dig or cultivate if given any choice. The attitude may well be beyond Afar control, as centuries of hard and meagre living may have bred for slim bodied persons who physically cannot dig. There may simply be a subconscious (mental) message which reads 'those who dig die' because the system will not provide enough food for diggers. The Afar now follow a system which is outdated in terms of survival, and die because of it. But a change to the market mode would require levels of organisation and social realignment which are currently beyond the means of the debilitated and fragmented Afar society. The present market system may also not even be able to respond to such a change.

Projects or interventions which rely solely on improving the present production system over time can be considered as 'holding operations' only

- No amount of improvement or manipulation of the present pastoral system will convert it into a 'go' situation, remove the terrible drought

low points which now occur every 5 to 7 years, and make the system self supporting. Time has run out for the Afar and the system itself recognizes this and is fiercely competitive. A complete and drastic re-orientation of the entire production system in terms of the live-stock composite (smallstock for sale rather than cattle for milk), social organisation and dietary reliance may be the only way the Afar can survive and continue as a people. The determination of a 'Survival Model' should thus be the first major objective of the production systems study.

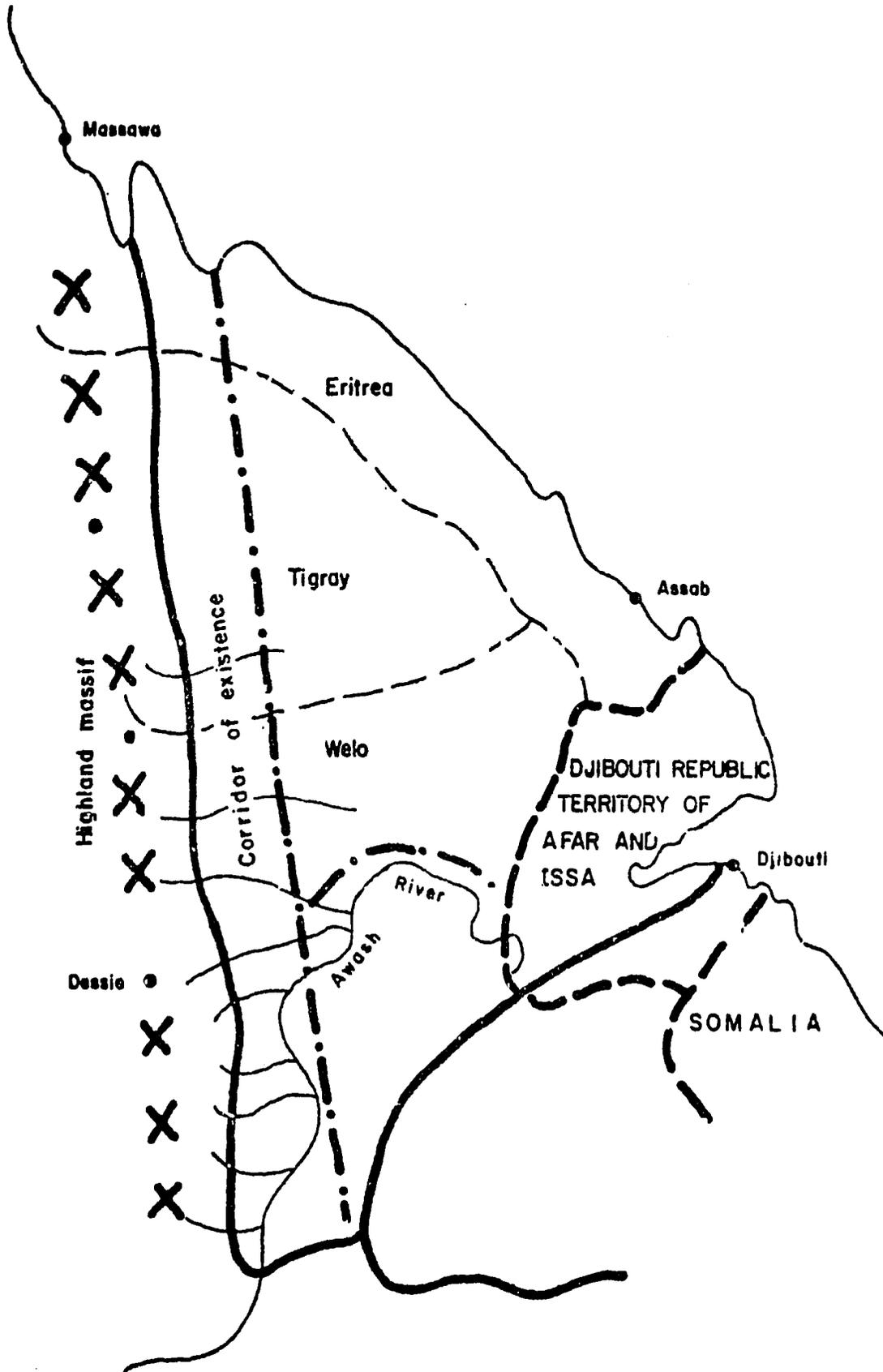
The pastoral production system which operates in the Danakil Desert, or Afar territory is dominated by two main factors:

- The central highlands massif which forms a solid and unbroken 500 km mountain chain along the western periphery.
- and the wide brown perennial Awash River in the South which terminates in an inland delta, and which allowed the only structured Afar State, the Sultanate of Aussa, to develop.

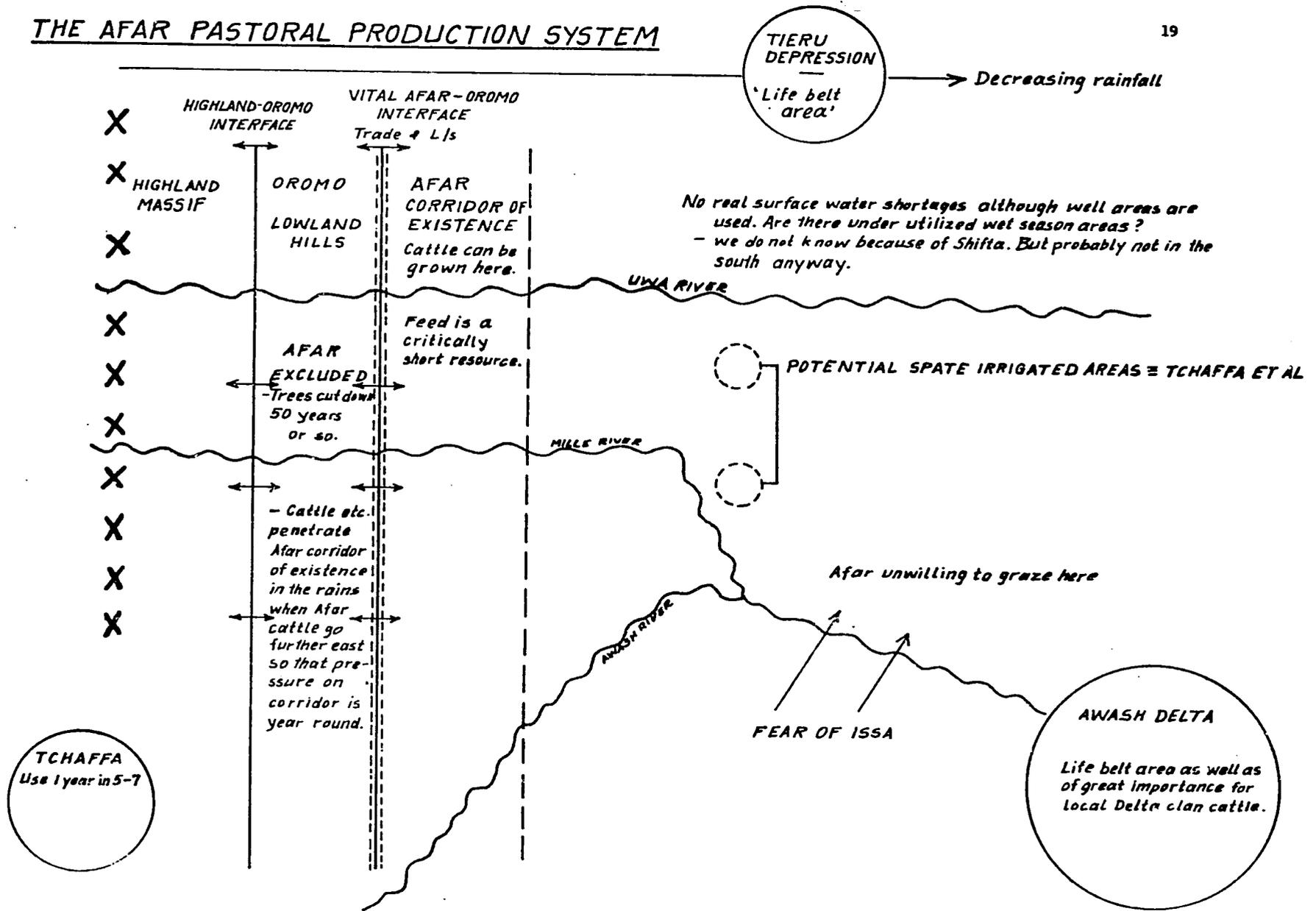
The central highlands hold the key to life for a majority of Afar tribes. Eastwards and over the edge of these highland ramparts is a narrow apron of land, transected by mountain fed rivers where the Afar retreat in the dry season, and where a meagre and uncertain bimodal rainfall of 600 mm. at best, and spate fed drainage depressions allows the husbandry of cattle. This 'corridor of existence' fades in the east into barren near-waterless plains and hostile lava flows in less than one hundred kilometres, where annual rainfall is 250 mm. or less, and where only camels sheep and goats can sustain a scattered and fragile pastoral mode.

The Awash is also seen as a green retreat but the much feared Issa limit use by the Afar, and to these are now added the 'Sultan's Shifta'. Forced out of the lush Awash Delta during the revolution by the Ethiopian Army, the old agricultural Sultanate of Aussa, now supports a desultory war, but the area is still a refuge for traditional pastoral clans. The system can be described diagrammatically as follows:

THE AFAR PASTORAL PRODUCTION SYSTEM



THE AFAR PASTORAL PRODUCTION SYSTEM



Critical importance when it is required. A 'life belt area': Only needed when the boat sinks which it does every 5-7 years.

STUDY SHOULD BE HORIZONTAL NOT ONLY VERTICAL
- between the three (?) systems HIGHLAND - LOWLAND - AFAR and not just within the Afar.

What we know about the Afar is confined mainly to the Southern Wollo half, where independent warrior tribes were only lightly bound by the levied tribute and occasional offices of peace making by the Sultanate of Aussa. Apart from this, the Afar seem to possess little unifying cohesive identity as a people and although inter-tribal alliances are contracted to fight the dreaded Issa, the Afar exist as a series of potential opposing and fluctuating tribal groups. These tribal groups do have defined territories, although interpenetration occurs where environmentally necessary. The very scarceness of resources has created a debilitated society ready to fight each other for these.

The tribe and its encircling loyalties allow an extremity of individualism within its social confines, which the environment demands. Tribal leadership exists not so much to be obeyed but to organise Afar life in a very limited sense. Family is the basic unit of society followed by the encampment, and larger kinship groups than this form solid action units only when force greater than family is needed to ensure group survival or continuity. Afar aspirations seem essentially limited, sharing within the kinship group is an important social factor and may in fact define a production unit, and the Afar can be described as casual rather than clever husbandmen, selling sheep and goats far more readily than cattle or camels. Their social structure and lack of sophistication also means a limited ability to cope with or adapt to change.

Afar households may move fairly frequently, but generally tend to move relatively short distances within the tribal territory. Sheep and goat flocks are kept with the households but cattle and camel herds make much longer seasonally exploitative movements. At times the cattle and camel herds may be away from the main encampment for six months or more, but contact is maintained and milk and dry animals and labour may be exchanged between the encampment and the foraging units. Females make up between 70 and 80% of cattle herds which is typical of the pastoral mode, and herds have the potential to at least double their numbers in four good years. Very little is known about livestock fertility, growth patterns, productivity and mortality, or human domestic economy, dietary requirements and intake.

WE IN OUR SMALL CORNER - The Afar of the North East Rangelands

The entire Afar system covers an immense area, but in fact probably divides into three related but essentially separate systems.

- the northern Afar pastoral system which is associated with the provinces of Tigrai and Eritrea.
- the Awash River Delta agricultural system, previously the old Sultanate of Aussa with its links to related pastoral clan groups along the Awash River.
- the Southern Afar pastoral system which is associated with the provinces of Wollo, Shoa and Hararghe

For reasons of access which is currently limited by security problems, and sheer logistics, the present systems study input is limited to the NERDU sub-project area which covers 12000 km² in the south west (ref. Map), and where a majority of the initial development work is concentrated. A study area was defined within this sub-project area in 1978, and although the current fluctuating security situation has reduced the effective ground survey area by a further 50%, we should be able to extrapolate any data obtained in this area in terms of interpreting the characteristics of the entire Southern Afar system.

The study area is characterised by a low mean annual rainfall distributed bi-modally. Rainfall correlates to altitude and decreases eastwards from the foothills to the plains. The main rains, accounting for about 60% of the annual total are from July to September (Karima), and the small rains (about 20% of the annual total) from March to April (Sugum). The most severe dry season, with ambient temperatures well above 40°C is May and June (Hagai), with a longer, but often less severe dry season from November to March (Gilel). In some years Gilel may be interrupted by winter rains and the best grazing season is from September to November (Kaira), with the vegetation theoretically lush after the heaviest rains.

