LAND TENURE AND LIVESTOCK DEVELOPMENT IN SUB-SAHARAN AFRICA

AID EVALUATION SPECIAL STUDY NO. 39

by

John W. Bennett

Steven W. Lawry

James C. Riddell

Land Tenure Center
University of Wisconsin-Madison

U.S. Agency for International Development

May 1986

TABLE OF CONTENTS

For any Tables, Figure Boxes, or Graphs that may be omitted from this document may be found on Microfiche.

FOREWORD

This paper emerges from a process of rethinking Agency for International Development (AID) livestock interventions in Africa. Both the Bureau for Program and Policy Coordination/ Center for Development Information and Evaluation (PPC/CDIE) and the Bureau for Science and Technology/Office of Rural and Institutional Development (S&T/RD) have participated in this rethinking process.

In the late 1970s, an emerging consensus on the generally disappointing results of AID livestock interventions in Africa led CDIE to commission papers by Michael Horowitz (The Sociology of Pastoralism and African Livestock Projects) and Allan Hoben (Lessons From a Critical Examination of Livestock Projects in Africa). Insights presented in these two papers provided the basis for a workshop held in 1979 on pastoralism and African livestock development organized by CDIE and the Africa Bureau. Staff and cooperating institutions of S&T/RD were significant contributors to and participants in the workshop. A second workshop in 1981 saw the emergence of a consensus among project technical officers, social scientists, and academics that interventions to improve pastoral production required both a sound technical base and an understanding of the resilience and constraints of pastoral production systems.

During the year of the first workshop, S&T/RD signed a cooperative agreement with the University of Wisconsin Land Tenure Center. Land tenure in pastoral development projects was seen as one of the most important African land tenure problems to be examined over the life of the cooperative agreement. The present document summarizes a series of pastoral land tenure and land management studies done under the cooperative agreement in West, East, and Southern Africa.

The rethinking process embodied in the Horowitz and Hoben papers, the two workshops, and the Land Tenure Center's research has been followed by two recent developments: a sharp decline in the number of African pastoral development projects and formulation by the Africa Bureau in 1982 of a livestock sector strategy. Both the decline in number of projects and the Africa Bureau strategy indicate a continued concern with developing only those livestock interventions in pastoral areas that are sustainable, productive, and of benefit to pastoralists. We hope that this paper contributes to the development of such approaches.

W. Haven North
Associate Assistant Administrator
Center for Development Information and Evaluation
Bureau for Program and Policy Coordination

Christopher H. Russel
Director, Office of Rural and Institutional Development
Bureau for Science and Technology

SUMMARY

The conventional policy model for livestock projects in the 1960s and early 1970s is described in Section 1, "Pastoralists in Transition: A Frame of Reference." The aim of the policy was to make livestock systems more productive in terms of producing more beef for market. Typically, projects were concerned primarily with the physical and technical dimensions of the production process--with animals, pasture, and water--and with organizational and infrastructural aspects of livestock marketing, including establishment of marketing boards and slaughtering facilities and trek routes. As animal numbers grew (for projectand nonproject-related reasons), declining range conditions became an additional concern. Thus livestock programs came to have three main thrusts: improve the quality of animals, increase "offtake" for the market, and improve range conditions. Land tenure was often seen as a major concern with reference to the last objective.

This particular combination of policies was rarely successful in reordering the decision behavior of livestock producers. Pastoralists continued to make the key decisions about production and resource use, and they did so in a way that was consistent with strategies that followed tested procedures. In uncertain environments this often involved reduction of risk. Whatever the strategy, it became increasingly clear that livestock policies had been promulgated without sufficient understanding of the broad social, economic, and ecological environment within which pastoralists operate.

Recognition of the absence of adequate knowledge for sound policy led, in the mid-1970s, to increased study of pastoral production systems. The "economic" perspective characteristic of conventional project design was broadened to include behavioral and institutional features not easily incorporated into econometric calculations. It became clear that many pastoralists produce livestock for market, but the importance of the market to individual pastoralists varies considerably and depends upon such factors as the role of other income sources in the household economy, other economic uses made of livestock (for milk, meat, draft power, and so forth), and the relative importance of social obligations met through animal exchanges. This suggested greater focus on the kinds of social and economic benefits required by pastoralists in return for their efforts at changing their production strategies and learning to manage diminished resources.

Nonetheless, an enhanced appreciation of the broader social and economic aspects of the production system does not ensure successful projects. Although efforts have been made to learn about indigenous systems, how indigenous systems interact with new market opportunities and with project activities remains unpredictable. More recent approaches have recognized that pastoral systems in Africa are in an awkward transitional stage, in which pastoralists

retain many attributes of older systems while responding in often unexpected ways to incentives offered by markets and by projects. Section 1 concludes with a frame of reference that describes the character of the transition process, incorporating some of its key implications to land tenure change.

Although the change process affecting pastoralists has certain commonalities throughout the continent which are, to a certain extent, generalizable for their implications to tenure change, sufficient regional differences exist to warrant emphases on different aspects of change and somewhat different approaches to the key issues in the regional studies in Sections 2, 3, and 4.

Section 2, "The East African Experience With Livestock Projects," examines World Bank and USAID projects in Somalia, Kenya, and Tanzania. In Somalia, the USAID-funded Central Rangelands Development Program concentrated on building up the National Range Agency (NRA), a multipurpose national institution for marketing and processing animals and for controlling range use through ranch development. The review of the experience with the NRA gives rise to a major conclusion: too often governments, through donor-assisted projects, have emphasized building up bureaucratic institutions such as marketing boards and range control agencies without sufficient reference to the production environment faced by producers or a sufficient understanding of the kinds of incentives to which producers would respond.

The analysis of the Kenya Range, Livestock, and Ranch Development Program (1960-1985) focuses on Kenya’s use of various ranch-type tenure models to promote livestock management and range conservation objectives. Ranches incorporated a variety of tenure and management arrangements, ranging from communal to cooperative to individual corporate entities. For Tanzania, the USAID-funded Masai Livestock and Range Management Project and the Livestock Development Program, Phase II, supported by the World Bank, are reviewed. Examining the group ranch experience, it is concluded that the group ranch can be expected to evolve, with or without development projects, for the simple reason that pastoralists are coming to see that their political survival depends on some form of tenured grazing land.

Section 3, "The West African Experience With Livestock Projects," reviews livestock projects in Mauritania, Senegal, Niger, Cameroon, and Mali. In Mauritania, political reforms and new Government-owned water supplies had the effect of obliterating tenure rules based on traditional hierarchy and reflecting a large measure of social inequality. General, nontenure changes were advanced without giving due regard to the need for a new principle of exclusivity to landed resources. This issue has been left to amorphous, traditional, rule-making procedures which have proven incapable of generating a new, generally acceptable system of resource rights.

In eastern Senegal, World Bank and USAID livestock projects have granted exclusive land and water rights to grazing groups as an incentive to adopt project-mandated management improvements, such as grazing rotations and fire-breaks. Although this approach has merit, project designers failed to account for the predominant role of crop production among members of the target group. Project design assumed a predisposition to commercial livestock production, when livestock were actually inputs into the crop enterprise and only supplementary sources of income. Similarly, project experience in Niger underscores the extent to which the pastoral sector exists as a part of a larger regional economy. The character of trade and other relations between the pastoralist Tuareg and Fulbe with their more sedentary neighbors is changing in important respects. For the time being, formalized range control may very well prove impossible. A tenure policy for wells probably has the best chance of succeeding.

Experience in Cameroon illustrates the difficulty of promoting production opportunities for mixed livestock-and-crop farmers when local political and economic resources are controlled by large absentee landowners. In a more optimistic vein, recent proposals to modernize the Dina, Mali's traditional system of grazing rights, point to a promising strategy for building upon, through reform, traditional resource regimes in advancing contemporary development policies.

Section 4, "Botswana's Tribal Grazing Land Policy," reviews the colonial and postindependence antecedents to the framing of grazing tenure policy in the mid-1970s. Tenure reform drew heavily upon the "tragedy of the commons" paradigm as formulated by Garrett Hardin.[1] Through creation of a leasehold instrument, the Tribal Grazing Land Policy (TGLP) grants exclusive rights to extensive areas of sparsely settled land. Despite a rhetorical commitment to improvement of the circumstances of smallholders in communal areas, most TGLP resources have gone to large, commercial holders in exclusive tenure areas. Early evidence suggests that most largeholders are not adopting many of the improved production and land use practices envisaged by TGLP and offered as justification for the tenure reform.

The concluding paragraphs of Section 4 are devoted to a review of efforts to improve smallholder production and management under communal tenure. A popular notion among many planners--the revitalization of the management authority of traditional authorities--is criticized. The suggestion is made that communal land management in Botswana, and elsewhere in Africa, might best be approached as a public lands management problem, similar in concept to the control and administration of individual rights to public

[1]Garrett Harden, "The Tragedy fo the Commons," Science 162 (1978): 1248.

grazing lands in North America. Section 4 concludes with a discussion of possible institutional arrangements for better managing grazing land in Botswana. A model is presented that assumes continued individual autonomy over most herd management decisions and producer membership in local grazing associations. Associations would develop local grazing plans and represent producer interests before a district-level land board, which would enforce grazing regulations consistent with incremental development objectives.