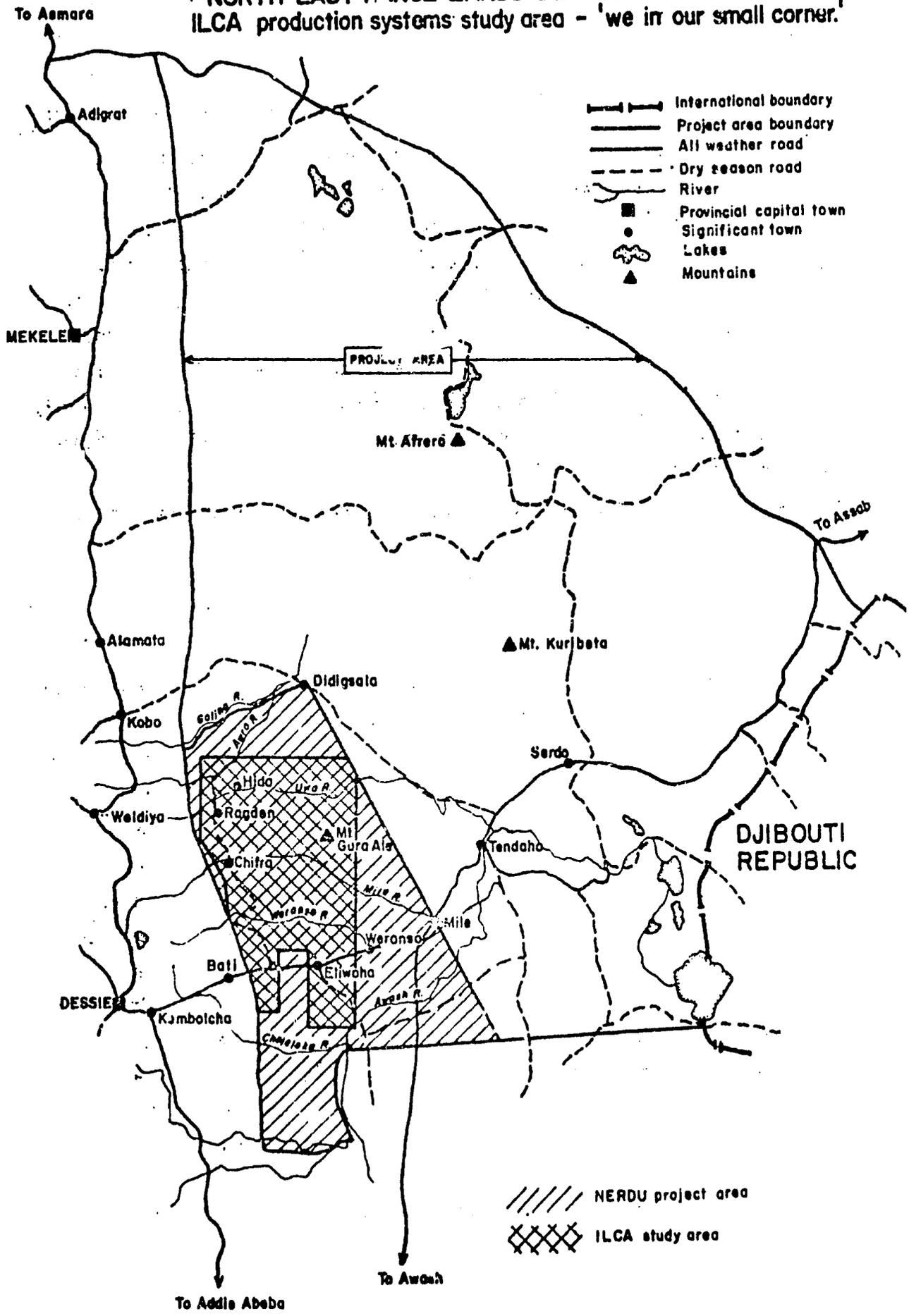
The term theoretical is used because the most consistent feature about the Afar system is the regularity of drought. At least one year in five can be counted a very hard year, and since the turn of the century there have been seven or more droughts probably as severe as the disastrous 1972-74 period. As survival margins are very fine, the traditional response has been a drastic reduction in human and livestock numbers. Although the actual drought periods may not be increasing in severity, there may be a cumulative rangelands deterioration effect induced by the eruptive phenomena, where for a period prior to drought, livestock numbers drastically exceed rangelands carrying capacity.

This hypothesis is supported by preliminary ecological studies which indicate that the area was probably once a great deal more eroded and considerably less arid. Archeological evidence also points towards this fact and indicates that in the south at least an agricultural culture may have pre-dated the Afar pastoral system.

We can state with confidence also that the Afar livestock composite is even now, almost certainly inadequate to support a purely pastoral mode. Even in a good year, livestock probably contribute only 70 to 80% of the probable required dietary intake, and the Afar are already becoming increasingly involved in the market mode with cyclical reliance on trade grain. Oromo and Afar interdependence seems to be coming more and more important, with sheep, goats, oxen and livestock products moving up, and grain, young females and client herds moving down.

So marginal is the entire system that variations from the norm in any one place cannot be absorbed or cushioned. There is simply no slack in the system, and any splash in the pond tends to ripple back through the entire system with often drastic overload effects. Something has to give and it is usually the livestock productivity of the system as a whole, or livestock and human death.

NORTH EAST RANGE LANDS DEVELOPMENT PROJECT ILCA production systems study area - 'we in our small corner.'



In general terms, the essential corridor of existence is being threatened by the steady and ever increasing pressures from the highlands; the Awash river grazing utilization pattern is being thrown out of balance by irrigation schemes; and the inevitable cultivation of last resort "life belt" areas may be the final straw in the accelerating decline of the Afar pastoral system.

There is really no question that the southern Afar pastoral system can be supported or will survive in its present form. It can not. Great changes are inevitable, or great and continued losses, and the situation may develop where long held notions about Afar attitudes toward their livestock may change from the romantic where prestige and other factors predominate, to the pragmatic, where maximizing numbers and optimising trade stock are principal management motives. For the Afar to survive as a people, and for them to become self-supporting, it will be essential that a new society is evolved, with new economic objectives, and even a new social and cultural emphasis. It is in determining how this change or changes can be brought about by the Afar and for the Afar, that will be the ultimate responsibility of production system studies.

SURVIVAL - The Afar Study Model

The Afar are up against the wall, their system is too far gone to manipulate within the parameters of its present resource utilisation and mode of operation, it is no longer self-sufficient or sustaining and relies on periodic outside injections of food to prevent varying numbers of its people from dying. As an initial step, I am thus not talking about making a system more productive or of manipulating certain aspects which will lead to new production techniques over time. With the Afar I am simply talking about survival, or moving completely away from an unworkable and overloaded system towards a new orientation and new economic objectives. At present the Afar are net absorbers of food. In most years there is a varyingly small to moderate requirement, but every five to seven years the requirement may rise dramatically (e.g. as much as 12-20 thousand metric tons of grain for the clans within the study area alone). The first step in reorienting the Afar system is thus the formulation of a series of survival alternatives or models which will lead towards the creation of a mode of existence and a system which is self-supporting, and which creates a surplus in good years which can be used as a buffer against the very bad years.

This is a basic premise, but it remains a research concept until we can state the form and detail of the social and economic alternatives which may convert the present unviable and fast declining system which has yet to bottom out, into a stabilised and self-supporting one.

If the proposal is accepted that the Afar system no longer can sustain a human population reliant on the system, and has no hope of ever doing this with the context of its present utilisation of resources, then there will be two main research objectives:

- to determine whether this hypothesis is correct;
- and to formulate a series of "survival models" or ways in which all the resources available to the southern Afar in the future can be assessed, measured and reassembled to provide a mode by which life can be self-sustaining as a first step towards an eventual possible food surplus situation.

An extension of the above statements is the acceptance that the present project, which is based on improving the existing Afar pastoral mode must be completely reoriented towards creating a new survival situation for the Afar which may be very different from the present mode. Just how all this can be achieved will be a function of systems study research.

An initial statement of how it may be possible to approach the simulation of a range of survival alternatives is summarized in the Afar Study Model on page 27. Basic to an understanding of how the system works or does not work is:

- the recognition of the importance of both dry season grazing areas, and "life belt" areas such as Tchaffa swamp in the highlands which are only needed once every five years or so, but when they are needed, are crucial to the survival of the system;
- an understanding of the importance of the 'corridor of existence' in the Afar system;
- the fact of highland - lowland interdependence and the fact that the Afar system is becoming, or has always been inextricably linked to the highland systems both in terms of a two way trade which provides food, heifers and trade goods in exchange for oxen smallstock and livestock products (and salt in the north). The highlands also provide some of the areas of last resort or "life-belt areas" in drought years.

Best Available Document

The highland "life-belt" areas which are mostly swamps, can be expected to vanish as increasing pressures for land, make drainage projects more attractive, and even lowland riverine areas may be given over increasingly to exclusive agricultural irrigation projects. What we need to do now is to:

- catalogue all life-belt areas in terms of location and importance
- quantify their importance in terms of livestock utilisation and value.
- determine whether occasional immigrant herd influxes can be feasibly integrated and accommodated within the framework of future agricultural schemes, or whether alternative compensatory areas must be found or developed.

A lot of water runs through Afar country which has its origins in the adjacent highland areas. What we need to research is just what can this water be made to do. Already spate irrigated pastures are being developed by the project, but what we do not know is whether we can ever feasibly and economically compensate for the loss of such areas as Tchaffa; what pasture species should be grown and how much will be needed and in which areas; and if there is any way that the Afar can be encouraged to organise for the logical exploitation of such areas. In the longer term also, we should research the possibilities or whether it will ever be technically and socially feasible to include an initial and elementary shifting (not settled) crop production element.

Next down the line is a need to establish the parameters of the 'corridor of existence' and what is happening in this corridor. Are the Oromo really encroaching to the extent we believe they are and at a time when the Afar themselves are resting the area by moving out to the eastern desert areas during the rains? Is the status of the vegetation deteriorating at the accelerating rate we believe it may be, exactly what is the rate and nature of the deterioration, can it be checked, and what does this mean to the Afar system?

AFAR STUDY MODEL

TCHAFFA

- present productivity and utilisation
- can Afar (and Dromo) utilisation be integrated or compensated in anyway by Ag. Dev. projects
- will defined stock access routes help etc.

SPATE IRRIGATION - NEW PASTURE AREAS

- what is needed to offset or compensate for Tchaffa
- how to maximize productivity
- will introduced browse or fodder banks assist
- can Afar ever hope to take these over and utilize/manage them as the Borana are doing with ponds
- will there be any downstream effects etc.

HIGHLAND
- Farmers and grazing areas

LOWLAND OROMA
HILL FARMERS

- interdependent with Afar
Trade, grazing, supply of draft animals, etc.

AFAR PASTORALISTS

An understanding of the level of interdependence between these three broad groups is essential. The study must be multidimensional as the Afar do not live in isolation from the areas above them

CORRIDOR OF EXISTENCE

What is happening to Veg. in this corridor
Patterns of utilisation. Relationships to far out desert trends. Primary production, etc.

OROMO USE

- extent and importance to Oromo
- do the Oromo have anywhere else to go

GRAZING CONTROL (RANGE MANAGEMENT)

- Is this realistic: ecol. and socially
- do Afar have viable alternatives
- do we know better than the Afar
- do Afar understand the reasons but are socially unable to implement etc.

CLIMATIC DATA
(Stations)

THE AFAR SURVIVAL MODEL

Using hard and predictive data a series of survival alternatives will be simulated with various combinations of livestock composite and production modes
Market mode ← Pastoral mode

FOOD/FOR WORK - RRC HANDOUTS
where, how much, when, why, future plans.

HUMAN NUTRITION
what are Afar requirements etc.

LABOUR REQUIREMENTS
- all activities. Input/Output

LIMITS OF SHARING
- may define a survival unit rather than a production unit

PRODUCTION UNIT STUDY

Livestock Productivity: Herd structure
Birth, Death, Fert. Growth, Milk.
Offtake (Sales, Gift, Slaughter) Increases (Purch. Acq.)
Management.
Input/Output

Domestic Economy

MARKET OFFTAKE

where, when, why, nos. etc.

DECISION MAKING / SOCIAL STRUCTURE

- How anarchic / flexible / adaptable is Afar society. Is it capable of making and sticking to the (tough) decisions that will/may be required w.r.t. changing the whole orientation of life
- not so much by controlling movements but by changing the structure of their 1/5 composite and entire mode of existence.

PROJECT INPUTS

Validity and effectiveness e.g. Range management may not be relevant in the context of the Afar system.

Range Management
Veterinary
Water Spreading
Services, Roads etc.

Best Available Document

27

Surrounding the Afar Survival Model then comes a whole host of contributing factors, all of which need a study input. These range from decision making and the capabilities and adaptability of Afar society, through present market offtake - what, where, why and how do the Afar sell livestock and livestock products - to human nutrition. What in fact do the Afar consume? Are the patterns of consumption changing? Are they really underfed all the time, some of the time, or only rarely in the context of their requirements, and have they adapted to needing less than other societies or peoples? What do the Afar mean when they say things are really hard and what is the level of food production which we should aim for as a minimum requirement in the Survival Model?

Woven in with all of this should be studies of the extent, importance, nature and trend in the links and interdependence between the various highland and lowland hill farming systems, and the Afar pastoral system. How reliant are the various systems on each other at the present time? Would the Afar not being there at all affect the farming systems? Are the lowland Oromo hill farmers gradually moving into the role of oxen producers that the Afar may once have held? Is the trend in the relationships one where the Afar are becoming increasingly reliant on the farming systems to the extent of becoming livestock servants?

Can the adjacent highlands produce enough to support the Afar if the Afar switch to an increasing reliance on trade grain, or at least do traditional trade mechanisms exist to find and bring in the trade grain from elsewhere in the highland market system; and will existing markets be able to cope with and absorb an increased tradestock level?

Apart from these overall considerations we also know very little about the productivity of the Afar livestock composite and how individual production units are managed. We do not even know what this unit is, whether it is described by family, family groups or the limits to which mutual resources are shared. Whether this changes to adjust to different demands at different times, and whether this is reflected in rangelands utilisation patterns. If we accept that systems change with different situations and different demands, then we may have in the Afar system, with its need to respond to dramatic resource availability fluctuations, production units which are in a state of constant flux depending on the year, the place and the circumstances. Who uses what, when, where, and why are unknowns.

We also do not know if and why the livestock composite is changing, the productivity of each of the livestock components and whether there are ways in which this could easily be improved. We need hard time-series data on all of these aspects, along with comparative sets from other contributory elements, so that the first essential series of models can be formulated and we can determine whether under any circumstances and resource manipulation, and any combination of alternative livestock ownership, the Afar can survive as subsistence pastoralists or even as livestock producers. Such a model might contain the following elements for a given set of production units who tend to rely on the same set of resources.

INFORMATION SERIES

Series 1

Present range conditions trends, water availability climatic variations etc.

Importance of life-belt areas.

Reliance , interdependence and importance of Highland farming systems

Effect and aptness of present project and other interventions

Series 2

Present livestock Nos.

Present utilisation patterns and fluctuations.

Present L/S productivity - herd/flock structure fertility, morbidity mortality, offtake.

Present Human Pop. status and standard of living.

Domestic Economy- dietary intake and physiological flexibility

Series 3

Production unit functions.

Social system, decision making, decision factors, social flexibility, and relevance.

Simulate optimum livestock utilisation patterns in terms of feed and water potential, and subsistence or market orientation. Include also options with selected 'lifebelt' and other areas removed or partially used by other modes such as irrigation etc. and/or compensated by spate irrigation

: Relate to various possible human population levels which will be determined by particular livestock utilisation systems

: Relate to real human and livestock populations

To draw conclusions of any use we will need to be able to relate, compare and crosscheck combinations of data or information. For example the domestic economic requirements of a production unit or social group will determine the number of livestock currently required to support a given group of people. This can be equated with present livestock numbers and again these and the pattern of utilization can be equated with theoretical optimum herd sizes and utilization patterns, and the capacity of different combinations of existing and potential resources. All this must be measured against social feasibility and economic practicability - will an increasing emphasis on the market as opposed to the pastoral mode allow changes (or reductions in livestock numbers) and will this be acceptable or even possible in a social sense?

To reduce livestock numbers without reducing human populations, range utilization patterns and animal productivity will have to be optimized. Then we can determine if the domestic economy need be changed from the pastoral to the market mode in an immediate or proportionate sense, and how fast this change should ideally proceed. All of this will depend on the social system extant, its complexity, flexibility, and ability to change without disintegration or deterioration. Essentially we have to find out the way decision making processes work so that we will be able to predict social reactions to preferred alternatives.

Do, for example, production units (or decision making units) consider a full range of alternatives in a manner logical for the system at any one time, or are only a limited number of alternatives considered and the laws of chance and custom accorded greater significance. We may, in fact, have to construct a model of all the key decisions which need to be made in the course of a pastoralist's year, and then list the alternative strategies available versus those recognized by the society or the decision makers at the time. The strategy adopted, and the reason for adopting the strategy should then be recorded along with the resultant outcome, and this compared with the simulated outcome if alternative strategies had been chosen. This may allow the categorization of groups of decisions, and the prediction of how pastoralists are likely to react to or cope with new interventions.

Apart from the social system and the study of processes, we will need to quantify as many of the different elements in the information series as possible. We will need to know for example, basic range and animal productivity levels, carrying capacities, utilization patterns etc. so that there is a starting point on which to base improvement package projections and simulations.

The determination of processes may indeed be the key to understanding a society, but to understand a process we must also chart quantitative points in the course of a particular process or set of linked processes. We may also arrive at understanding a process by working backwards from actual or simulated results if there is a framework of quantitative data to work back through.

Once we reach this point we can proceed with the business of determining a range of possible alternatives, matching these with possible or potential social acceptability - what the Afar will do or not do when confronted with the choice of survival - and determining how these can be implemented in a project or any other context.

The Afar have clung to their arid desert rangeland for centuries, despite the fact that it provides a very hard living and periodically kills large numbers of people. It is almost certain that in the long run we will not end up with the choice of modifying or manipulating this system within present utilisation parameters but will need to institute a radical change. The Afar are likely to resist such changes and the major problem confronting any development program will be social rather than technical, will consist of manipulating people rather than physical resources, and should be seen as the crucial development component.

FIRST FOOTSTEPS - The Initial Afar Production Systems Study Program

Given the current resources of the Ethiopian production Systems Studies Team there is no way that all the research aspects essential to produce a Survival Model can be covered. The current team is as follows, and the ILCA staff are used to cover the Southern Rangelands as well.

<u>ILCA STAFF</u>	Team Leader	Junior Professionals : Animal Production and : /Marketing Sociology
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<u>RDP STAFF</u>	(under training)	Junior Staff : Sociologist
		Part time
		Junior Staff: } Marketing Economist Animal Production. Ecology/Veg. Studies.

The ILCA input also includes a part time assistant meteorologist, and an initial junior professional ecological input. Despite being relatively few

on the ground, the team has begun to study or initiate practical research programs of the following aspects.

- A pastoral information network has been established which consists of 52 stockowners or production units in six separate groups representing all the major clans of the study area except the Arapta whose area is not currently accessible for security reasons. (Ref. map page 34) Each of the groups is being followed by a resident enumerator, and the network constitutes an initial basic building block for Production Unit Studies. An initial survey has been carried out which details stockowners statements regarding their total life style, and this will later be compared with actual measurements which are being kept on a monthly basis. Two specific camel groups are also being followed. The network was initiated in September and October 1980 and as yet, insufficient data has been generated on which to base any conclusive statements. An initial analysis and review is targeted for August 1981.

- A market data collection network has been established which covers all 13 markets where the Afar of the Study Area sell their products or which act as a trade interface between the highlands and the Afar. (Ref. map Page 35) All incoming and outgoing livestock are being logged on every market day with respect to livestock type, group size, type of seller and buyer, reasons for sale and purchase, catchment area and price. The first six months data from these markets, has been collated and coded, a computer program prepared, and data is being directly entered on the IICA computer system during March 1981. An initial data run is anticipated by April and will provide the first real quantitative information with respect to the trade relationships between the Afar and the highlands and the extent and importance of livestock trading to the Afar system.

- A detailed ecological assessment was conducted in September/October 1980 of some of the transects established during the 1978 Base Line Study. It is anticipated that a comparative analysis of the data collected will be carried out during the next three months by the senior EARLS ecologist in Nairobi.

- A hydromet. and cumulative rainfall guage station network has been established in the study area. (Ref. map 36). Three of the stations were previously established, and two of these, Mille and Eliwoha have records over

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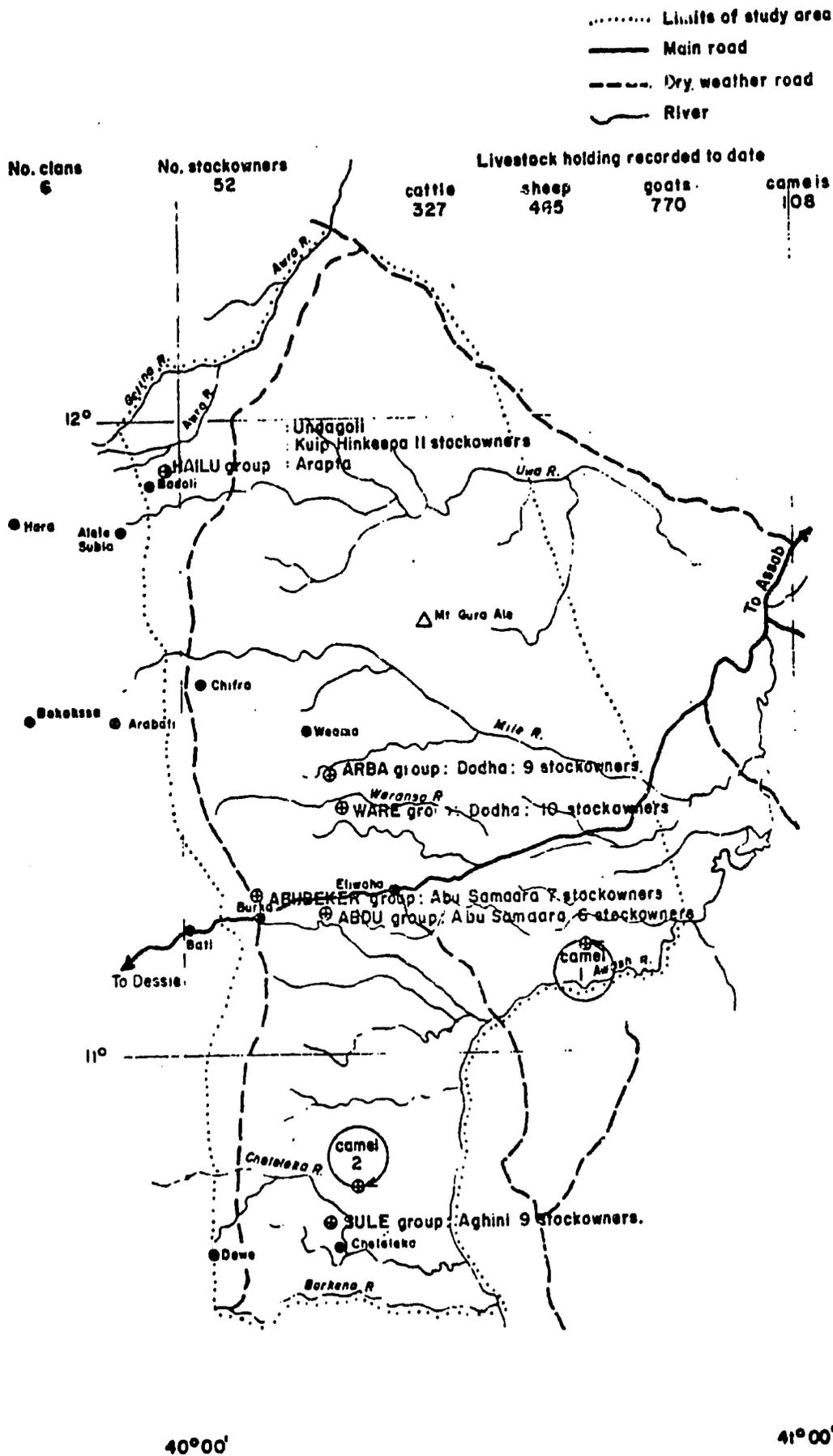
15½ years. All the other stations have only two and half years or less of records which is too short a time for anything but elementary analysis. All records are planned to be entered on the ILCA computer during the next few months.

- The study of the 'life belt' areas of last grazing resort is recognized as of high priority. An integrated study of the livestock utilization and the comparative value as a feed source of the Tchaffa swamp was commenced in March 1981 on the basis of the high probability that this year is one of the bad years in the cyclical Afar weather system, where the livestock are forced to retreat to areas of last grazing resort.

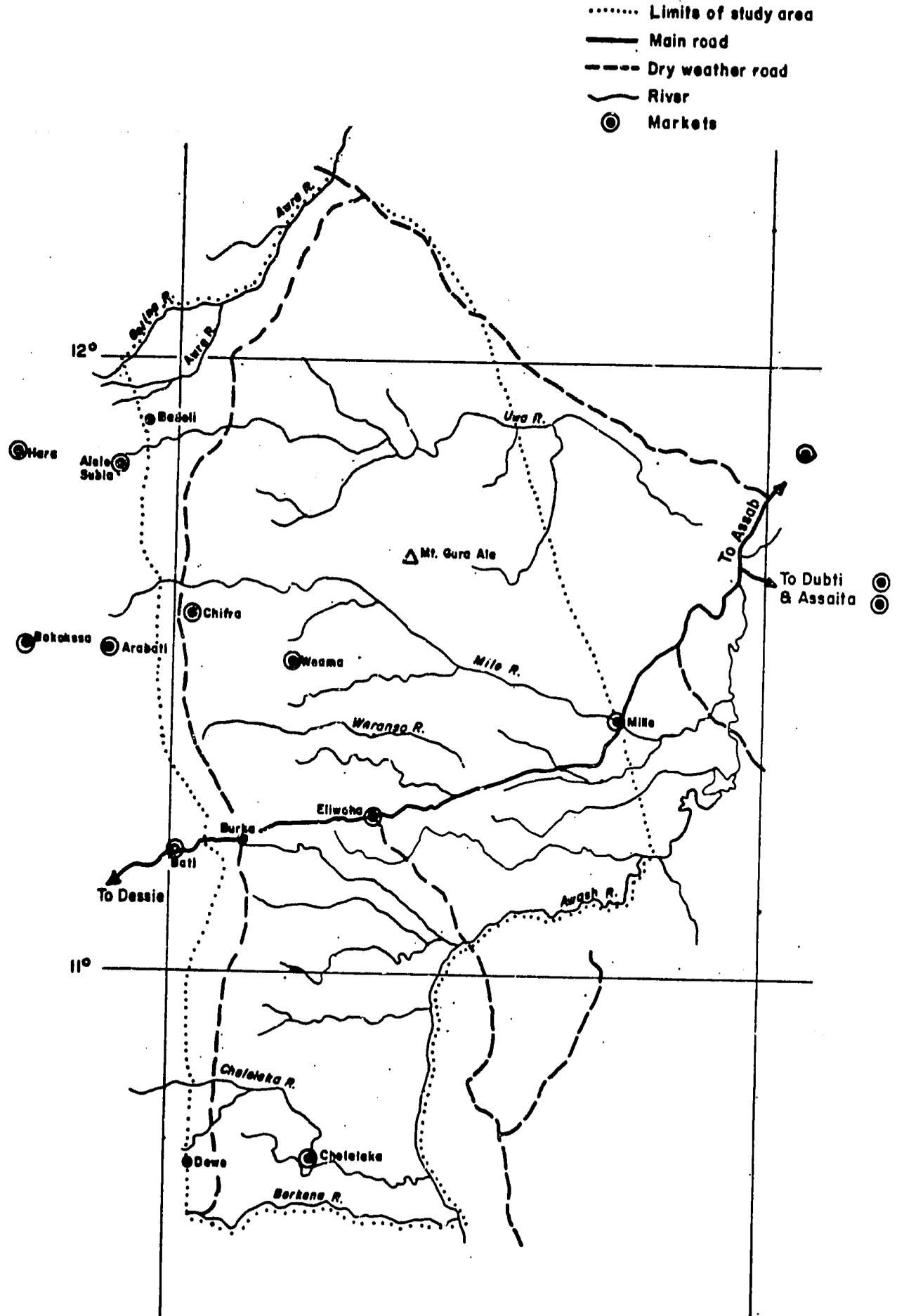
- Some initial sociological studies regarding the relationships between the Oromo lowland hill farmers, and the Afar have commenced but are still of a preliminary nature. This study area requires far more emphasis.

All the above study inputs are far from complete or comprehensive and should be seen simply as first footsteps in the study of a complex and difficult pastoral system. I say difficult for a variety of reasons which include the climate, security problems, and the intractability and suspicions of the Afar themselves who have to be continually coaxed and cajoled to cooperate, and to allow their animals and their life style to be measured and studied. It is a start and a lot can be done with the data and information which should begin to accumulate in significant amounts by mid 1981. However, to do the job properly, to be able to build up a variety of alternative survival models in order to properly direct the form and style of future interventions, each of the functions described in the Study Model of page 25 will need extensive, careful and elegant study and consideration within the context of an overall and coordinated inter-disciplinary study program.