In the fifth and final section, "Land Tenure Policy in African Livestock Development," the authors summarize their findings on the effects of economic change in the pastoral sector upon resource management, access to resources, and traditional tenure rules. The authors present a model which suggests that effective tenure reforms will be based on pastoralists' production environment and management practices: (1) Large, commercially oriented producers may need exclusive rights to extensive grazing areas, secured either through conversion to freehold or, more likely, through creation of a long-term leasehold. (2) Small- to medium-size producers, because of their inability to capitalize private range investments, will require some kind of modified communal tenure. The diversity of income strategies within this segment of the pastoral population suggests that the development of workable group structures will often be difficult. This is an issue that merits much closer consideration in the project design stage. (3) Smallholder itinerant producers present special problems best dealt with through land use zoning and projects which bolster mixed farming strategies or, in some cases, promote off-farm employment opportunities.

Some form of communal tenure will be the rule for the foreseeable future. This requires that attention be given to devising a specific body of laws governing individual rights and limits of access to communal resources. At the same time, developing an institutional framework for allotting land rights and policing land use is of paramount importance. Both tasks are long-term undertakings, but are necessary if small- to mediumsize producers are to have an opportunity to participate in any significant way in commercial livestock production in the future.

PREFACE

This report is the culmination of a series of coordinated studies on land tenure issues in pastoralist development projects which have been underway at the Land Tenure Center, University of Wisconsin-Madison, since 1979. The Land Tenure Center focused upon this topic as a result of discussions at that time with the U.S. Agency for International Development (USAID) concerning research topics to be pursued under the Center's new 4-year Cooperative Agreement with USAID. USAID was beginning a review of its policies toward the livestock sector, prompted by the disappointing performance of its livestock and range management projects. At the Center, a number of staff members had become increasingly uneasy about what appeared to be insufficient empirical and theoretical understanding of land issues in rapidly changing pastoralist societies.

The report aims to fill a gap in our understanding of pastoral systems of production in Sub-Saharan Africa, and in particular those systems based upon the extensive use of arid land resources by cattle-herders. Specifically, the study considers the relationship between the changing economic uses of cattle, changing livestock production strategies and resource use practices, and changing land tenure systems. Land tenure--the structure of rights in land, their distribution, and administration--is important both as a factor interacting with broader economic changes and as an instrument for managing change processes. The study considers how tenure systems are changing as a result of general changes in pastoral societies (for instance, the growing importance of market relations, new technologies for land and water use, and changing patterns of political authority over land), and what these and other factors imply for tenure reform.

Three Land Tenure Center associates have been directly involved in this study, and portions of their individual and combined efforts are presented here. First, Professor John W. Bennett provides a frame of reference for considering pastoralists in transition. Then, individually authored chapters are presented on three main regions of study: John W. Bennett on projects in East Africa, James C. Riddell on projects in West Africa, and Steven W. Lawry on the experience of Botswana, which provides important tenure policy insights for Southern Africa. A final integrative chapter on land tenure policy in African livestock development gleans some critical lessons from this diverse body of experience.[2]

---

[2]Expanded versions of the regional studies contained in Sections 2, 3, and 4 are available in three Land Tenure Center Research Papers:

John W. Bennett, Political Ecology and Development Projects Affecting Pastoralist Peoples in East Africa, LTC Research

The Center is grateful to the authors for their commitment to and perseverance in the formidable task of research and rethinking set for them by this project. We believe they have made substantial and much-needed contributions. We are also grateful to Professor Don Kanel, who as the then-Director of the Center formulated and organized this project; and to Jane Dennis-Collins, who typed and retyped the several parts of this report at various stages of maturity. I have learned a great deal through my involvement in the final assembling and editing of this report, and I hope that others will find it equally illuminating.

John W. Bruce
African Program Coordinator
Land Tenure Center
University of Wisconsin-Madison
May 1984

Paper, No. 80 (Madison: Land Tenure Center, University off Wisconsin, May 1984);

James C. Riddell, Land Tenure Issues in West African Livestock and Range Development Projects, LTC Research Paper, No. 77 (Madison: Land Tenure Center, University of Wisconsin, December 1982);

Steven W. Lawry, Land tenure, Land Policy, and Smallholder Livestock Development in Botswana, LTC Research Paper No. 78 (Madison: Land Tenure Center, University of Wisconsin, March 1983).

Section 5 appeared in slightly dikfferent form as Chapter 16, "Land Tenure Policy in African Livestock Development," in Livestock Development in Subsaharan Africa: Constraints, Prospects, Policy [papers presented at Conference on Overcoming Constraints to Livestock Development in Subsaharan Africa, held August 3-6, 1983, at the University off Florida-Gainesville], edited by James R. Simpson and Phylo Evangelou, (Boulder, Colorado: Westview Press, 1984).

GLOSSARY OF ABBREVIATIONS

AFC	-	Agricultural Finance Corporation (Kenya)
AOF	-	French East Africa (Afrique Orientale Francaise)
CIDA	-	Canadian International Development Agency
CNRS	-	National Center for Scientific Research (Centre National de la Recherche Scientific)
CRED	-	Center for Research on Economic Development, University of Michigan
DDC	-	District Development Corporation (Tanzania)
FAC	-	Fund for Assistance and Cooperation (Fonds d'Aide et de Cooperation)
FAO	-	Food and Agriculture Organization (United Nations)
FED	-	European Development Fund, (Fond Europeen pour Developpement)
IBRD	-	International Bank for Reconstruction and Development (World Bank)
IDA	-	International Development Association
IEMVT	-	Institute for Animal Husbandry and Veterinarian Medicine in the Tropics (Institut d'Elevage et de Medecine Veterinaire des Pays Tropicaux)
IFAN	-	Institut Fran~ais d'Afrique Noire
NACO	-	National Agricultural Company (Tanzania)
NARCO	-	National Ranching Company (Tanzania)
NRA	-	National Range Agency (Somalia)
RIDS	-	Rural Income Distribution Survey
SATEC	-	Society for Technical Assistance and Cooperation (Societe d'Aide Technique et de Cooperation)
SEDES	-	Society for the Study of Economic and Social Development (Societe d'Etudes pour Developpement Economique et Social)
SODEFITEX	-	Society for the Development of Textile Fibers (Societe pour le Developpement des Fibres

		Textiles), a Senegalese parastatal
TGLP	-	Tribal Grazing Land Policy (Botswana)
TLMC	-	Tanzania Livestock Marketing Company
UBT	-	Standard international measure of livestock: 1.2 cattle or 5 goats
UNDP	-	United Nations Development Program

1. PASTORALISTS IN TRANSITION: A FRAME OF REFERENCE

In its basic geographical context, the problem of African pastoralists and livestock development concerns the nature of dryland resources and how best these might be made agriculturally productive to serve social and economic ends. These lands degrade rapidly when irrigation, cultivation, and other uses are developed without proper safeguards. These same safeguards tend to slow down development and reduce animal yield to safe, but relatively low, levels not in accord with national objectives.

This is viewed as a serious problem for those African countries seeking to produce commercial agricultural commodities on arid and semiarid lands for their own food needs as well as international markets. Pastoralist peoples--those who raise livestock in desert or on range and migrate with their herds in order to exploit the resources efficiently--evolved environmentally sound practices over the generations, but these practices yield animal products of a quality and quantity considered to be less than adequate for the new demands. In addition, many pastoralists have occupied rangelands which are capable of accommodating grain production, game reserves for tourism, and other uses which may provide more immediate monetary returns. The importance of animal industry is generally appreciated in those countries as a source of food, hides, and other products, but frequently these commodities appear to be of lower priority than food grains, sugar plantations, and the like. Development planners are asking pastoralists to raise more and better animals, more efficiently, on increasingly restricted acreage.

At the beginning of the "Development Decade" in the early 1960s, probably less knowledge existed about arid-semiarid resource development, and indigenous animal industries, than for any other comparable geographical habitat or form of production. Arid lands research is really in its initial stages everywhere. In the United States, most arid lands research institutes date from the 1950s, and much of their current work concerns research on thoughtless and damaging practices in the United States and how to repair the deterioration they have caused. "Desertification," the French-derived term referring to varied activities with degradational effects on land and water resources, became a matter of international currency only in the 1970s. Among the many problem situations included in the term were the effects on vegetation, soil, and water tables of intensive restricted grazing by pastoralist peoples in various parts of Africa. "Over-grazing," another vague but pregnant term, was always with us as a local and intermittent problem, but its spreading effects began to add up to large-scale deterioration of rangelands only when development began to alter grazing regimes, the freedom of range use, indigenous land tenure, and water use in the 1960s.