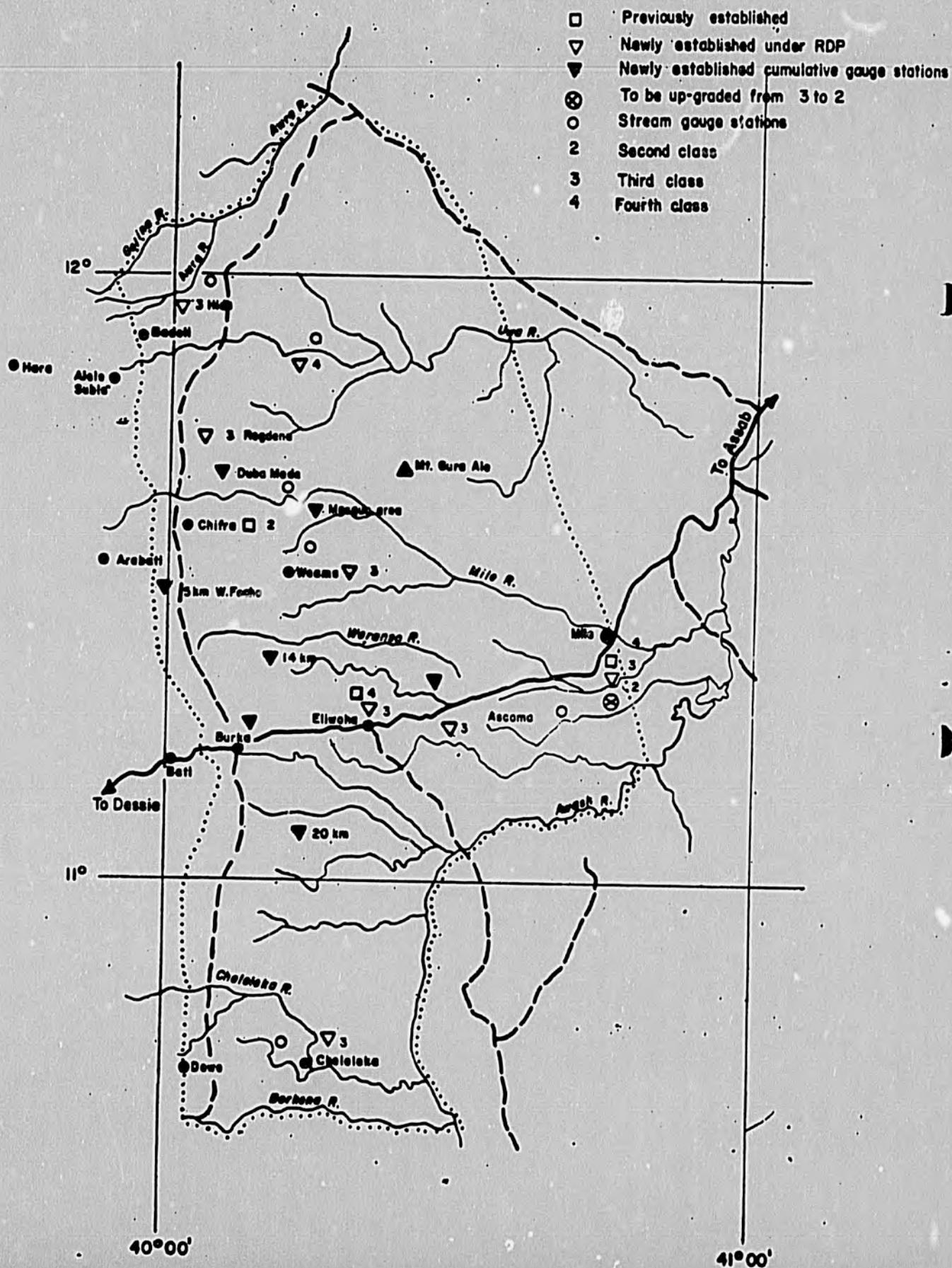
The Southern Afar Pastoral Network



The Southern Afar Market Network



THE SOUTHERN AFAR METEOROLOGICAL NETWORK



THE BORANA PASTORAL SYSTEM - A Society of Husbandmen

The Borana are one of the last great traditionally intact African pastoral societies. Even though there are continuing historical outside pressures on the Borana system, they are still able to describe their territorial boundaries and themselves in terms of cultural unity. There may be war without, but within the system there is peace, competition between units is controlled by a complex and structured social organisation and there is a fundamental understanding of the need to manipulate and maintain the balance between people, livestock, water and grass.

It may have been the Wardai Galla and their herds who first opened up the south to pastoralists, and legend has it that it was the Wardai who dug and developed the great deep well system which became the central pivot of pastoral life. With the coming of the wells a vast area was opened up to grazing, and this area became the focus of attention of would-be invaders. In the 16th Century these were the Borana horsemen, who rode from the east pushing the Wardai before them, and who establish a new society across the wide Borana plateaux grasslands.

This savannah plateau, which now constitutes one of the best remaining pastoral areas in Africa, is an area of about 95,000 km², and slopes gently from the foothills of the Bale-Sidamo massif at a temperate 1500 to 1000 m. in altitude, with occasional abrupt mountain areas reaching to 2000 metres or more. Rainfall varies from 500 mm in the lower south-east areas to over 700 mm in the north-west. The main rains fall in late March to May and may account for over 50% of the total, while the secondary rains from September to November may account for up to 40% but are much more unreliable. The months from June to September are grey and overcast for much of the time, and fog, mists and occasional showers occur. The main dry season occurs from November to March and its severity is largely determined by the capricious secondary rain period.

By the 19th Century, the Borana themselves were under pressure particularly from the volatile Somali clans of the east, and the last one hundred years has been that of a steady westward retreat for the Borana. Despite their sophistication and superiority, the Borana can be described today as a society under siege both culturally and economically. On all sides but the south their savannah plateau lands have been raided and

or the Gujji and Arssi, driven out by agricultural landlords, who had nowhere else to go. Vital eastern well areas, and the Dawa river have been lost, and the Leman area surrounded and isolated.

The Borana - Somali interface is critical, and since 1976 has been in a state of dynamic tension again. Including the increasingly arid eastern lowlands the Somali clans occupy more than 60% of the project area but constantly only 16% of the plateau population. In contrast to the Borana, internal peace is not a cultural cornerstone and the Somali clans frequently fight and raid each other. Expanding lineage descent groups have historically displaced their clan predecessor in a continuing succession of skirmishes.

Interspersed with both the Boran and Somali clans are small numbers of hybrid pastoral societies and peoples, such as the Somali Galla/Gabra who live within Borana boundaries and the Midgari cattle groups and Wata hunters who are subservient to and despised by the Somali. In the South, the Gurreh are also of Somali/Galla origin but occupy an intact territory which is mostly within Kenya.

All pastoral systems in the South centre on a permanent well or water based territorial grazing system evolved with varying effectiveness by the areas' pastoral societies. This grazing system is practiced in its highest form amongst the Borana where traditional cultural systems are most opposed to change, and is least developed amongst the more culturally adaptable Somali. For this as well as for reasons of security and access, the Borana will be the focus of work and study in the south. While the study area has not yet been defined, it will most likely consist of all or part of the Borana area west of the Yabello, Mega to Moyale road.

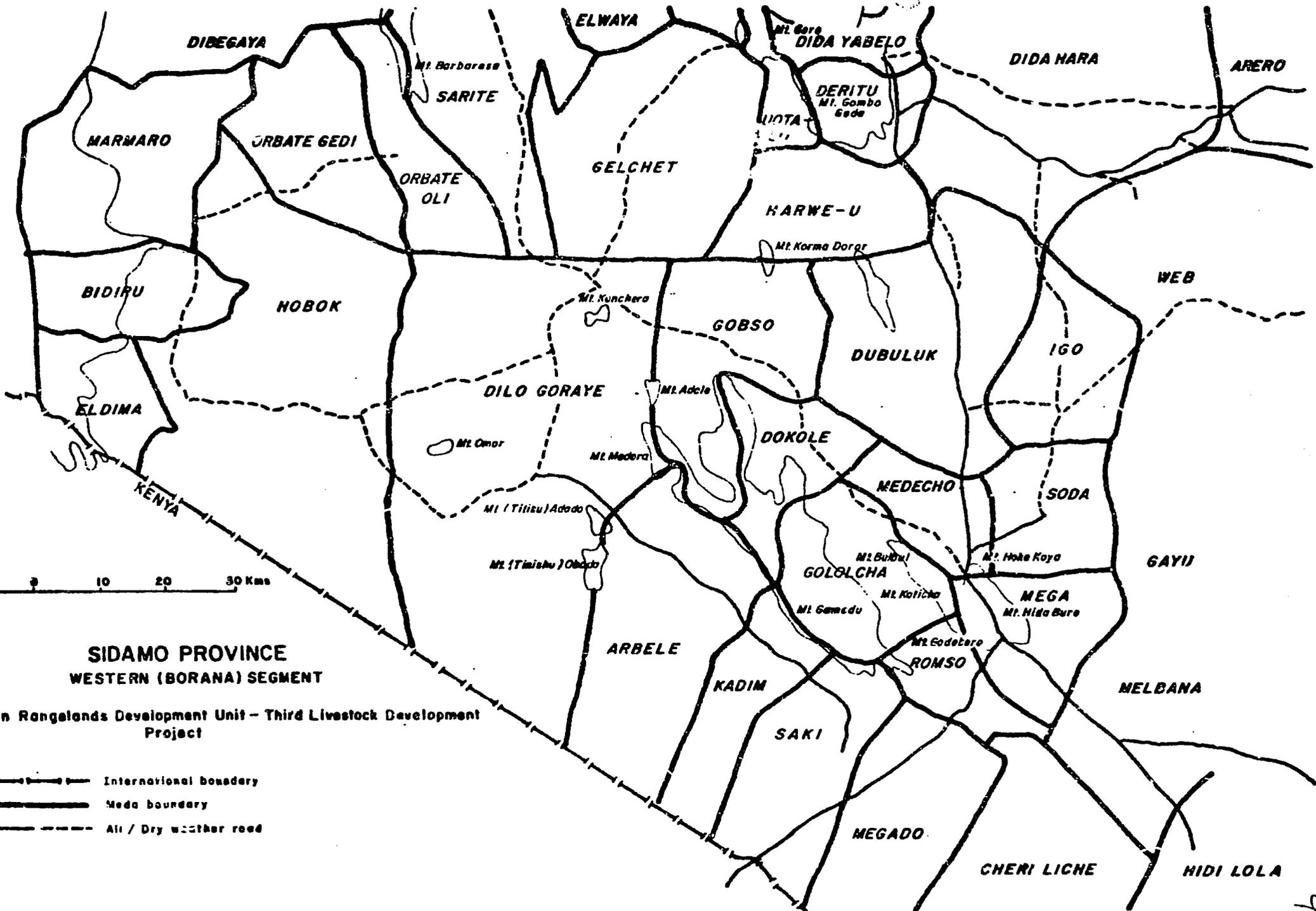
The Borana are cattle men with high husbandry capabilities and their cattle the Boran Zebu are considered one of the outstanding beef breeds of Africa. The Boran Zebus' characteristics are high resistance to most indigenous livestock diseases, tolerance to heat, general hardiness and high productivity. In Kenya, careful selection by commercial ranches over the last 50 years has produced Boran cattle which are equal to any beef breed in comparable environments. The Borana are also renowned horsemen and are ranked amongst the best of Africa's animal husbandmen. Total livestock numbers have never been accurately determined but currently accepted figures are of about 600-800,000 cattle, 20,000 camels, and 80,000 sheep and goats. There are considerable herds of horses for which no figures are available, as well as donkeys and mules.

The Borana are a highly organised pastoral society and have divided their tribal lands into at least 75 concise and demarcated pastoral districts. (Ref. map page 41). Each of these has one or more permanent water points and a generally stable population with defined leaders and autonomous management councils. The nearest equivalent in the Somali areas is the Bel or homeland which are loosely conceived in membership and area and act in concert only against threats to collective clan security.

The actual role of these pastoral districts or Meda is difficult to define. Most Medas are associated with a permanent well or well group and while the Borana do seem to identify with a particular Meda, there is no restriction or control of grazing access between one Meda and another as there is with permanent wells. Certain Medas seem to have common utilisation linkages and where Medas may be of importance in the future is in defining utilisation rights to new project ponds, for while a Borana may graze anywhere, rights of access to permanent wells although negotiable, are closely defined. It may be that identification with a Meda may signify access rights to the permanent water associated with the Meda and that this will be transferred to pond utilisation.

Within each Borana pastoral district or Meda are a number of management sub-areas or Rera while the social occupying units are the Olla or encampment groups and their member families. The Borana Warra or families are probably individual self-contained production and consumption units. Also, by dividing the family herd into Warra (family or milk herds), and Fora (dry) herds, the need for human mobility is minimized by the Borana while maximum exploitative movement advantage is retained for the livestock. Fora herds will range in a totally exploitative manner over a wide area, while the smaller milk herds remain accessible to the Olla. As the dry herd may be grouped and managed as an encampment unit, family herd labour demands are also shared so that an Olla may remain in one place for several years and all but the Fora cattle herders in a family will remain in daily contact with the Olla and move no more than 2 to 8 kilometers from dry to wet season grazing areas, and even the Fora herders may have rest periods.

Against this background of the Borana is the mobile court of the paramount political and judicial chief, the Abba Gada. His position is defined by lineage and handed on to a successor in a cryptic tribe-wide age grade ceremony every eight years and has no equal in Somali society. To the practical and ceremonial function of an Abba Gada, a supernatural charisma of divine law is added and it is to this that innovation must conform to be acceptable.



**SIDAMO PROVINCE
WESTERN (BORANA) SEGMENT**

Eastern Rangelands Development Unit - Third Livestock Development Project

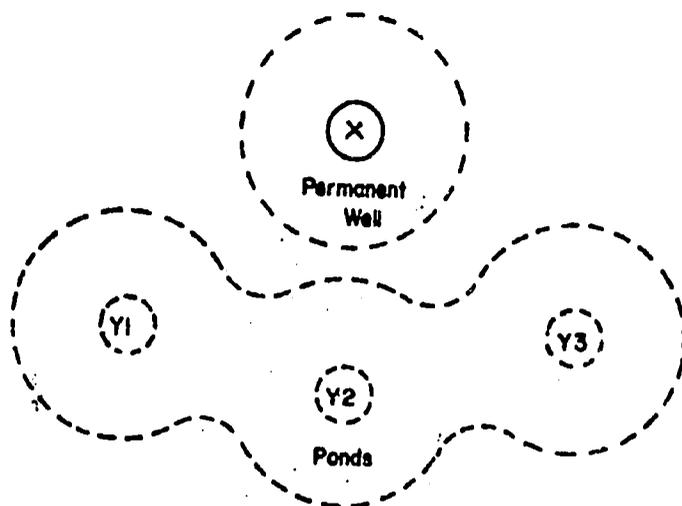
-  International boundary
-  Meda boundary
-  All / Dry weather road

Water as a Critical Resource

The entire highly organised Borana pastoral system is centered around and perhaps grew from the need to balance the use of the areas around the permanent well complexes, and the intervening areas which are accessible only when temporary rain fed ponds and depressions are full.

For the Borana the permanent wells known as *ela* are the most vitally critical of their resource, and the central focus of Borana economic and religious life. Their upkeep, control, utilization and maintenance are the continual concern of all Borana, and access to the wells and the labour required to operate them are central to the effective management and size of livestock production units. The area has only one river, the Dawa, which runs through the peripheral north east, and rainfall is the single most important factor in Borana life. The intensity and distribution of this is even more important than annual totals, and as heavy and concentrated rainstorms are common, and fall in an erratic pattern, available pasture is equally unpredictable and erratic. Rainfall must also not only be sufficient to stimulate grass growth, but also to fill the essential ponds and depressions. If this does not occur, stress situations can paradoxically develop while feed is abundant. Such a situation occurred from 1973 to 1975 when severe pressures were exerted around permanent well areas, while the majority of Borana land was undergrazed.

The Borana livestock system is thus essentially geared to the critical periods of the dry season when all livestock must fall back on the permanent well system. All strategies centre on survival through this period and all else in the system is subservient to the balance between the water being produced from the wells and the feed available within the limits of grazing from the wells. For example, however good a veterinary program is, numbers cannot be increased above the limits imposed by water, water and grass, or grass in the dry season. If grass or feed is the limiting factor then extending the wet season grazing period by semi-permanent ponds may relieve the situation, but if it is water then a pond-program will not in itself be enough. Certainly the longer animals are able to stay away, and the fitter they and the Borana are when they arrive at the wells, the more likely they are to be able to come through the dry season alive and ready to take-off when the next green flush occurs. However, there ultimately comes a day in the dry season when regardless of anything else, the most important factor for most wells is the amount of water the Borana can actually produce on that day.



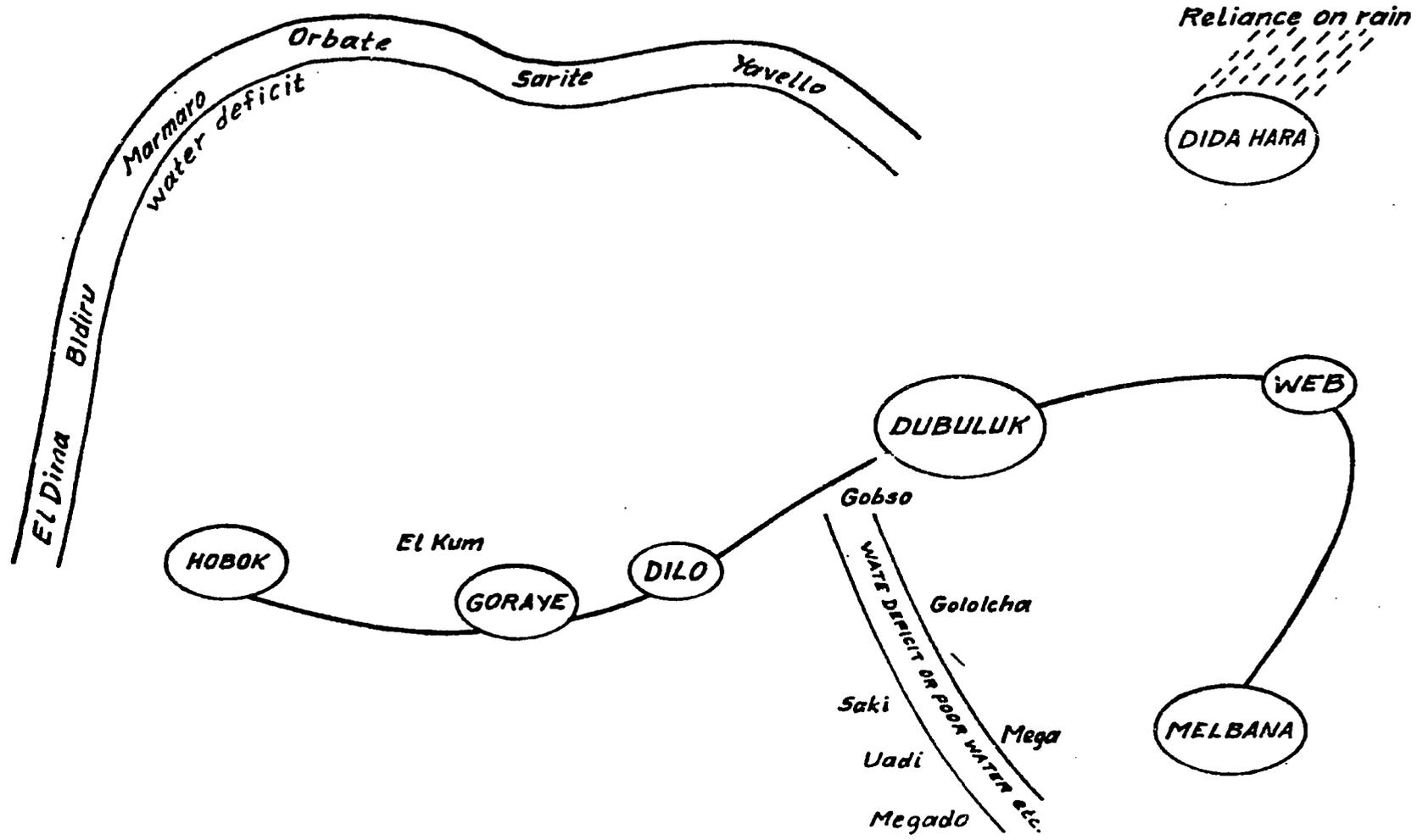
The longer cattle, and other livestock can exploit area Y using semi-permanent ponds, the better well area X will be able to carry them through the dry but numbers cannot exceed the amount of water the Borana can produce from well X over a three day period (cattle) or the amount of feed available in area X.

The map on the following page shows the location of all permanent wells in western and central Borana but the picture is misleading as is shown by the next diagram. There is in Borana a crucial water belt of deep wells or crater well areas. These wells probably support a majority of Borana livestock during the dry season including those from the water deficit areas of the north west and central highland areas and a substantial and significant number of Borana/Gabbara groups from Kenya.

The ownership of wells, the regulation of access and the organisation of labour to work the wells are complex. The deep wells whose shafts are sunk through rock are in themselves considerable technological achievements, and one that the Borana have either lost or never had. In almost every deep well area there are disused wells which the Borana of today are either unwilling or incapable of re-excavating. Whether these wells fell out of use for social reasons, labour scarcity during stress periods, or because the Borana recognized that in using them water supply would exceed feed supply is unknown. Labour demand, however, can be extremely high and we have estimated, for example, that the four wells at Melbana which require 18-20 men to work each one of them at any one time require a total labour force of 650 to operate them at full capacity during the dry season, watering upwards of 12,000 livestock when a continuous water supply (which can be as much as 50-60 litres per minute with a single chain of men) is demanded.

One of the most disturbing and serious recent new survey discoveries is that of a probable steady decline in the numbers and productivity of wells in the deep well system, particularly over the last 20 years. The reasons for the apparent deterioration are as yet unclear and follow-up work will be carried out to substantiate the initial findings, and to try and determine causes.

BORANA WATER - SIMPLIFIED



*The crucial water belt
deep wells & craters*

*Middle and peripheral
water deficit area.*

DAS

While the organisation of well use is highly structured with an overall clan well council which decides larger issues such as which groups outside the clan will be allowed access to the wells; the days on which particular groups will water; the order in which each herd will water on that day; well labour contributions down to the individuals charged with the tasks of maintaining the physical structure of a well and its day-to-day operation, the organisation surrounding the use, maintenance, and access rights to surface water is less clear cut. It seems probable, however, that this equates directly with the reliability and complexity of the surface water source, and that some, if not all of the organisational structures surrounding the use of deep wells are being transferred to the new project ponds. This certainly includes the organisation of the daily order of herd group use which is discussed in detail prior to a pond being brought into use; the careful control of access and the construction of troughs to prevent the animals entering the ponds; and maintenance and clearing where users remove the dung of their own animals and even silt from the pond as it dries out. This aspect will have increasing importance if more ponds are constructed and also has relevance to the Dida Hara area.

Access to permanent water is a basic pre-condition of Borana life but when this is surface water without the great labour input requirements of the deep wells other considerations arise. This is particularly relevant to the Dida Hara area where relatively permanent surface ponds and dams have been constructed over the last ten years. Dida Hara was previously a valued wet season grazing area, but because it lacked permanent wells its use was transient and variable. It remained a vast underutilized grassland area, tempting but inaccessible for most of the year. It has now become a centre of permanent settlement and use. Just how these new Borana groups are managing the organisation of the use of their ponds and whether they are able to restrict or control access to these ponds during the wet season when herds from adjacent areas traditionally move to Dida Hara for grazing is of extreme relevance, given the present logical emphasis on the construction of surface water sources to increase access to existing underutilized grazing areas.

Growing out of reach - grass, a question of access not availability

The Borana system stands increasingly alone in pastoral Africa for it is a system which operates in a sea of surplus grass. Huge areas go untouched or under-utilized every year, and the problem for the Borana pastoralist is

not the fact of grass availability in the area as a whole, but how to gain access to this grass. There is no permanent surface water in the system and the permanent wells provide access to perhaps as little as or less than 25% of the available grasslands.

Access to the remaining areas is through surface ponds which rely on a variable and vicarious rainfall to fill them, as well as a variety of surface depressions and drainage lines. In some years rainfall is sufficient to promote a vigorous flush of grass, but is insufficient to fill surface ponds. Animals are forced to fall back on the permanent wells too early, and the contrast between thin animals and a surplus of grass is dramatic.

Even in good or average years, livestock are forced to retreat to permanent well areas when only a small proportion of the outlying grazing areas has been properly utilised, and thus the feed situation in Borana can be described as:

- a small heavily utilised area around the permanent wells
- large and greatly-under utilised grazing areas whose access is limited by the availability of temporary surface water

Given the ability of the Borana to manipulate and control livestock numbers and grazing patterns, unlike other pastoral systems, the areas around the permanent Borana wells may be heavily utilised but not necessarily over utilised, and are thus not necessarily showing signs of deterioration. Thus, with some exceptions such as the Web area where the security situation to the east has forced the acceptance of displaced clans, it is possible that the Borana are managing their system so that grass or feed around the permanent well areas, may only be in serious short supply in years when rainfall shortages force an early retreat to the wells. It is probable that an equilibrium of sorts now exists between:

Permanent Well area Feed and Water
Total Livestock Numbers and Productivity
Access to outlying Grazing Areas

An Attitude of Independence

Apart from the basic need to ensure and stabilize food supplies, disease and medical facilities are perhaps the strongest motivational stimuli for development and change. Basic animal vaccinations have found ready acceptance but human disease such as malaria, respiratory diseases, rheumatism and other debilitating diseases prevail with little check. More recently the social problems of venereal diseases and chronic alcoholism amongst the Borana near towns have been growing. These, and the felt need for other social services evoke conflicting attitudes, for there is always the underlying fear amongst the Borana that innovation is inevitably destructive of their traditional culture.

Thus the major dilemma facing in particular the Borana will be how to obtain the things that they probably will want and need without invoking a degradation of traditional society which is exactly what they do not want. This is important for, while the Borana are essentially the basic central unit for development, they are also one society where development will not inevitably displace traditional values. These must be accommodated not because of social niceties but because of the otherwise probability of failure.

The Borana may be under pressure now but there is no question that they have not achieved a high plane of rangelands management. In the context of the available technology, their system is a well balanced ecological adaptation which is maintained by a complex and sophisticated social structure based on the organisation of group access and utilisation of the critical water resource.

Social considerations are thus far more important to development in the Borana system than technical inputs and may be far more so than for the Afar. The system works now, but careless technical innovation could rapidly change this and lead to serious long-term degradation, and to the end of the Borana as a self-sustaining and unique society of pastoral husbandmen. Or at least unique in the sense that they have not yet gone the way of so many other African pastoral societies who have lost their ethnic identity, their fundamental cultural ethnic, and their ability to be self-supporting.

TUNING UP THE SYSTEM - Development and the Borana.

The success and stability of a pastoral system should be judged in terms of the life it provides its people, and not its animals although these are interrelated. Human nutrition, sickness and death, are the important criteria and not necessarily these factors as they apply to animals. It does not really matter how many animals die every year, or in a stress year, just so long as the people survive and their system is poised to recover after each stress period. The Borana are a success if seen from this view point. The system provides its people with a generally good if not excessive nutritional level, and a very satisfactory social life unlike the Afar. Rarely are droughts utterly disastrous. People may get very hungry at times but there seems to be no history of regular and cyclical famine and death, as there has been for the Afar over the last 70 years.

The Borana pastoral production system is a system in balance or almost in balance. Its society has evolved a relationship with the environment where all the various resource components are skillfully managed by a complex social structure which is directly related to the regulation of the access and utilisation of the critical resource, permanent water. Why tamper with it at all is the logical question and the answer is twofold:

- the pressures on the system are gradually mounting so that even now there may be a negative bias to the previous equilibrium of the system. In the past such biases have been absorbed by adjustments within the system, but now the Borana have retreated in terms of territory to the point where new pressures can no longer be absorbed. Some of these pressures are also outside the ability of the Borana to cope with.
- there is almost certainly a great deal of productivity slack in the system, particularly in terms of feed availability, and this forms an important untapped local and national resource in a country where such resources are in short supply.

So far the Rangelands Development Project has been completely in line with the above criteria. Project interventions have centred around a carefully planned and implemented program of pond construction which is designed to extend the wet season grazing period, thus increasing the nutritional intake of animals and reducing the pressure on dry season grazing areas and the labour demands of watering. Permanent water sources are not provided as this is viewed as being too big a step at this time, given all the social and ecological unknowns surrounding the introduction of new permanent water sources.

This program is totally within the present Borana social and technological framework and has been carried out in concert with the respective Borana elder groups. It is as such a relatively unique, socially acceptable and integrated activity in terms of African development project history.

The pond program has been supplemented by a disease control and vaccination program, the construction of access roads, the provision of certain other services and the initiation of a ranch whose objective is to act as a safety valve for the potential increase in numbers which may be a spin-off both of the veterinary inputs and the pond program - if this has caused increases in fertility rates as well as other productivity factors.

With four years of activity now completed, interrupted to an extent by the early Somali Shifta campaign, which still limits access to the eastern project areas, the questions which now need to be asked are what has been the effect of these interventions, and where should we be going now. Also, we still do not know how the Borana system really works, we cannot describe the processes which link one part with another, and we cannot quantify any part of the system on either an absolute or comparative basis.

MAINTAINING THE BALANCE: The Borana Study Model

In the Borana we have a system which has a capacity far greater than its present productivity. Its people are excellent managers of the system's resources given the current status of their technology, feed is a surplus resource, and the Borana cattle are one of the finest of any African breed. The main justification for development and other interventions is that the ability of the Borana to manage their pastoral resource has reached its limit and zenith, and that the value and standards of general pastoral life is in decline be it ever so gradual. This is conjecture, not proven fact, but a generally accented picture is painted of a Boran society in retreat with the other social groups in no condition to exploit the resultant position. Cattle numbers are said to be down 60% in the decade; subsistent agricultural enterprise is gradually engulfing the better grazing areas around settled centres; population is projected to increase by 50% over the next 20 years; and a steady trickle of highland farmer immigrants is gradually increasing. It has also been estimated that within the Borana area 20% of families can be considered poor and 10% destitute and without livestock holdings, although a competent social redistribution system prevents actual starvation. The ongoing guerilla war in the eastern Somali areas may also be aggravating this situation. As well, institutions that might aid eventual adaptation such as the present schooling system are perhaps realistically disregarded by the pastoralists as irrelevant to their systems.

The Borana system with its great herds of fine cattle is also viewed rather hungrily from a national point of view which, properly tends to see the unexploited potential of the system in terms of a significant surplus meat producer and breeding area. Interventions are thus taking place, and although to date they have been carefully considered and planned, they may not continue to be so without a strong, and practically oriented research input.