The failures--or at least the very limited achievements--of livestock and range development projects in African countries during the 1960s and 1970s were based on this general ignorance of dryland management under unfamiliar social and economic circumstances. The urgency of the development efforts in the countries concerned did not permit a generation or so of lead-in research before various instrumentalities were tried, and the available technical expertise consisted mainly of people trained in the commercial regimes of the Western world, with their many subsidies and regulatory practices designed to make up for resource deficiencies. Such methods, translated into the African reality, were not only less than effective, but interacted with poorly understood livestock-production institutions to result in lowered productivity and serious resource depletion. By the 1980s, it was clear that basic research needed to be done, and, in effect, a fresh start on the livestock development problem is being made. In the past decade, probably more research and conference activity have been devoted to African livestock than to any other agricultural sector for the continent, and our perceptions of pastoralism have altered in several important respects.

1.1 Changing Perspectives on Pastoralism

This decade of research has a number of distinctive characteristics which may constitute the framework for a very different type of development planning and execution. First, the "economics" approach to livestock development has been broadened to include more detailed consideration of behavioral and institutional features not easily incorporated in econometric calculations. This came about because the difficulties of development projects showed that the methods used to raise livestock in indigenous systems were based on distinctive forms of land tenure, animal management, geographical settlement, and resource conservation. Since these practices were part and parcel of the "culture"--that is, the distinctive styles of viewing the world and interacting with nature and other people--of the pastoral populations, anticipated changes in productive activity on the basis of Western styles of incentive did not materialize. Consequently, the indigenous systems had to be learned. Moreover, the reactions within these systems when one component was altered could not be predicted. For example, early projects assumed that if livestock prices increased, herd owners would sell more animals. In many cases, such sales did not materialize. Recent research has demonstrated that this response is a completely "rational" one, given the need to build herds to cushion the effects of recurrent drought, or to retain animals in expectation of a further rise in prices, and so on through a number of factors.

Second, the emerging approaches give greater importance to research done prior to the planning of projects in order to ascertain possible behavioral and institutional responses. This effort has meant more extensive use of academic specialists like

anthropologists skilled in social-ecological analysis. Project design increasingly incorporates "scholarly" analyses of social relational structures, customary land and water tenure systems, and property ownership. These institutions and practices were found to be remarkably resistant to inducements to change, not because pastoralists are innately "conservative," but because the older, existing procedures seem to provide less risk than the advocated new ones. This attitude has been reinforced by the fact that country governments have repeatedly reneged on promises made to livestock producers to supply facilities for pasture development, water, price support, and marketing. In turn, many of these government promises had been generated by the conviction of the foreign technical assistants that their development projects would succeed, that is, that the economic incentives created by such projects would induce appropriate behavior on the part of the producers. As we have already suggested, much of this was built on a basic ignorance of how these livestock production and resource utilization systems really operated--ignorance shared by the government ministry people and the foreign specialists.

Third, the newer approaches to development also include more concern for the welfare of the pastoralist people themselves. In the first decade the livestock development projects in Africa were almost exclusively concerned with animals, pasture, and water, and with the cooperative infrastructural components like marketing boards, slaughtering facilities, and so on. The critical attack on development planning which emerged in the several international conferences of the late 1970s and early 1980s, based on the research that had been accumulating through the 1970s, celebrated the common theme of neglect of the pastoralist populations. The thrust of the development efforts was to improve the quality of the animal breeds, the amount of offtake, and the condition of the range. These emphases can be traced far back into the colonial era (as we shall show in subsequent sections), and they were carried forward into the era of independent states by ministry people and development agency personnel.

However, because the almost exclusive focus on production factors (granting a good deal of lip service paid to pastoralist income and welfare) did not live up to expectations (at least as promised in the project papers), it became evident that something was fundamentally wrong. The producers themselves had been neglected. It was <u>they</u> who made the decisions, not the government ministries or the parastatal creations; it was <u>their</u> welfare they were attempting to safeguard, and they were doing it the only way they knew how: to minimize risk by following tested procedures. Consequently, it has become clear that these risks--risks actually enhanced by the development initiatives--have somehow to be minimized by focusing more clearly on the social and economic benefits required by the pastoralists in return for their efforts at changing their production strategies and learning to manage diminished resources. This perspective for the first time has

appreciated the fact that pastoralists are capable managers of their own economy, and not incompetents unaware of the fine points of livestock production. Their priorities were simply more complex than simple output for markets; they produced for a basic social living, much as the early ranchers in North America, Australia, and the South American pampas did, with sales of animals as only one of several objectives.

Fourth, newer approaches to the development of pastoralism have come to recognize that the animal industries of African countries are in an awkward transitional stage. Much of the failure by specialists to comprehend the subtleties of production strategies was based on the incompleteness of historical information, that is, on the differential patterns of change. Thus, the basic ethnological information available at the beginning of intensive development efforts in the 1960s was derived in the main from ethnographic research carried on in the 1920-1940 period, research which had as its primary goal a reconstruction of precontact production and social systems. The concept of the "East African cattle complex" is a case in point. This conception, created in the late 1920s by Melville Herskovits and others, portrayed East African pastoralism as a unified cultural endeavor, in which animal production served mainly social and ceremonial purposes, with the principal values residing not in commercial transaction, but in livestock as symbols of collective wealth.

Many elements of this "traditional" or precontact system have survived into the present, despite changes in the resource base, income demands, and political position of pastoralist populations. Pastoralists in many parts of Africa continue in varying degrees to use animals as wealth and continue to produce animals to finance socioceremonial activities; but at the same time, they are capable of participating in commercial markets when the conditions are right and the needs are apparent. There is evidence that in many pastoralist societies sales of animals have long been part of the livestock economy, although this fact was neglected in the earlier ethnographic research.

Moreover, the earlier research neglected to note that pastoralists have been accustomed to participate in other economies when the occasions arise: wage labor, cultivation, trading, and urban employment. This cosmopolitan adaptability of pastoralists has come to be appreciated only recently as a protection against the results of interruptions to their herding activity deriving from natural and political sources. A recognition of this situation of almost permanent transition and pastoralist accommodation of change argues for development approaches in which pastoralists are provided with useful information and inputs and then presented with alternatives, not forced into positions they have already learned to evade.

1.2 An Organizing Concept: From Subsistence to Commercial Livestock Production

It is possible, and we believe useful, to organize what we now understand about pastoralists in an evolutionary schema. This effort is facilitated by the accompanying diagram, Figure 1. The events and processes indicated are set forth on a rough time scale, beginning with the reconstructed systems of the precolonial era in the l9th century, passing through the colonial era of European intervention, and concluding with the contemporary era of intensified intervention associated with the "planned change" version of development.

Below the time scale are listed two basic social institutions used by pastoralists to manage livestock, or at least those institutions we have chosen to represent the key to the problem of change in the development projects. These are a form of "communal" land tenure or pasture utilization combined with ownership of herds by individuals (not collectivities like whole tribes, clans, and so on). Producers move with the herds at intervals and, in varying patterns and combinations of semipermanent residence or encampments, they move to maximize the availabilities of pasture in a droughty or seasonally variable climate. If herds are going to move at intervals, then it is impossible to assign permanent "ownership" to particular tracts of land; in its place will arise a complex system of customary "rights to use" land (and wells and the like) at certain times and under certain conditions. The individual cattle-owner's right to graze his cattle over broad areas was derived from his membership in a group which held grazing rights in those areas, and hence the term, "communal."

The combination of communal tenure and individual herd ownership has an inherent ~otential for resource abuse; that is, the problems envisaged by the "tragedy of the commons" model can emerge, given appropriate conditions. That such conditions emerged at times in the precolonial era can be assumed; there is no intention here of glorifying the ecology of tri-bal pastoralism--it had its problems like any other human production system. But the point is that, as suggested by the left-hand column of Figure 1 entitled "Preintervention Systems," the herd owners worked out mutual arrangements to handle "commons" management problems if they appeared. Both by negotiation and by pushing and shoving, understandings were reached among tribes or herding groups as to mutual needs for pasture and water--understandings which were flexible in order to allow for the inherent variability of climate characteristics of arid and semiarid areas. Usurpation of pasture by a herding group outside the customary rights system might be met by armed resistance or raiding. Depending upon the pressure on pasture resources, the rightholding groups developed lesser or greater controls over their members' grazing practices. Among individual herders, "herdfriend" relationships developed between herd owners at considerable distance from each other (and often

related by kinship), which operated so that, if one of the pair were affected by drought, his partner would take a portion of his herd on a borrowing basis and return the animals and portions of the increase when the first herder's territory had returned to normal production.