Clearly the system works now and very well. It would be folly to try and introduce interventions which would demand drastic changes. What we should be looking for is ways in which to tune the system, not to disrupt it, to assist the system to evolve into an entity not necessarily very different to what it is now, merely more productive. There are resources which can be manipulated in order to achieve this, but it is the order, speed and manner in which they should be manipulated which are unknowns. Also, Borana society is essentially complex and intact. As an entity it knows how to organise itself, and should and can be brought into the processes of deciding the direction timing and place of any planned changes.

If we accept that the current equilibrium of the system as a whole is threatened and that improvement can be made within the social and technological context of the present system by evolutionary rather than drastic changes then there are two crucial factors to consider and to which all else is subordinated.

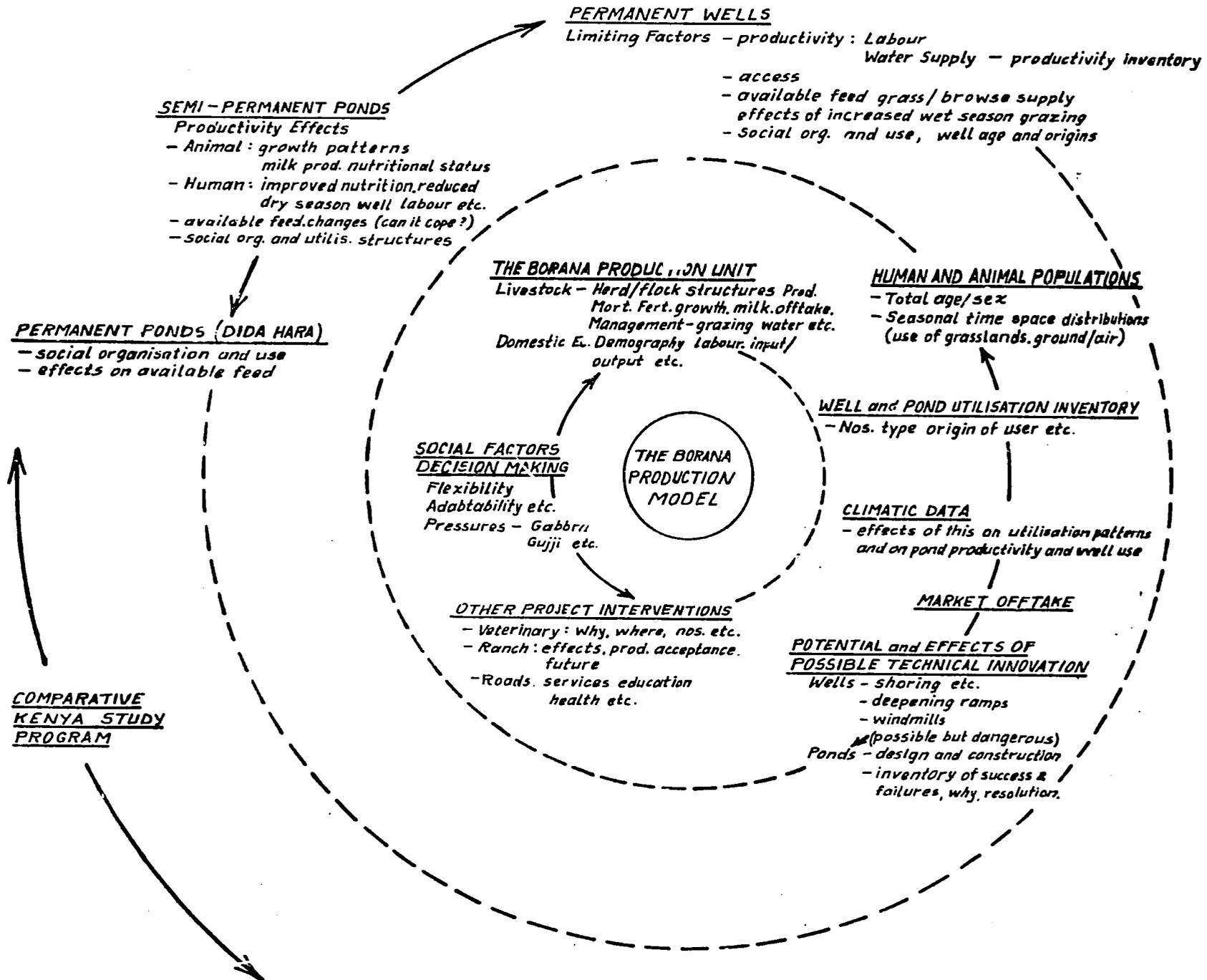
- The permanent well system: the amount of water which can be produced by these and the numbers of animals which can be sustained within the grazing limits of these wells.

- Outlying wet season grazing areas: the extent to which these can be exploited through surface water sources.

Given that these two factors encompass the Borana system in its entirety a Borana Study Model has been designed and is represented schematically on page 53.

The object of the model is to consider the system in terms of the descending but interrelated importance of various resources, interentions or activities, and has as its final objective the formulation of one or more production alternatives which will describe the way in which the various resources available to the Borana can be manipulated to ensure that the system remains both intact as a social entity, and productive as a livestock system.

BORANA STUDY MODEL



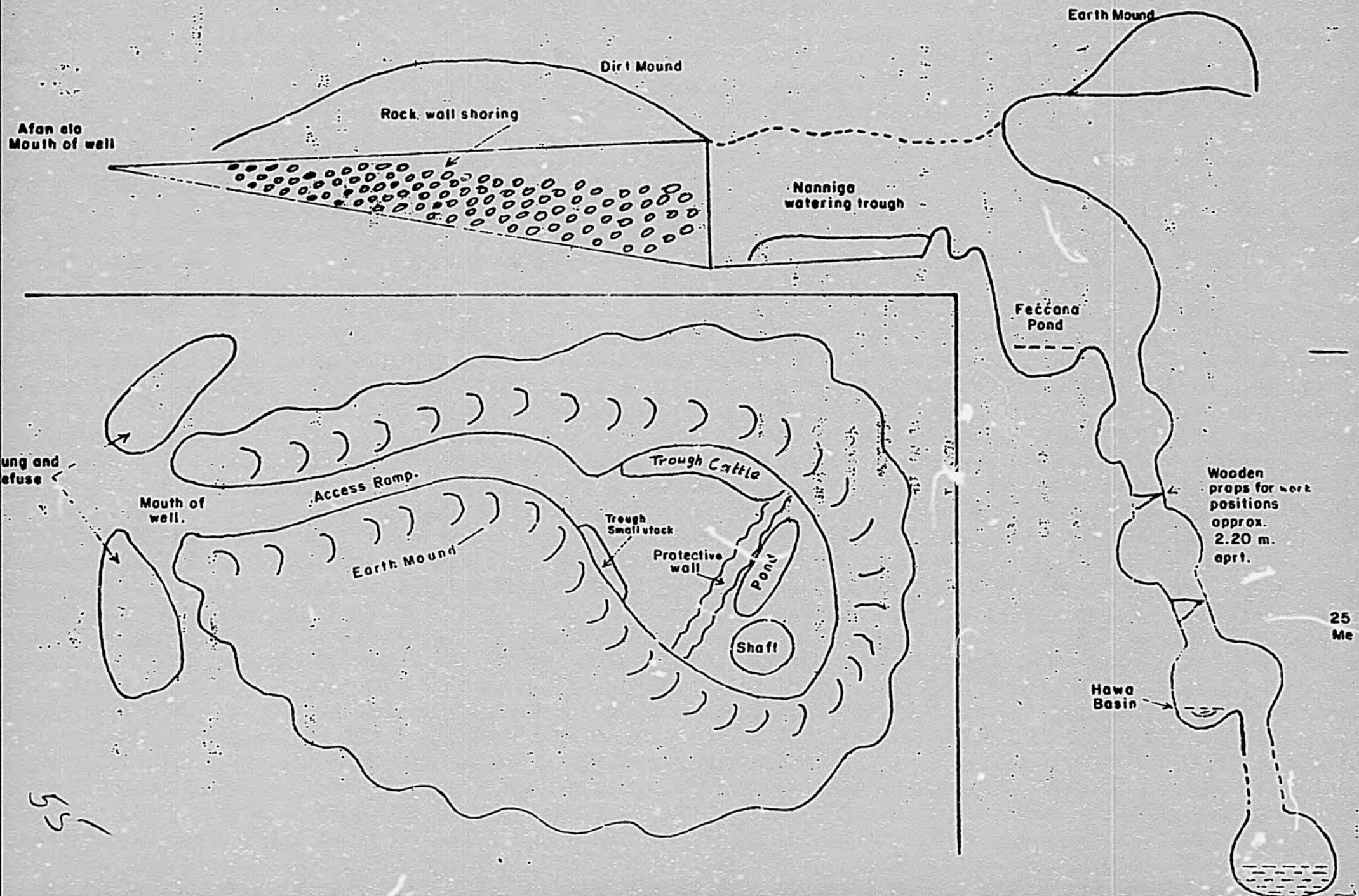
The permanent well system

The permanent wells are the most critical single resource, the focus of Borana economic and religious life and are the key to the entire Borana production system. Borana wells are of two types. Tula wells are sunk deep through the rock, have a complex access ramp and trough system and can be 30 metres or more deep (Ref. diagram). Adadi wells are shallow wide shafts dug out of soft strata, sand or gravel. We know that the organisation surrounding well use and maintenance is complex and highly structured, but we know also that the Borana either have forgotten how to dig the deep tula wells or did not dig them in the first place. This latter may be crucial to the eastern deep well areas, for it seems that existing wells may be going out of production faster than the Borana can either re-excavate them, or re-excavate older wells which have been out of production for many years.

In deep well areas such as Web and Melbana, a previously unknown but critical situation may be fast developing whereby dry season water supplies are decreasing. As a consequence Fora herds may be increasingly seeking alternative dry season water sources with the result that a grazing overload factor may be building up in well areas where water is in abundant supply.

At present we know very little about the Borana permanent well system. It is probable that these are water deficit areas, as described in the diagram on page 45, but in these and the crucial 'water belt', we do not know what factors limit the number of animals watering at any particular well, or the status of the feed supply around the wells. We do not know who uses the wells, the numbers of livestock, at what times or why. We do not know if the water resource is increasing or decreasing, or if numbers of livestock are limited by the actual water supply or the labour to lift water out of the wells. Is access the limiting factor as it may be for the mountain top wells of Gololcha or the crater wells of Dilo and Goraye, or is it simply dry season feed availability as it may be around Web? If the dry season feed situation is still positive then there may be ways

DEEP WELL DIAGRAM - BORANA TULA WELL



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of increasing water production if labour is the problem, by deepening well access ramps by mechanical means, or opening up new access routes to the crater wells.

The Adadi or shallow well areas may also have problems particularly in the water deficit areas of the north west hills. Continued use of some of these wells may be limited by successive cave-ins or landslips and it may be that a simple technological input such as shoring may open up what are now dry season water deficit but feed surplus areas.

The whole Borana well system can in fact be described in terms of a series of interlinked dry season micro-worlds, each with its own set of specific problems which limit either livestock productivity or numbers. In this context, measurements and estimates of stocking rates for the area as a whole are irrelevant. The most important measurements are the numbers of livestock the dry season grazing areas are carrying compared with the numbers they should carry and their relationship to wet season grazing areas. For grass has no value to livestock unless it is accessible. In the dry season well areas the problem is not just one of feed, but is a complex of interrelated factors. For example, increasing the wet season grazing period will relieve grazing pressures on the dry season well areas, relieve the length of the labour consuming watering period and will allow an increase in livestock numbers, but only provided water productivity can be proportionately increased over a shorter period.

It is for these reasons that an overall well use and well area inventory is essential. If we are to logically plan for the future, we must be able to quantify the Borana system in terms of critical dry season micro-worlds, the various linkages and interrelationships which exist, and the crucial trends and changes taking place in these micro-worlds.

Outlying wet season grazing areas

If the deep well areas are the key to Borana survival, the wet season grazing areas are the key to Borana productivity. There is no question that these areas are greatly under-utilized, but there is the question of how

much. The present project has increased Borana access to the wet season grazing areas through a net work of seasonal ponds sited in concert with Borana elder groups.

These ponds have almost certainly had a positive impact on Borana productivity, but we do not know by how much, and whether the benefits equal or exceed the costs. If animal numbers are increasing as well as productivity, we do not know if the dry season areas and wells will be able to cope. We do not know what effect the ponds are having on vegetation patterns and to what extent wet season grazing areas are now utilised. How much grazing slack remains in the system and how this can be further exploited are also unknowns and thus demand a comprehensive wet season grazing resource inventory which should be taken during a number of successive dry seasons when all animals have fallen back on permanent water sources.

We believe also that the Borana are beginning to institute controls and formal organisation regarding access to and use of project ponds but we do not know the manner and form of this organisation, how effective it is, whether it is still evolving, and whether guidance and assistance from outside the system would be of use and acceptable.

Dida Hara, the Meda which was created by the construction of permanent ponds ten years ago may provide some of the answers. The most important issue regarding this entire area is its divergence from the Borana norm. There are no permanent wells and thus no well elder groups with all the attendant organisational and social structure. The crucial question to study, is what social and organisational structures, if any, have evolved in their place and, after ten years, what controls are the Dida Hara residents able to exert over ponds in their Meda.

There is also another issue with respect to Dida Hara, for the surface ponds have created a population dependent on an unreliable water source. Last year the rains were poor, and only the action of the Awraja administration in sending tankers, relieved a situation which might otherwise have required entire Ollas with their stripped down minimum Warra herds to move out entirely. Although there were admirable humanitarian motives, the overall and long-term result may have been negative in that it has created

a group of Borana who are now reliant on factors completely outside their social structure for survival under stress. Once a society begins to lose control of its options, it can no longer be described as intact and self-sufficient, a factor which has been an important feature of Borana society and survival to date. Dida Hara thus points towards the fact that there can be no reliable replacement in Borana for permanent wells.

In terms of project interventions there are also problems. Many of the ponds which have been constructed are silting up at a rate which exceeds the ability of the user group to remove silt using hand labour, which is probably between 5 and 10 cubic metres per year, and others simply do not fill with enough, or any water. There are design, location and construction faults throughout the area and a review and inventory of all ponds should be an essential study activity. Pond maintenance and re-construction should thus also be a major future project component.

Production factors

Borana cattle form the basis of a highly successful commercial ranching system in Kenya, but we have no way to compare the productivity of such animals with those in the traditional Borana system. The collection of such data is another essential if we are to properly understand the system.

Borana cattle may, for example, have a crucial feed demand at certain times which affects such factors as fertility. In November 1980 cattle were fat, grass and water were plentiful, but there was no milk as the previous calf drop and breeding season had been a bad one. But how bad. We can hypothesise that Borana cattle, like those in northern Australia, are extremely responsive to feed intake with respect to conceiving or not but we do not know what this threshold nutritional level is.