These and other techniques, functioning in a low-fertility and low-density population, were reasonably effective in maintaining an ecological balance among humans, animals, and land and water resources. The balance was probably facilitated by recurrent natural crises--extreme droughts, disease outbreaks, and the like. That is, the pastoralists were never in complete control of the situation; it was simply that, through time, a reasonable continuity of production at a subsistence and traditional wealth-excess level was maintained by processes which can be subsumed, at least in generalizing retrospect, by concepts of "ecosystemic control." Helge Kjekshus has attempted to reconstruct this system for East Africa and its disestablishment by the colonial governments; although there are problems with her analysis, in the main it appears to explain a good deal.[3]

Changes introduced in this socionatural system by colonialism, and their prolongation into the era of independence, had the effect of disturbing the balance among the human, animal, and physical components. So far as basic institutions were concerned, land and water tenure rights and use patterns were greatly altered. The indigenous systems of communal-usufruct tenure were modified in a variety of ways, depending on appropriation of pasture and rangeland for other uses and on the political settlement of landownership accompanying independence. Each African country now has its own particular mix of tenures--some traditional, others borrowed from European law, yet others recently developed to meet particular local needs.

These changes and experiments have had the effect of restricting pasture acreage for migratory pastoral production, introducing competition for available range, and inducing relative overproduction of animals and over-grazing when animal management methods are not changed to cope with altered resource conditions. The system of agreements designed to control resource use has broken down or is gradually deteriorating in many areas, since the physical and economic basis of these arrangements has changed. Pressures by government for more off-sale of animals have driven many herders out of business and encouraged others to move toward a ranching form of production. The human populations are gradually losing their adapted balance with resources, with some areas overpopulated and others underpopulated. This is, of course, a generalized profile of the situation; later portions of this paper

---

[3]Helge Kjekshus, Ecology Control and Economic Development in East African History (London and Nairobi: Heinemann, 1977).

will examine some of these changes, and others, in greater detail.

Figure 1 indicates two major overall consequences: first, a general drift toward entrepreneurship, such as the move toward individual or kin-group "ranching" (which often results in exclusion of small herd owners from the system). This change means that the collective benefits sought under the indigenous system are replaced by an attempt to maximize individual gain--or at any rate benefits for the effective local producing groups acting entrepreneurially in the absence of the socionatural "ecosystemic" controls. It should be noted that such entrepreneurship does represent "development" insofar as it means that pastoralists move toward commercial regimes, as sought in development programs. However, the process occurs at the expense of the collective welfare of the tribe or general population. "Excess population" emerges; these people move into the towns if farming or trading is not possible. The second major consequence is a disturbance of the physical controls of animal management. Herd size is no longer governed by collective controls operating in consonance with physical factors, but by the search for individual gain, commercial opportunities, and the like. The equilibrium reached under indigenous conditions between human and animal populations, in relationship to resource potential at given levels of exploitation, is upset, and populations fluctuate, or grow, in response to "extraneous" factors.

The predictable results for the resource base are chronic overgrazing of available pasture and chronic shortages of water. These conditions exert a continuous demand for improvement or amelioration. Thus, the dominant theme of the colonial government development efforts was resource conservation--finding ways to alleviate pressure on land and water. In the era after independence, these goals have continued, but added to them has been a series of projects designed to increase commercialization of livestock production in an effort both to remove the "excess" animal population from grazing lands and to increase the quantity of animal products available to the national economy or international markets. To accommodate this commercial development, development projects in the 1970s emphasized government and parastatal companies designed to receive and process animal offtake.

These projects had limited success (most were considered "failures") because of inadequate pricing mechanisms and a lack of follow-through on guarantees of enhanced resource development. Pastoralists commonly considered that, in light of low or fluctuating prices, they might experience less risk by continuing in the transitional production regime, hoping to benefit from the mixed subsistence-commercial strategy they had utilized since colonial times. While the communal tenure situation has been selectively and locally modified in some situations, the pastoralists have not adapted it in a general or comprehensive manner;

that is, they have attempted to maintain a migratory strategy as best they can, given the various constricting factors.

2. THE EAST AFRICAN EXPERIENCE WITH LIVESTOCK PROJECTS

This section of the paper reviews livestock development projects in East Africa funded principally by AID and the World Bank group, with contributions from other national and international agencies. This review is based on a series of papers representing the final plans and budgets of the projects involved in each program, together with, where available, evaluative studies of the success and failure of these projects and programs. At the close of the country reviews, the general pattern of development planning and implementation followed by the agencies will be discussed with reference to a number of scholarly critiques.

The review will dwell mainly on three countries, in this north-to-south order: Somalia, Kenya, and Tanzania. This order is also one of expanding treatment and analysis, since this section of the paper is concerned mainly with the East African countries proper.

If there is a major theme in this review, it is that the style of development used in East Africa for livestock development is based mainly on the theory that by creating state agencies, or semiautonomous bureaucratic organizations, facilities for production will automatically provide adequate incentives for the pastoralist producers to increase and improve their production. This approach to development apparently has not provided the incentives; in addition, the activities assigned to these organizations have tended to disrupt the traditional and relatively effective modes of production without supplementing them with more effective strategies. Few of the evaluative reports assess this crucial issue; their criticisms pertain to more specific failings. At the same time, certain features of the development programs have provided infrastructure which possibly may permit a more adequate regime in the future. The professional method of evaluation of development programs makes it difficult to discern these possible contributions or successes, while at the same time it criticizes efforts for a lack of realism, which is more easily understood as part of the necessary enthusiasm associated with the building of new institutions in new nations.

This section of the paper concludes with a comparative examination of the group ranch phenomenon in Kenya and Tanzania.

2.1 Somalia: The Central Rangelands Development Program

Nearly half of Somalia is rangeland, with a fluctuating and geographically variable precipitation of 50 to 200 millimeters annually. Seventy percent of the population lives in village settlements, their populations practicing transhumant grazing plus

crop raising. In the late 1970s, when the livestock development projects to be reviewed here began, Somalia was one of the poorest countries in Africa, with a per capita GNP of about US$110. Because of usual circumstances--deteriorating rangeland, increasing population, political unrest, and other factors--many pastoralist groups have found it increasingly difficult to operate even as subsistence herders.

It would appear that development of the livestock industry is, therefore, a matter of high priority for Somalia, more so than for other East African countries with more diversified agricultural and light industrial sectors. These facts help to explain the distinctive character of the projects reviewed, that is, the strong emphasis on creating governmental organizations and agencies which could act as patrons for the principal national source of wealth. In the 1960s and 1970s, livestock exports from Somalia were increasing rapidly. In the period 1974-1976, livestock furnished about 80 percent of all foreign exchange earnings. Of the animals exported, 57 percent were sheep and 38 percent were goats, while cattle and camels accounted for only 3 percent and 2 percent, respectively. One of the main objectives of the development programs was to increase the number of highquality beef cattle for export.

The mechanisms of change described elsewhere in this report also have affected the Somalian pastoralist system. Prior to the beginnings of modernization of the economy and the land tenure system, pastoralists adapted to drought by permitting herds to contract and expand through slaughtering and uncontrolled breeding and by transferring animals through migration from one part of the range to another. Constraints on movement, plus encouragement of production and the introduction of veterinary services, resulted in herd growth and consequent range deterioration. This established the need for control of the animal population and for intensive management of the range flora and water resources. Under the present conditions, drought has a growing impact; each period of rainfall contraction leaves the herds, the range, and the human population in worse condition. Considering the dependence of Somalia on its range and livestock resources, it is essential that a new socionatural system be established; simple conservationism is an inadequate response, since it does not deal effectively with human-use strategies.

The project reviewed casts the measures in the context of development, insofar as the overall objective is to stabilize and improve resources in order to increase the output of quality animals, and by so doing, supposedly to improve the economic position of the pastoralist population. As with other livestock projects in Africa, resource control and enhancement is viewed as a bureaucratic activity requiring government intervention. It is also seen from the viewpoint of crisis management: something must be done rapidly to avert an anticipated catastrophe.

The Central Rangelands Development Program dealt mainly with a government organization, the National Range Agency (NRA), and the economic, technological, and production activities administered by this agency. The program was concerned with the development and management of a 149-square kilometer (sq km) area within the Central Rangelands region of Somalia. This region comprises about 25 percent of the total land area of the country and is the portion subject to the most severe droughts. In the drought of 1973-1974, herd losses were as high as 50 percent. Many pastoralist families went on relief; others migrated permanently to Kenya;[4] and an unknown but substantial number died.