Calf drop is another aspect and an important secondary calving period is given as November with a fertility flush which corresponds with the long rains of March and April. Calves are born when there may be grazing after the short rains but they go into the peak dry season period as three month old animals, and at the same time there is a high demand for milk for human consumption. Any lengthening of the short rains grazing season at this time

may be critically important as will the quality and quantity of feed around the permanent wells.

Even at the peak of the dry season, the Borana do not give the impression of a people under great stress. They may be hungry but they still show an outward exuberance to life. However in terms of human nutrition we do not know whether the Borana really have enough to eat, and how important may be the role of the small sheep and goat flocks in providing milk for children. Is available food really a constraint to labour output during the dry season when peak labour demand at the wells corresponds with milk production being at its lowest ebb; and would the most effective way to initially help the system be to provide, or organise the storage of food supplements (grain) at each well to supplement the diet of those working in the wells?

Deciding what to do

The Borana social system is a highly structured and organised one, and we know quite a lot about its form and structure. What we do not know, however, is how the Borana decision making process works and how the various groups from the well elder groups to the Meda elders relate to each other. Present day elder groups, for example, seem incapable of either organising sufficient people, or raising the livestock to pay the workers to re-excavate wells which have fallen into disuse. But are the Borana really interested in opening these wells or do they know there are already prohibiting feed and labour shortages?

In Borana, there also appears to be no word which precisely conveys the meaning of the word measurement. People decide things because they know it is the right or correct thing to do and not as the result of a series of quantitative measurements. The elders at Golsa for example know the right numbers their wells can sustain and how many must go elsewhere, and other groups make judgements on a whole host of issues. This idea of rightness must be a composite of conscious and unconscious measurement and it will be important to try and determine how such processes work and how to incorporate a Borana decision making mode within the framework of the production model.

Inner and outer pressures

Pressures on the Borana are increasing from outside the system and from within. We have no measure of the effects of these pressures which range from the outside eastward push of the Somali, to those within the system which range from increased agriculture around the hill areas and deforestation, to the unchecked and potentially dangerous commercial exploitation of vital crater salt deposits. One recent pressure was the introduction of upwards of 3000 Moyale area Gabbra families. The principal stock type for this Gabra group is camels who browse, so direct feed competition with the grazing oriented Borana will not necessarily occur. But already water resources are under strain and trees are being lopped and there may be both serious short term water problems, and longer term effects on the vegetation. Such new introductions within the Borana system need to be carefully studied before the ensuing pressures become intolerable.

And then there is the Kenya connection. Over the border into Kenya from the Huri hills and westwards are Borana - Gabbra groups who either have traditional seasonal or drought stress utilization rights to the Dilo, Goraye and Hobok well areas. Goraye in fact probably forms the essential northern end of a two crater dry season watering axis for the Gabbra, whose southern end is the Chalbi crater in Kenya. It is also hypothesised that large numbers of immatures and livestock (40,000 per year) enter Kenya every year from southern Ethiopia. To the Borana and the Gabbra, the border is of little significance and to properly understand how the Borana and the related Gabbra systems work, it will be necessary to undertake comparative and parallel studies on the Kenya side.

Clearly the questions at this stage could go on and on, for what we do know pales into insignificance besides what we do not know. What we need to do now is to begin to seriously study the Borana production system in the context of the Study Model, modifying changing and expanding this model as our knowledge and understanding of the system expands, and as the various equilibrium and balances change. At no time, however, should first principles be forgotten in a welter of quantitative and measurable data. The basic reference points should continually be that:

- only data relevant to research objectives should be collected. All data collection has a cost and it is very easy to collect too much data which though interesting may not be relevant or essential.

- in the process of attempting to reduce the pastoral systems under study to quantitative elements it will be essential not to allow a dehumanizing factor to assert itself. Man, the object of the research, must not be lost as part of the research process. There must thus be a place for intuitive observation as well as for the measurement of quantitative factors, or factors converted to measureable data. It is to these latter that intuitive observations must be applied in particular to offset or balance the weight of quantitative opinion.

A system that thinks for itself

The Borana have a system well worth while studying and are a people who can capture the interest and intellect of those who care to work with them. They are a sturdy, independent, happy people who show an exuberance and joy of living that is fast being lost in Africa today. They have a lot to be happy about and even in the back breaking work of watering from the deep wells, with all its noise, hubbub and dust, the magical singing chants of the men and women working deep in the shaft rises over all.

At Dilo one evening we sat captivated and enchanted in the soft light at day's end as three women toiled up the steep crater path from the wells singing the 'song of the handsome man', laughing out loud as they improvised, their clear voices echoing around the giant bowl etched within the sharp shadows of the coming night. At times in his life, when a Borana man wishes to contemplate part of his culture or life, he carries with him a special thinking stick to remind him of this. In many ways this sums up the Borana system. It is one that has been given much thought in its creation and operation, and one that deserves much thought in the future.

GOING SOUTH - The Initial Borana Production Systems Study Program

The Borana may be under pressure but they still exist and view themselves as a social whole. When we talk about the Borana production system we can describe one that is still viable in that it provides its people with a generally good life, socially and nutritionally. Even under stress it rarely creates a situation where its people die.

The Borana production system and the manner in which I propose it be studied revolves about the basic premises that

- the Borana production system is understressed in terms of its overall resources, but is probably operating at the limits of its capacity at present with respect to access to its resources, particularly grazing.
- the present project is an essentially correct initial approach in that its emphasis is on increasing the length of the wet season grazing period (increased grazing access and hence increased animal productivity, fertility etc.) and thus access to under-utilised resources in a manner which lies totally within the existing social and technological framework of the Borana.

What we do not know after some years of project implementation is whether the project is having the effect that was intended, just exactly what these effects are, what they mean to the Borana, and where the project should be going next.

- it should be possible to create an ongoing situation within the Borana system which preserves it as an efficient user of pastoral resources, maintains the Borana as an intact society, and which may lead to the production of surpluses which are needed in the national context.

At this stage it is not possible to begin studying all the aspects we will need to, in order to produce a 'Borana Production Model', but we can begin to study some of the more important ones within the context of the Borana Study Model. These are planned to be as follows:

Borana Production Unit Studies

Nine representative Medas have been selected to represent both permanent and water deficit areas, (ref. simplified Borana water diagram), and the four broad ecological characteristics of Borana - the increasingly and eastern lowlands, (Red) the central highland area, (Green) the western plains, (yellow) and the north western hill areas (Blue). Dilo and Goraye were chosen as representative of crater well areas, and Dida Hara as a Meda whose livestock composite relies entirely on recently constructed rainfed ponds. (Ref. separate map fold out)

The actual role and definition of a Meda is unclear as a Borana is entitled to graze anywhere he chooses although in fact pre-set patterns are beginning to emerge. Borana do tend to identify with a Meda area, and the Meda is generally associated with a permanent water source (or sources) and the social grouping this represents. The most important thing about Medas is that they exist, they provide some sort of grouping which can be addressed but their boundaries do not at all represent an intact grazing area or system. Borana as a whole is the intact system and although groupings may later be defined it is too early to state with confidence what these will be. However, Medas are a starting point for looking at the system.

Borana enumerators have also been identified and interviewed and will be trained in March 1981 with respect to the data, measurements and information they will be expected to collect. Each enumerator will live with or near a selected Meda stockowner group and fill in monthly return forms covering human demography; domestic economy; livestock productivity and management; herd/flock structures; and other relevant data on human nutrition, trade, and social factors.

The possibility of establishing a trial Borana herd unit on Sarite ranch for comparative productivity and milk production measurements will also be discussed as will the possibility of establishing research herds in the context of the traditional Borana system.

- Well Productivity and Utilisation Studies

Given that the entire Borana livestock production system is geared to the critical periods of the year when all livestock must fall back on the permanent wells, wells will form a focus of study attention. This includes well utilization and the factors limiting the numbers of livestock which will use a particular well area. Already we are fairly sure that we can define three categories (Ref. Borana Water diagram) of permanent water sources in Borana.

- ellas (wells) which are situated in the water deficit zones, and which cannot support the entire livestock composite of the surrounding Meda during the dry season.
- those ellas which form the crucial water belt and which serve the livestock of 'customary user' Medas, as well as the livestock of the 'home' Meda.
- Dida Hara which has no permanent wells and is totally rainfall reliant.

A questionnaire has been prepared regarding well utilisation and will be tested on selected major well areas during the course of the March study period.

The data collected should describe the user's origin, water rights, labour obligation, frequency of use of the well, and other information as well as the total numbers and type of animal using the well, and will begin to provide an idea of overall herd structures. Water being taken from the wells for other purposes (human consumption and Warra livestock) will also be determined to further elaborate the data. A trial computer program will be written based on the initial data series and if the techniques prove successful they will subsequently be applied to most well areas in the Borana study area so that a complete picture of dry season water utilisation can begin to be drawn, and a total well and dry season inventory prepared.

Preliminary studies on well: production, production limitations, labour requirement and input, and social organization will also be commenced. Wells will be investigated for construction techniques, well age and origins, draw-down factors etc. , and techniques for a future elaboration of this component will be established.

Disease Control Survey

At present the only way in which the effectiveness of disease control program can be determined is by the total number of doses of a particular preventive or control vaccine issued from the stores. A questionnaire form has been prepared which will be applied at all vaccination sites during the 1981 vaccination program to determine the number, type and age of animals which are being vaccinated; in which areas; for what diseases; at what time; and whether the vaccination is an outbreak response or routine control. Whether the animals have been vaccinated before will also be noted, and the entire data set which may include upwards of 400,000 animals will also provide another measure of overall Borana herd structure.

It is intended that vaccination assistants will be trained in the use of these forms and that the data will be collected during the course of the entire 1981 vaccination campaign. This data collecting function will be ongoing and serve to direct future veterinary inputs as well as providing overall information about the status and importance of various diseases in Borana which will supplement the Production Unit Studies.

• Market Surveys

In Borana, bush traders who circulate from Olla to Olla putting together a trade herd and then trekking this to a highland (or Kenya) market, account for a probable high proportion of total trade offtake. These bush traders are very often the Borana themselves. While this trade is recognised, and a method to measure its quantity will be determined during the March field period, the throughput of the traditional static markets (Mega, Yabello, Teltelle etc.) will also begin to be followed using methods and survey forms already tested and operating in the North East Rangelands. We will thus begin to accumulate data on the type and quantity of animals sold, the type of buyer & seller, buyer/seller catchment areas, and seasonal fluctuations in price and numbers, as well as data on general tradestock

movements, including animals which may not move via formal market routes, and those moving over the southern border into Kenya.

- Nutrition Studies

We know very little about human nutrition in Borana and yet when everything is reduced to its fundamental elements it is this aspect which the project or any intervention aims to improve. If it does not, then from the Borana point of view, the intervention may be judged as relatively worthless (this excludes disease control, education etc.).

It is anticipated that human nutrition studies will be commenced in March 1981 with the overall objective of determining in particular if, at the time of peak stress, diet is a limiting factor in labour or energy output which will in turn be a limiting factor on the capability of the society to produce such crucial items as water. Other areas of interest will include debilitating diseases, child nutrition, (e.g. the importance of sheep and goat milk) and the effects of the general level of nutrition on a wide range of factors from growth rate and fertility to human productivity. If we also are able to obtain the two opposite measurements - what the human population requires, and what Borana cows can produce in terms of milk we will also be able to begin to make judgements on how much productivity slack there is in the system in terms of milk available to calves etc.

- Socio-Archeological Input

While it is too early yet to describe the precise value of this input it may contribute to areas ranging from an ecological description of Borana over the last several hundred years, the trade and cultural linkages the Borana system may have with adjoining systems, to a description of who dug, how they dug, and why they dug the great permanent wells which we think may pre-date the present Borana society. An initial ten day reconnaissance will be undertaken by a two man team from the Addis Ababa University, after which the exact manner and value of a longer term input can be determined.

In addition to the above study inputs whose scope is a function of staff and logistics limitations, a meteorological network was initiated in 1979 and its present status is described in the map on page 69.

Staff Inputs

As for the north, the Borana systems study team is a relatively slim affair, and initially will consist of the following. All ILCA staff members are also responsible for the Afar program.

<u>ILCA STAFF</u>	Team Leader.	Junior Professional: Animal Production/ Marketing (part time Meteorological)
<u>RDP STAFF</u>		Full Time: - Assistant Trials and Study Officer - Production Unit Studies and Meteorological Network Enumerators
		Part time: Technical Adviser
<u>HONORARY</u>		: Nutritionist : Addis Ababa University Social Sciences and History Department

BORANA SURVEY SAMPLE : REPRESENTATIVE MEDAS

WESTERN HILLS

MARMARO

North-West hill-lowland Medas. Water deficiency in dry season. Bush (Tryp.) problems.

CATTLE / SMALLSTOCK

ORBATE GEDI - ORBATE OLI

SARITE RANCH

EASTERN LOWLANDS

DIDA HARA

Relies totally on permanent ponds. Borana believe it to be excellent grazing but may be showing signs of over-use.

CATTLE

WESTERN LOWLANDS

CATTLE / CAMELS / SMALLSTOCK
(Some)

HOBOK

Most important western permanent well area. Used by Kenya Gabbra.

NO WATER DEFICIT

KENYA

DILO - GORAYE

Crater wells. As for Hobok. Limit on numbers may be due to access problems.

CENTRAL HIGHLANDS

GOL

CATTLE / CAMELS / SMALLSTOCK

Central highland-lowland Medas. Water deficit problems for Gcbso; access problems for Gololcha. Other problems may relate to high-low grazing patterns.

GOLCHA

EASTERN LOWLANDS

WEB

A great well centre for eastern Borana. May be overgrazed.

CATTLE

CATTLE / HORSES.

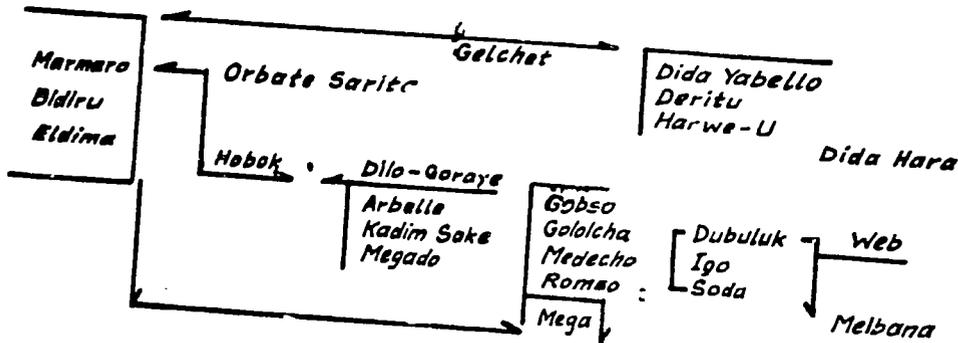
MELBANA

One of the most important deep well areas.

CATTLE / HORSES.

MEDAS : ROUGH VEGETATION - ECOLOGICAL GROUPING

Segon
Cheri

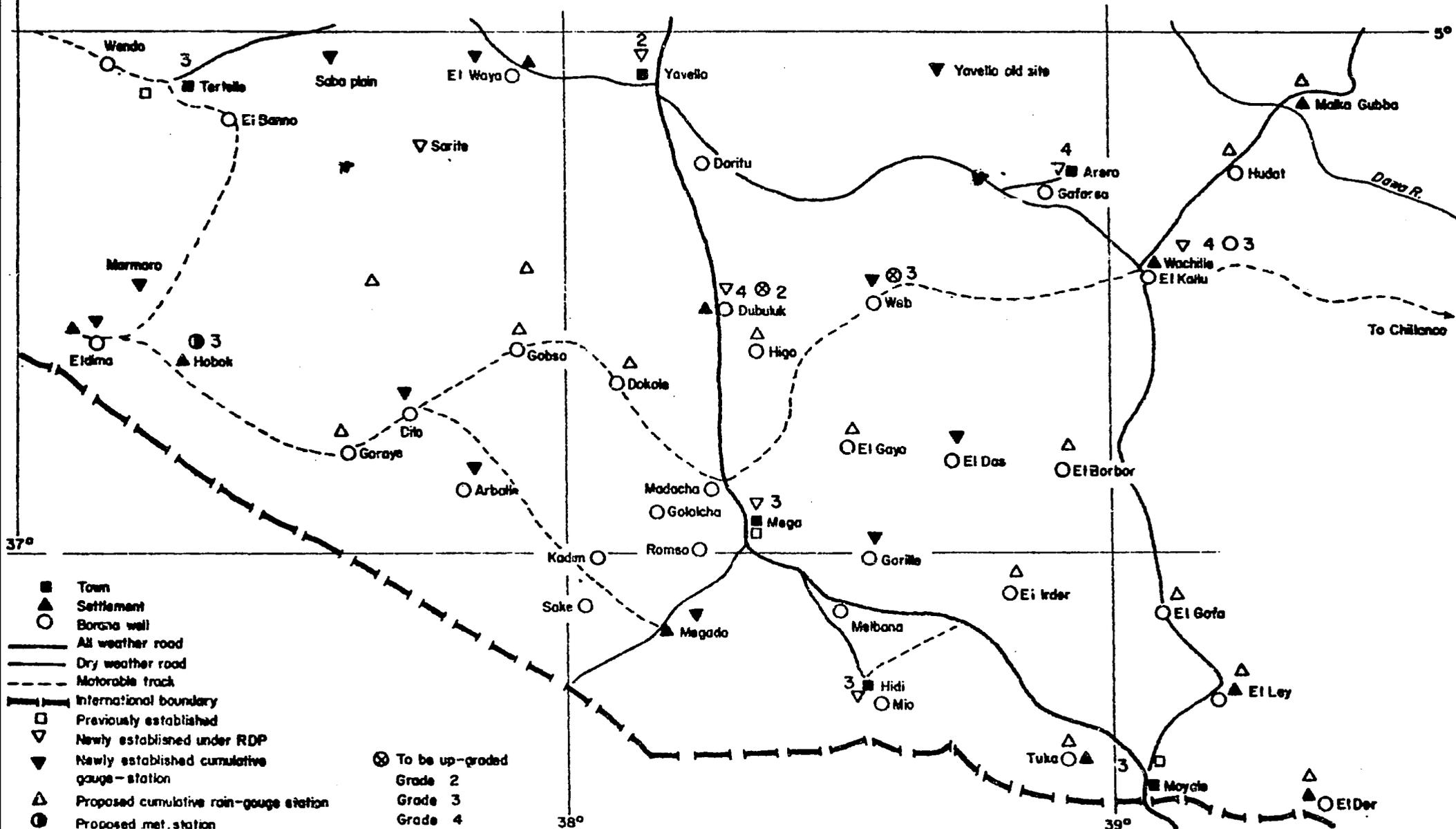


Gelchet: Note that this Meda is a typical because it supports two refuge camps for Borana affected by draught and Shitta. These are from eastern Borana. Some 3000 have been settled.

In other Medas the effects of the recent influx of the Moyale Gabbra, (an induced not a natural movement) with their large camel composite should also be carefully watched.

THE SOUTHERN RANGELANDS METEOROLOGICAL NETWORK

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DEVELOPMENT AND RESEARCH - The Ethiopian Pastoral Production Systems,
Study Proposal

The chapters 'First Footsteps' and 'Going South' describe the level at which ILCA in cooperation with the Rangelands Development Project (RDP) is initiating studies of the Afar and Borana production systems in order to provide information which will serve to guide project implementation. However, in the context of the proposed extension of the Rangelands Development Project, the need for a far more comprehensive understanding of the pastoral systems, and the manner of their reaction to project and other interventions has been identified as a pre-requisite to both future project implementation, and the eventual preparation of a second phase project.

If this is to be achieved, it will be necessary to expand the ongoing studies into the sort of full scale systems study program outlined in the previous chapters. Such a systems study would have as its primary objectives, the provision of information and direction with respect to past, present and planned future interventions, and the design and preparation of future development projects or programs.

As this systems study program can be seen as an integral part of the ongoing project, the proposal is advanced that part of the funds made available under the extension of the project be devoted to financing an effective and disciplined systems study component, which is responsive to but not necessarily conditioned by Government policies and operation. This report poses that this would be most effectively achieved by formulating a special cooperative ILCA/RDP project.

This special project would establish an autonomous study team which would incorporate suitable and available Government staff provided by RDP. Specific senior scientific staff who would not be available locally would be recruited by ILCA. A scientific auditing function will be introduced as an additional study dimension, where senior scientists, specialised in production systems studies would ensure the quality of the work being carried out.

The study team would be free to operate and produce results within the confines of its technical and scientific terms of reference, regardless of the fact that some results may be critical or contrary to the activities of the present project, or even overall national development objectives. This is essential to ensure the integrity of the scientific information being used

to identify future development interventions, and the effectiveness of existing interventions.

To answer the requirements of the production systems study models, a team approach has been formulated which is described schematically on page 73. This contains an outline of the responsibilities of each of the team members, and team groups, and inventories specific tasks. The parameters and methods of study are described in the two study Models in the previous chapters. The essential modus operandi of the team will be interaction, between the study team members, the ILCA scientific support service (computer, modelling, and nutrition laboratory), the RDP management, and the scientific audit group.

Effectiveness of communication is crucial to the systems study program, and standard formal annual or semi-annual reporting modes cannot be expected to keep pace with the complexity and quantity of data and information being collected and analysed. If the systems study program is recognized as being innovative, so must be its reporting and information dissemination methods. The emphasis will thus be on computer printouts with explanatory notes and conclusions, regular illustrated seminars which will be recorded and minuted, and working papers which describe critical points in the data, information or thought process series. At the conclusion of each scientific audit period workshops may also be convened to review and adjust the status and direction of the program as necessary. An annual report will be prepared, but this will be in the form of a comprehensive summary rather than a detailed statement of the study program.

Pastoral systems are notoriously conservative and operate in a very slowly changing milieu compared with agricultural systems. Although the study program will be oriented towards providing information as early and effectively as possible, even after two years it will contain a considerable predictive and intuitive element, diluted of course by a lot of hard and factual data.

The study component is initially proposed for two years, but if a second phase project or intervention program is to be one of the end products of the teams' work, a three year input will be necessary. Also if it is accepted that ongoing systems studies are an integral part of the entire development process, then it will be logical to include a suitable systems study component in the new project or intervention program design.

A cost estimate has been made initially for a period of two years and a provisional cost table is attached. As it is proposed that the study be formalised as an ILCA Special Project, separate accounts and auditing will be maintained and an annual statement will be made in full to the Rangelands Development Project.

As is the case with the present studies a separate Memorandum of Understanding would be signed between ILCA and the RDP setting out in detail the various procedures regarding staffing, operation and administration of the study program. In general terms however, it is visualised that under the terms of the Memorandum of Understanding, an agreed schedule of payments for staff and equipment, and claims for reimbursement of operating costs would be forwarded to the RDP who would request direct payment to ILCA from the development credit.

The Ethiopian pastoral production systems study program will be one of the first instances where research at last becomes fully integrated with development in a dynamic and ongoing sense. The program also potentially has wide implications. Apart from being of essential value to the Rangelands Development Project, the methods developed and pioneered in Ethiopia may lead the way for the complete re-orientation of the planning and implementation of livestock development projects or intervention programs in Africa, and give new life to what now seems to be a dead end in the development of the African pastoral world.

N.J. COSSINS
Addis Ababa
February 1981

THE ETHIOPIAN PASTORAL SYSTEMS STUDY PROPOSAL

Cost Estimates 1981-1983
US\$.000

ITEM	UNIT	UNIT COST	No. UNITS	YEAR		TOTAL 1 + 2	
				1	2		
<u>STAFF</u>							
Senior Scientists	Man year	70	(2)	140	(3)	210	350
Post Doctoral Scientists	"	40	(1)	40	(2)	60	120
Junior Scientists	"	20	(2)	40	(2)	40	80
Data Collectors ^{1/}	"	3	(20)	60	(20)	60	120
Field Assistants (part time)	Lump sum	-		15		10	25
Scientific Audit team	Man months	8	(2)	16	(4)	32	48
Short Term Scientists ^{2/}	"	8	(5)	40	(3)	24	64
ILCA Scientific Input	"	6	(4)	24	(3)	18	42
Sub total				375		474	849
<u>SPECIAL STUDIES</u>							
Aerial Survey ^{3/} (Systematic Rec.)				105		45	150
<u>VEHICLES</u>							
Station Wagon 4 WD	Vehicle	20	3	60			60
Pick up 4 WD	Vehicle	12	2	24			24
Trailers	Unit	2.5	2	5			5
Essential Spares 20%	Lump sum			18			18
Sub total				107			107
<u>EQUIPMENT</u>							
Radios (Vehicle-base)	Each	3	2	6			6
Radios (vehicle-vehicle)	Each	0.25	4	1			1
Camping Equipment	Sets	0.9	10	9			9
Data Centres	Each	2.5	2	5			5
Office Equipment	Lump sum	5	1	5			5
Scientific Equipment	"	40	1	40			40
Sub total				66			66
<u>OPERATING COSTS</u>							
Vehicle ^{5/}	Vehicle year	10	(5)	50	(5)	50	100
Computer	-			20		40	60
Laboratory Analysis	Lump sum	4	(1)	4	(1)	4	8
Scientists Local per Diem ^{6/}	"	9	(1)	9	(1)	9	18
Office Operation	"	10	(1)	10	(1)	10	20
Sub total				93		113	206
Contingencies 10%				75		63	138
GRAND TOTAL				821		695	1516

^{1/} Data collectors cost is all in.

^{2/} Includes travel and per diem.

^{3/} Based on three sample flights for SOROU year 1 and one in year 2, and one per year for NERDU.

^{4/} Based on 20,000 km/year per vehicle at US\$0.50/km.

^{5/} Based on CPU time of US\$400 per hour plus ratio of 5:1 storage to CPU time.

^{6/} Based on average of 120 days in field for senior scientific team. Junior Scientists will be posted in field. At US\$ 15/day = 120 x 15 x 5 = 9,000.

Best Available Document

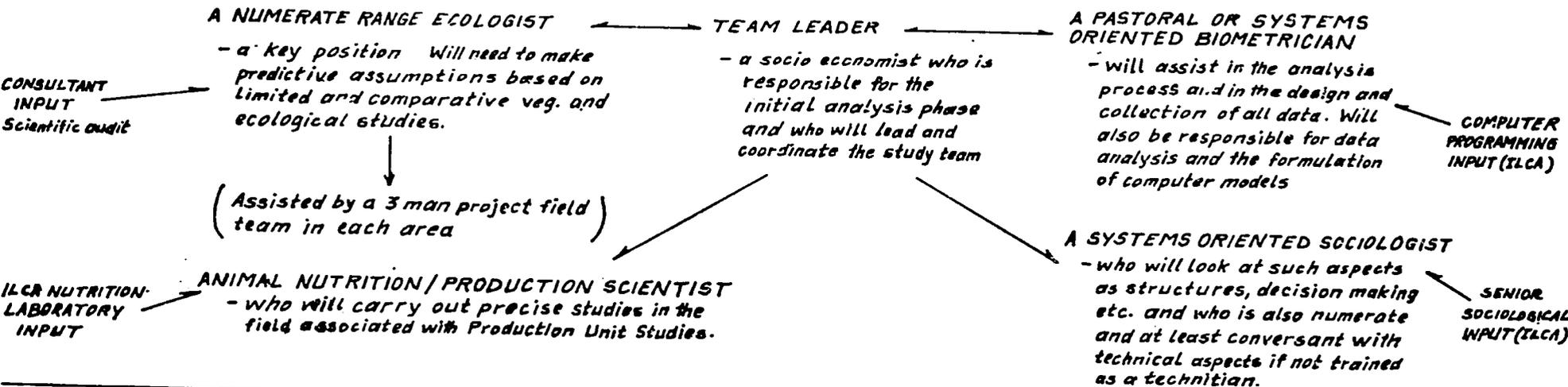
ETHIOPIAN RANGELANDS PRODUCTION SYSTEMS STUDY TEAM

73

HW

SCIENTIFIC AUDIT: A yearly scientific audit of the entire systems study program will be carried out by a two or three man senior scientific team. The objective will be to keep the study team on its toes and to justify their research approach and data to an independent scientific opinion. The first audit should take place at the starting point to discuss and dissect study approaches, objectives etc. Project Management will be included in the audit process.

SENIOR TEAM



PART TIME PROJECT STAFF INPUT:

TWO JUNIOR SCIENTISTS
- each responsible for enumerator networks including climatology, in the north and south. These posts would be full time positions will be equipped with a data centre, and will be specifically responsible for marketing.

JUNIOR FIELD STAFF

Enumerator Networks - Production Unit Studies : 20 : Part or full time field assistants for other study components such as well production and utilisation, nutrition etc.

LIMITED TERM INPUTS

: other than that already described for ILCA inputs which cover Range Ecology, Animal Nutrition, Sociology, Computer programming, and Scientific Audit whose members may also be involved in one of the above short term inputs.

- : Aerial Survey. Population distribution. Numbers, trends. Vegetation stratification etc.
 - : Macro / Micro Economic Input.
 - : Human Nutrition
 - : Engineering : Pond and water spreading inventory, well potential etc.
 - : Marketing
 - : History - Archeology : description of system stability, links etc. Coop program with Univ. of A.P
 - : Computer Time : Programming, Processing, Data Runs etc.
- 4 in first year
2. there after