The rangelands program was designed to operate over a period of 6 years--hardly enough time to make a start on the problems--but with the expectation that it would continue indefinitely as a long-term program, since most of the projects were concerned with building functioning departments. To quote the AID description:

> The project would . . . consolidate and improve rangeland and livestock production in the project area, increase the income of the pastoralists through the introduction of a system of range utilization, and make way for the gradual concentration of pastoral communities, which would help in the provision of social services. This would be achieved by conducting an aerial survey of the rangelands, including livestock and human habitation, and the preparation of a vegetation map. This would be followed by a ground survey of the rangelands and the pastoral communities. This survey would form the basis for the establishment of grazing reserves and selection of those reserves where stock water supplies would be developed. The veterinary services would be expanded; nonformal and formal education would be provided. The National Range Agency's administration would be strengthened and nurseries, town shelter belts, and water and soil conservation activities would be initiated. Specifically, the project would provide staff, equipment, housing, and transport[5]

The National Range Agency--the organization receiving and administering the funds--was established in 1969 under Somalian laws controlling conservation of game, wildlife, and forests. As in other countries, range management was conceived originally as a conservation issue rather than as one of development. This has both favorable and unfavorable implications: favorable for the range;

---

[4]Ben Wisner, "An example of Drought-Induced Settlement in Northern Kenya," in Abbar: The Somali Drought, edited by I.M. Lewis (London: International Africa Institute, 1975).

[5]U.S. Agency for International Development, Somalia: Central rangeland Development, AID Project No. 649-0108 (Washington, DC: AID, 1979), pp. 3-4.

often unfavorable for pastoralists, whose cyclical strategies for forage use are often misunderstood by the specialists trained in conservation science.

The NRA has considerable powers. It can open and close grazing reserves, establish grazing associations, control stockwater facilities, seize and arrest individuals for offenses, and undertake research. The NRA powers also have significance in the light of the emphasis on persuasive compulsion on pastoralists to conform, exerted by some of the activities in the rangelands project (to be noted later). The most important department in the NRA, from the standpoint of pastoralists and pastoralist development, is the Department of Range and Environment. This contains divisions which plan, implement, and enforce various programs of land, plant, and water conservation; plan and direct the formation of grazing associations; monitor the activities of grazing cooperatives; and establish experimental cooperatives with different functions. Agents of this department are essentially range police.

In the early and mid-1970s, many of the difficulties with pastoralist production described for other countries made their appearance in Somalia. This accounts for the attention paid to the pastoralist activities and social organization in the World Bank and AID papers for the rangelands program. The AID rangelands Project Paper provides about 15 pages (out of a total of about 70 textual pages) of description of pastoralist production and its organization. The material presented reflects a sophisticated view of the system, and it is clear that qualified anthropological consultants were called upon for assistance.

The most important aspect of this material concerns the institutions of grazing associations and grazing cooperatives. The cooperatives were started in 1974 under the sponsorship of the Ministry of Livestock, Forestry, and Range as a preferred method of adjusting pastoral land tenure to modern conditions and grazing restrictions. These cooperatives have had the usual problems of group-production organizations in Africa: the size of the grazing areas assigned to the cooperatives rarely meets the needs of the herds and herders in periods of drought when flexibility of movement is necessary. The expansion and contraction of the herds in relation to the drought cycles have not been modified in the direction of stable, intensified production, although many of the initiatives of the rangelands project were designed to do that--that is, to provide special grazing reserves, watering, roads, and other facilities which might provide backup resources and cushions in periods of special need.

Grazing cooperatives in Somalia were about 12 in number in 1980, most of them in the north on superior grazing land. Each family in the cooperatives had access to more than 300 hectares (ha) of range per family unit. The cooperatives also retained the

right to graze common rangeland in drought emergencies. The development of the cooperative system by 1979 was beginning to squeeze smaller herd owners not belonging to cooperatives out of the areas, since the cooperative system was in effect enclosing grazing lands. One of the secondary or incidental objectives of the rangelands project was to develop grazing lands so that the nonmembers would be assured of pasture. Presumably, the countervailing force would be grazing associations, but some cooperatives on a different plan are also alluded to. (The Project Papers hints subtly of a realignment of the political economy and ecology of grazing.)

The grazing association comprises a rather different tenure system and has indigenous roots in Somalian sociopolitical structure. The associations emerged over the past 40 years and were fitted into the Somalian system of village and district local government. Transhumant herding groups from outside the association region are given the right of limited grazing in the territory--a practice that the cooperatives did not permit. By late 1979, there were 34 grazing associations in the rangelands region, each consisting of a group of pastoralist families who are elected or chosen by their respective village or district council. The members meet as a body at intervals to decide on management of their grazing territory and its rules. District Range Assistants, employees of the National Range Agency, supervise the grazing operations and activities of the associations and also provide a certain amount of extension assistance. The project includes funds for the strengthening and buildup of these services.

The grazing associations were viewed by the project designers as more than desirable organizations. They were, in fact, prerequisites for assistance of any kind to the pastoralists.

> In order to enhance the participation of pastoralists and their acceptance of restrictions on grazing, a strong non-formal training component has been incorporated into the Project. Establishment of reserves and stock water development has been made contingent on the dec4ared willingness of pastoralists to cooperate[6]

That is, the pastoralists were required to conform to the project's definition of what is good for livestock production before any benefits could flow to the range areas. The point, of course, can be argued: since the grazing associations had strong indigenous roots in Somalian land tenure and local government, the demand may not have been unreasonable. It was, however, a competitive strategy designed to favor the grazing associations over the cooperatives, the latter being seen as a constraint on grazing and production in certain localities.

---

[6]USAID, Somalia, Annex 10, p. 8.

Whatever the merits or demerits of requiring conformity, the question here is whether the project made adequate provision for the "nonformal training" and education functions which it felt would be required as a means of persuading pastoralists to accept the rangelands program. To determine this requires an examination of the fund allocations. The logistic items--construction, vehicles, machinery, equipment, furniture, vehicle and machine operations, maintenance and utilities, and food rations--constitute a total of US$24.4 million, or more than half of the grand total. Salaries for foreign technical assistants add another US$10.93 million. Items which conceivably might reflect the training and education functions--professional services, fellowships, and perhaps local salaries--are funded at US$9.59 million. The two Project Papers do not include a description or presentation of the "nonformal training" or extension program, although they do contain a single paragraph describing the formal training at the Livestock and Range School, an institution to be funded by the program and operated by the NRA. The fellowships and professional services items refer to this operation, not to the work with pastoralists. Thus, the nature of the important educational functions directed toward pastoralists, to obtain their important consent and participation, cannot be determined from these papers, and no budgetary item specifically pertaining to it is apparent.

Although it might be argued that the extension training services are to emerge out of the reconstructed and strengthened National Range Agency as a matter of course, one can conceive of a rather different rangelands program which would achieve more effective integration of government agencies and the producer population. Such a program would consider the pastoralists as the target beneficiaries--not as secondary or "effect" beneficiaries. Major funding allocations would be made for extension services involving local, semipermanent training schools and facilities in which pastoralists would participate directly in the construction of grazing reserves, water facilities, and the like. Unless producers participate directly in resource development and conservation projects, they have little understanding of or sympathy with them.

There is no question that the rangelands program will be of great benefit to Somalia insofar as important organizations have been created and their functions defined. In a monocultural economy (mainly livestock) like Somalia, perhaps centralization of control is required. However, the producers are still vital to the realization of national goals; if their interests are not safeguarded, or their incentives cultivated, the system will not prosper.

2.2 Kenya: The Kenya Range, Livestock, and Ranch Development Program

The principal organizational form emphasized in the Kenya

program was the ranch, conceived as an entrepreneurial organization designed to raise livestock under a variety of tenure and management arrangements from communal, to cooperative, to independent corporate identity. The Kenya and Tanzania projects have done more with the ranch models than the Somalia program has with the grazing association. For reasons of comparative analysis, we have decided to reserve treatment of certain problems associated with the group ranch and other forms of grazing control in Kenya until it can be handled comparatively in the section of the report dealing with Tanzania. Since the problems are similar in both countries, and since one substantial tribal group, the Masai, has been the object of development measures associated with ranch organizations in both cases, it seems wise to delay the detailed treatment of this feature.

The Kenya[7] program began in 1960 and has included development projects covering all aspects of livestock production: range conservation and improvement; water development; livestock breeding and management; marketing, including roads, holding pens, and other facilities; and, as a major emphasis, the strengthening of various types of ranching operations and grazing schemes. At the time of writing, this program is in what the World Bank calls "Phase II," which began in 1975-76 and is designed to run through 1985. This livestock-oriented program has paralleled one for crop agriculture with a similar duration. The congeries of projects involved in both of these programs probably should not be described as a coherent planned program of agricultural development. Overall planning began to emerge in, at least, Phase II of the livestock program, although evaluative reports on the program have continued to fault the effort for lack of coherent or informed planning. The program has been, on the whole, a matter of numerous, separate, loosely coordinated projects funded by many different donors.

In the mid-1970s, when Phase II commenced, the livestock population of Kenya was as depicted in Table 1. About one-half of the cattle were located in agricultural areas and belonged to farmers and semipastoralist peoples. The other half were on rangeland, and about 2.5 million of these were in herds belonging to migratory pastoralists. An estimated 0.5 million head of cattle of those considered to be in "agricultural areas" were on large "commercial" and "company" ranches (these are technical terms, defined below). That is, this half-million head represented the prime commercial beef herd of Kenya, used mainly for export sales. Farmer cattle served mainly the domestic meat market and also subsistence needs. Pastoralist livestock served subsistence and

[7]International Bank for Reconstruction and Development, International Development Association [IBRD-IDA], Appraisal of Livestock Development Program; Kenya, Report No. 51a-TA (n.p.: IBRD-IDA Agriculture Projects Department, Eastern Africa Regional Office, 1974).

some commercial domestic market needs. All dairy animals were on commercial farms.

Table 1. Livestock in Kenya (ca. 1975)

Category	No. of Animals
Cattle	9.5 million
Dairy Cows	0.5 million
Sheep and Goats	8.0 million

Source: IBRD-IDA, Appraisal of Livestock Development Program: Kenya, Report No. 51a-TA, 1974

During the mid-1970s, approximately 800,000 head of cattle were slaughtered in Kenya, making an offtake rate of about 9 percent--although an averaged figure like this hardly represents the great variation in output between the various modes of ranch and pastoralist production (ranch offtake was as high as 12 percent; pastoralist, as low as 3 percent). Moreover, in the same period, only about 285,000 head of cattle were actually sold on Kenya markets, which reduces the 9-percent rate to about 3 percent in terms of animals actually sold. (The difference between the 9-percent and the 3-percent rate is one possible rough index of the extent of use of cattle for subsistence purposes.) Of the 3-percent rate, about half was from the commercial and company ranches; the remainder, from farmer and pastoralist herds. Precise figures on the number of cattle sold for beef purposes from pastoralist herds in the north and northeast and from the Masai group ranches in the south are difficult to determine. An unknown fraction, incidentally, consists of pastoralist cattle sold through illegal or covert channels to buyers in other countries.

During the 1970s, Kenya’s official export trade in beef cattle increased steadily: in 1972, the sales totaled about US$24 million; by 1980, the figure was about US$35 million. These are important figures for Kenya; they help account for the interest shown by the Government in livestock production.

The domestic per capita beef consumption in Kenya in 1972 was about 13 kilograms--the highest amount for East ~frican countries and a reflection of the relative prosperity of Kenya, which, after independence, elected to preserve a capitalist, export-industry financial posture.

The principal objective of Phase II was to improve and facilitate livestock production on the several types of "ranches"

in Kenya (these are described below). The nature of the ranching organizations constituted the prime focus of effort in the development program.[8]

The Group Ranch. Mostly in the southern Masai country, with a few in Samburu territory in the central northwest of Kenya, group ranches are carved out of the old British tribal reserves. A total of 60 were targeted for development in the early 1960s. A group ranch consists of from 50 to 100 nuclear families (many of whom constitute a single kin group) who have received a clear title from the Government to a tract of land and who are expected to remain within the boundaries of that tract, raising cattle primarily (and other livestock if they can graze them). The ranch families choose a managing committee which establishes stocking rates and marketing arrangements (surplus stock is sold on a rotational basis among the families); the families maintain their own family-owned herds but have collective title to the land. Financial arrangements are also a group function, and repayment of loans and all services is made by a per-head charge to the herd owners. Sharing in the profits of cattle sales is based on the number of individually owned animals sold minus any charges due for services or loans.[9]

The Company Ranch. Company ranches are commercial enterprises leasing land on an annual fee basis from the Government. They are limited companies, responsible to at least 50 shareholders per ranch, most of whom do not live on the property, some not in Kenya, although many are Kenya Government employees. A few Africans are included in the shareholder group of many ranches, and the number is increasing. Shares can be purchased with either cash or cattle. In contrast to the individual-family herd-ownership pattern in the group ranch, the company ranch cattle are collectively owned by the shareholders. Animals are managed and sold according to agreements

---

[8]For a description, see Lucas J. Ayuko, Organization, Structure and Ranches in Kenya, Pastoral Network Paper No. 11b (London: Overseas Development Institute, Agricultural Administration University, 1981).

[9]For an introduction to the role of the group ranch, see G.B. Hedlund, The Impact of Group Ranches on a Pastoralist Society, Institute for Development Studies Paper No. 100 (Nairobi: University of Nairobi, 1971); J. Helland, An Anthropologist's View of group Ranch Development, Livestock Development Course Note No. 24 (Nairobi: International Livestock Centre for Africa, 1978); J. Helland, An Outline of Group Ranching in Pastoral Maasai Areas of Kenya, Working Document No. 24 (Nairobi: International Livestock Centre for Africa, 1980); and John G. Galaty "The Maasai Group-Ranch: Politics and Development in an African Pastoral Society," Chapter 11 in When Nomads Settle: Processes of Sedentarization as Adaptation and Response, edited by P.C. Salzman (New York: J.F. Bergin and Praeger, 1980).

between the shareholders and the managers, who are paid by a board of directors. Shareholders can sell their shares at any time.

The Cooperative Ranch. The cooperative ranch is essentially the same as a company ranch, but established in accordance with Kenya Government cooperative legislation, which requires a different method of shareholding and compensation. Cooperative ranches are also entitled to certain Government benefits as cooperatives, including low-interest loans for development. Members cannot arbitrarily sell their membership to an outsider; arrangements for partial equity vesting must be made with the cooperative society. A total of 21 company and cooperative ranches were listed for development.

The Commercial Ranch. The label "commercial ranch" is used to describe the 100-odd large enterprises operated by shareholders on top-grade rangeland in central and southern Kenya. Some have been purchased from European owners by Africans in recent years. About half are owned by from 50 to 100 farmer shareholders as a result of the land repatriation policy--land purchased by the Government from British owners. Again, Government employees are among the shareholders. The lands are in freehold tenure and are territory appropriated by the British during the protectorate. A variety of management patterns exist: a few are cooperatives; most are limited companies; some are operated by the owners; others by hired managers for absentee owners, many of whom live in England and Canada. These ranches control the best beef herds in Kenya and sell most of their stock to export traders or hotels.

The Grazing Block. As noted earlier, experiments in the assignment of grazing lands to pastoralists in north and northeast Kenya began under the British, with little success in restricting pastoralist herd and population movements. While the program under examination here appears to have focused mainly on the established ranches (including the southern pastoralist group ranches), the northern pastoralists were expected to move toward the creation of group ranches out of the old grazing blocks. To facilitate this, the program included assistance in providing water sources, roads, marketing facilities, and so on, as well as a strengthened program of land tenure reform and consolidation. The grazing blocks also were conceived as the focus of future village settlements, since as the pastoralists increased offtake and sent their immature animals south for feeding on ranches or farms, they were expected to settle down and become ranchers.

Of the funds for Phase II (about US$60 million), 72 percent were allocated by the World Bank to the improvement of group, company, cooperative, and commercial ranches.[10] Data were not available to permit calculation of what percentage within this

[10]IBRD-IDA, Appraisal: Kenya, p. 13.

category went to the pastoralists' group ranches, but, from indirect references, it would appear that the amount was not in proportion to the number of cattle held on these ranches. As noted previously, about 0.5 million animals were on the big commercial ranches and another 3 or 4 million on other ranches, as against the 2.5 million in pastoralist herds, including the group ranches. The value in foreign exchange earning power of the half-million animals was, of course, many times that of the pastoralist herds, which were used mainly for domestic consumption at Government-stabilized low prices. Internal evidence in project papers suggests that the per-head expenditures on the commercial and company-cooperative ranches was about twice that for the pastoralist herds, with some exceptions in the case of one or two southern Masai group ranches. USAID data provide a figure of 45 cents as the return on every development dollar spent on commercial, company, and some cooperative ranches. A single figure is lacking for the group ranches, but quantities from 0 to 15 cents on the dollar appear in other accounts. There seems no doubt that if the livestock development program is viewed in economic terms, then investments in group ranches and other pastoralist herding operations would have to be considered risky. It is clear that the Phase II program was conceived in terms of high-value production output.[11]

Financial benefits to the "beneficiaries" who invested in the project were projected as fairly substantial: "The rate of return on incremental investment would range from 12 to 23% on the ranches . . . ."[12] Since pastoralists did not make investments in the ranch improvement facilities other than, perhaps, their own labor, one could not expect them to benefit on the scale described. The paragraph refers (though it is not entirely clear) to the company and commercial ranches and some of the cooperative ranches (no data could be found on the relative amounts of investments in the projects by the various ranch beneficiaries).

Although some benefits did flow to pastoralists and to the group ranches, the World Bank Phase II program probably should be viewed as a Government investment scheme to build up cattle-ranching ventures in the private business sector of the Kenya economy to increase the flow of foreign exchange from tourist and export trade. This would benefit many African shareholders as well as Europeans. It is doubtful if this program should be viewed as a serious attempt to improve pastoralist livestock production, increase the income of pastoralists, or otherwise improve or modify the position of these people in the national socioeconomic structure.

It is time now to turn to a critique of the operations of the

---

[11]IBRD-IDA, Appraisal: Kenya, pp. 19-20.

[12]IBRD-IDA, Appraisal: Kenya, p. 19.

Kenya livestock development program. The principal document used for this analysis is referred to as USAID-Devres 1979, and it constitutes an evaluative report by an outside consultant firm of USAID participation in the overall Kenya programs.[13] The Devres analysis is sufficient to document the major issues, since the projects are the same as those in the World Bank segment. There is no need to list all the analyses and conclusions of the report, and we shall make a selection of the items which have special relevance to the topic of this paper. In the most general terms, the report concluded that the program was based on the desire to increase livestock production in Kenya--all other purposes were secondary or derived from this production goal. The report found that this goal could not be achieved with the means used; but even more important, it was by no means evident that an increase in livestock in Kenya was wise or could be supported on the resource base available. The design was accordingly judged to be faulty both in its basic assumptions and in the administration of the projects. It was by no means a total failure, however. Significant gains were made in a number of important infrastructural areas: livestock health, marketing facilities, water development, and, of course, the training of hundreds of Kenyans in new skills. Much of the groundwork for a future livestock industry was created in the 20-odd years of the program to date--this is no mean accomplishment, considering the "faulty assumptions" and inflated objectives. Much planning in human affairs is of this type; to get a massive effort involving basic change off the ground, it is necessary to overplan, overbuild, in order to instill optimism and enthusiasm. The social cost of this method is, of course, an inevitable aftermath of failed expectations.

What, more precisely, was the nature of the shortfall in this case? The Devres evaluation finds the project goals to be economic, both in the nature of their assumptions and in the indicators selected to test accomplishments. These indicators and assumptions differ only slightly from those used in the World Bank paper. The principal assumptions are based on the projected increase in numbers of livestock resulting from the project operations (and other benefits), which have to be valued in some fashion. Both the World Bank paper and the Devres evaluation of the USAID version of the program use projections of favorable price-cost ratios for livestock production for the duration of the project (roughly, mid-1970s to mid-1980s). This yielded a return on investment of 30 percent for the USAID calculations, and ranged from 17 percent to 25 percent for the World Bank. By 1979, when the Devres evaluation was completed, the price-cost ratios for livestock production and sales were unfavorable, and many Kenyan ranches were in financial

[13]U.S. Agency for International Development [USAID/Devres], Evaluation of the Kenyan National Range and Ranch Development Project, AID Project No. 615-0157 (Washington, DC: AID, G.H. Axinn et al., 1979).

trouble. Demand for livestock remained high in Kenya, but the demand was not producing marketed animals. This was due to the fact that the volume of animals predicted has not materialized, since volume was based on expectations of substantial numbers of immature animals coming from the northern pastoralist herds. The program was supposed to create conditions which would induce these people to send their immature animals south for feeding, where facilities were to be created for finishing and marketing. There was, however, no increase over the 1960 figures in the number of immature animals sent south. Thus, the northern pastoralists were not induced to participate on the basis of promised cash income. In addition, the rising costs of production in an inflationary economy made production on the southern ranches increasingly difficult.

The pastoralists did not respond to the economic incentives anticipated by the program for several reasons: partly for the reasons discussed in Section 1.1 concerning the response of livestock raisers, especially when a severe drought has encouraged them to retain stock or rebuild depleted herds; partly because they had little need for cash, since consumer aspirations were low in the north; partly because of the low prices for domestic beef; and partly because certain development measures to improve livestock care were provided gratis by the Government. Offtake was estimated by the Devres team at about 4 percent for a mid-1970s average and could not at any time have reached 8 percent, the figure selected by the USAID project planners to create the favorable economic outcome predicted. Anthropologists consider 8 percent as outlandish; livestock specialists who know Africa regard 4 percent as optimistic. Actual sales offtake, as already noted, was around 3 percent.

As noted, the Kenya program, like others, assumed that increased production would result in enhanced income and, hence, improved welfare for the target populations. Therefore, indicators of the expected results needed to be devised. USAID called these "objectively verified indicators."[14] Three of these were presented: the first was called "family real income" for both the northern pastoralist populations and the more developed ranching areas in the south and central portions. Since nearly all of the families in the north, and many of those in the ranching areas of Kenya (e.g., the small-farmer shareholders in the commercial ranches), were subsistence producers in greater or lesser degree, family income cannot be determined with any degree of accuracy, nor is cash income a measure of economic status. The Devres team performed its own calculations on data collected in the field, finding that "only from 5 to 20% of the total flow of energy and materials recycled within the family or clan unit" were exchanged in the

[14]USAID/Devres, Evaluation, p. 24.

marketplace.[15]

For the ranches, the team noted that USAID papers did not specify what was meant by family income, nor was an attempt made to measure it. This was due to the fact that, for the company-cooperative ranches, most shareholders do not live on the premises nor manage the livestock. Since 1974, none of the ranches paid dividends to shareholders due to the loss of livestock in the severe East African drought. These same ranches, however, were given 10-year loans by the Agricultural Finance Corporation (AFC) of Kenya out of the overall program funds. The Devres team found that this resulted in a majority of ranches going into debt to the AFC with poor prospects for repayment, and most were actually in arrears on payments by 1979. Managers of many of these ranches are junior-grade Government officers, salaried by the bureau and, therefore, unaffected by the financial condition of the ranch (this is a service to the ranches from the Government due to the shortage of qualified managerial personnel).

The Devres team reported flatly that, in their fieldwork, they "found no evidence of any change in quality of life that could be associated with the grazing block program" in the northern pastoralist areas.

USAID also devised a second set of indicators related to an expected increase in sedentation among pastoralists. These people were supposed to settle in village areas, enjoying the social services to be provided by the Government and encouraged to do so by the increased income derived from their sale of animals for feeding elsewhere. Since this objective of stratification of livestock production did not materialize to the extent predicted, no settlement occurred, and the pastoralists apparently remained migratory and adapted to transient pasturage. The team also questioned the merits of sedentation, suggesting it "may not be in the interests of those pastoralists.[16]

The third set of indicators concerned the services to be enjoyed by pastoralists (education, local government, and the like) and the improved ranching and marketing facilities the program was supposed to provide. The team decided that since these services develop very slowly, no evaluation could be made. So far as the southern ranches were concerned, the team noted that, if anything, marketing facilities had deteriorated during the period of the program due to unfavorable cost-price conditions.

The team also noted that the assumption that improvements in income and the assignment of permanent landholdings to pastoralists

---

[15]USAID/Devres, Evaluation, p. 24.

[16]USAID/Devres, Evaluation, p. 26.

currently operating on ambiguous grazing blocks could be expected to encourage sedentation was invalid, since the land program was behind schedule. Moreover, the Government was known to be considering individual property ownership for herd owners, thus confusing the issue. They might well have added that Masai pastoralists regard permanent tenure as a valuable investment, but not necessarily requiring restriction of pasturage to the particular tracts, especially in periods of drought. Moreover, the subsistence factor and the value of herds as wealth can coexist with market sales of animals--one factor does not automatically create or cancel the other--although, if sales are linked to a concept of money capital, the subsistence function and the definition of livestock as wealth will begin to change.

With respect to the question of economic incentives relating to commercialization of pastoralist production, the Devres team noted that Government assistance in the provision of water holes, cattle dips, veterinarian services, and the like appears to delay, rather than facilitate, conversion. Pastoralists simply accept these facilities and use them for whatever fraction of the herds they choose to sell. However, since they do not have to finance these facilities out of their income, there is no incentive for increasing offtake. The team urged that pastoralists be required to pay, at least in part, for services and that stronger efforts at extension work and education be instituted.

Ranch development (group, company-cooperative, and commercial) was found to have proceeded close to schedule. The program originally called for the establishment or improvement of 60 group, 21 company-cooperative, and 100 commercial ranches. In 1979, 50 group ranches were found to be functioning; all 21 of the company-cooperative ranches were operative, but no data were given for the commercial ranches (however, from other sources it is known that about 100 existed in the late 1970s and early 1980s). It should be noted also that these numbers date from the early 1960s and are by no means all the result of Phase II. The establishment of the ranches represents a long-term process and should not be considered simply as an accomplishment of the project.

This development program was based on a set of assumptions which forecast economic behavior of a certain type. The whole structure was erected on the expectation that northern pastoralists would begin to ship immature stock south to permit the ranches and farmers to feed them out, increasing sales of beef to various buyers, particularly export markets. Thus everybody would benefit from the increased offtake. The scheme was based on the assumption that pastoralists decide on offtake on the basis of motives of economic gain. The low prices established by the Government, however, invalidated the assumption. Nor was the initial assumption a sound one, for pastoralists make decisions about offtake on the basis of a number of factors, many of which have no relation to monetary gain. Perhaps the most damaging criticism of the program,

then, is that it did not do its homework and failed to determine in advance just what forces govern herd management, especially offtake in migratory pastoralist societies.

2.3 Tanzania

In contrast to Kenya, Tanzania has the majority of its land in diversified farm production, the product mix varying by location and climate. Some five agricultural regions are distinguished, four of which contain substantial numbers of livestock. The migratory pastoralist style of production is confined to the north, along the Kenya border, and is associated mainly with the Masai and Gogo tribal groups. Agriculture provides a living for 90 percent of the country's population of 17 million, and most of this agriculture furnishes subsistence as well as marketed products.

Livestock constitutes about 11 percent of the country's agricultural production. The total value of agricultural exports in 1971 was about US$178 million, of which about US$8 million, or 4.5 percent, came from processed meat and live beef cattle. The national herd is around 13 million head, the second largest in Africa, and is owned by diversified farmers and pastoralists in various parts of the country. However, the majority of the animals are found in the northern part of the country, since tsetse limits the cattle in the rest of the country, excepting a limited area around Mbuya in the southwest. In the north, the majority of cattle are owned by the Sukuma people, who manage small herds (20-30 animals) along with their cotton and maize cultivation. The Gogo and Masai herds in the north-central and northeast areas are larger, averaging around 50 head. Most of the family income, along with subsistence, is provided by these herds, grazed on communal lands. The expansion of these pastoralist herds provided the main increment in the expansion of the national cattle herd from 3 million in 1923 to an estimated 13 million in the early 1970s. That is, the pastoralist segment of livestock production has furnished the main part of the increase in livestock production; but, at the same time, this increase represents the main source of range degradation and the problem of offtake. The main thrust of the livestock development programs in Tanzania has been toward these pastoralist herds in the north, seeking to increase offtake, to add to the food and income supply, and also to control herd size to reduce grazing abuse. The situation is similar to that in Somalia and Kenya, but the geographical focus of the problem is sharper for Tanzania since the pastoralist population is more concentrated.

This concentration helps account for the substantial investments in development projects in this northern region. However, the interest shown in the area is also explained by the significant experiments in land tenure and settlement carried on by the Tanzanian Government. The pastoralist livestock producers were the targets of many of these experiments. Development projects thus were conducted in the setting of attempts to introduce new forms of

communal tenure and village consolidation.

The principal factor in the social experiments of the Nyerere Government is designated by the Swahili word, "ujamaa", meaning fraternal cooperation or family solidarity. The ujamaa village is a constructed community resembling, in some respects, the "intentional" rural settlements established on the basis of communitarian or communal-property religious ideals in the United States and other Western nations. It is important to note at this point that the ujamaa village, when fully developed, has few ties to the traditional settlement and social organization of the tribal communities whose members constitute the volunteer family units of the ujamaa. This is particularly important with respect to the pastoralists, who lack clear-cut nuclear settlements and the kind of social organization and production systems associated with them. The "social amenities"[17] of the livestock development program were, in the stated objectives of the Government and the development program, to be furnished by moving the target population--the "beneficiaries"--toward ujamaa village settlement. The impetus toward ujamaa was particularly strong in the late 1960s and early 1970s, when the program was conceived.

Two projects are reviewed here in which both USAID and the World Bank were involved to varying degrees, though major funding was provided by one or the other agency. As with Kenya and Somalia, these and other projects made up a national program beginning in 1969 or 1970 and continuing until the 1980 period, when international development agency funding for East African livestock projects came to a close or was sharply curtailed.

2.3.1 The Livestock Development Program: Phase II

The original livestock program for Tanzania began in 1968 or 1969 and included a number of projects financed by the World Bank. The objective of these projects was institution-building: "five large scale National Agricultural Company (NACO) ranches are being developed. Government's original request comprised continued NACO support and substantial development of ujamaa and ranches sponsored by the DDCs [District Development Corporations], together with a foot and mouth disease (FMD) vaccine production plant and marketing and processing facilities."[18] As the original projects came close to implementation in the late 1960s or early 1970s, the Government commenced its slowdown on fostering ujamaa communities due to the

---

[17]International Bank for Reconstruction and Development International Development Assocation [IBRD-IDA], Appraisal of Second Livestock Project: Tanzania, Report No. 51a-TA (n.p.: IBRD-IDA Agricultural Credit and Livestock Division, Eastern Africa Regional Officer, 1973), Annex 1.

[18]IBRD-IDA, Appraisal: Tanzania, p. 1.

difficulties experienced by these experiments. The World Bank teams also recommended deemphasis of the DDC ranches as well, and felt that the vaccine plant could not be justified in terms of its minimal use. Therefore, for Phase II, the World Bank decided that the task would be to give NACO and its Government-operated ranches strong support, inaugurate important new projects dealing with livestock marketing and meat processing, and provide limited support for the further development of ujamaa and DDC ranches. It is the credits pursuant to these objectives which are referred to here as "Phase II."

The first credit advanced by the International Development Association (IDA) for the livestock sector amounted to US$1.3 million for a ranching project with a total price tag of US$3 million. The project aimed "to increase the output of beef, expand the development of improved breeding stock, and demonstrate the advantages of modern ranching techniques by developing five cattle ranches and a training program for ranch management."[19]

The Phase II World Bank project, in detail, would include:

-- Development of 11 NACO ranches, 4 DDC ranches, and 22 ujamaa cooperative ranches

-- Development of 3 large markets, 10 medium-size markets, and 20 small markets, and the remodeling of 104 small existing markets

-- Development of 2,300 km of new stock routes and 2,200 km of existing stock routes, and establishment of 4 new holding grounds and improvement of 23 existing ones

-- Reconstruction of 1 meat processing plant and the construction of 2 new ones

-- Provision of technical services, training, and project preparation

The total cost of the project was estimated by the World Bank at US$24.7 million, of which 49 percent was for ranch development, with the majority (30 percent) for the Government-operated NACO ranches. Marketing and meat processing received 33 percent of the funds, with technical services and contingencies allocated 21 percent and 12 percent, respectively.

Three types of ranch organizations are supported by the project.

District Development Corporation Ranches (DDCs). These four

[19]IBRD-IDA, Appraisal: Tanzania, p. 8.

ranches, supported by the Phase II program, were located in districts selected by the Government as targets of intensive development of regional governmental authority or decentralization--the first steps in Tanzania toward true local governing bodies. The ranches were essentially Government-operated cattle ranches similar in structure to the NARCO ranches to be described next. However, their control was vested in the regional district development body, and this made a considerable difference, as we shall see.

The DDC ranches averaged around 40,000 ha; the typical ranch had about 2,200 head, with 1,500 cows, 30 bulls, and 675 calves. In 1976-1977, the typical ranch sold about 2,500 fat steers, all to local butchers in the district. Most ranches were located in sparsely populated portions of their districts, where competition for land was minimal.

National Ranching Company Ranches (NARCO). These were begun in 1968 or 1969 in the World Bank Phase I program. The operation was a direct result of President Nyerere's publicly stated belief that Government-operated facilities would be needed to supply cattle for export, tourism, and also for critical food needs during a period of national transformation. The ranches were originally under NACO, as previously noted, but were given their own organization in 1974 (and were virtually bankrupt by 1976--of which, more later). A total of 12 of these ranches were operating in Phase I, and 6 were added in Phase II when the decision was made to foster this form of production.

Ujamaa Ranches. These originated as an opportunity to make use of the ujamaa philosophy for the organization and improvement of livestock production and the pastoralist population. Thus, two objectives might be served: the livestock output of pastoralists would be controlled and enhanced, and the peoples themselves would be induced to settle down in villages.

Fifteen such ranches were funded by the World Bank. Most were relatively small "village" units, with 50 or 60 cattleowning families in each, most volunteers. Most ujamaa ranches were formed by members of mixed farming communities or transhumant pastoralists; only two or, at most, three were formed out of Masai true migratory pastoralists, and these tentatively, as experiments. However, such classifications into sedentary or nonsedentary producers in northern Tanzania are deceptive. The region has been one of considerable transition and mixing of production styles: many Masai groups have continued to farm intermittently or even routinely; many village people move with livestock almost as often as the Masai or Gogo; and so on. In general, the ujamaa ranches were viewed as a way of stabilizing human and animal settlement in varying degrees for different communities.

As is the case with the Kenya and Somalia projects, the

criteria for evaluation of Phase II mainly concerned the vitality and productivity of organizations and construction projects. The project appraisal paper reviewed the accomplishments of Phase I in this light,[20] that is, not with reference to gains or losses to the general population or to the producers of livestock. The later Phase II evaluation in 1977[21] is also concerned mainly with the bureaucratic operations of the companies and ranches, but it does note that the benefits for the producers and populations involved in livestock were not realized. Such critiques are, of course, expressed indirectly as failures of the project to achieve the projected rates of return or income gains.

On the other hand, a large number of Tanzanian bureaucrats received salaries from these companies for a number of years, and most of them probably continue to do so. In 1980, all of the organizations described in the 1977 report as "virtually bankrupt," nearly defunct, and so on, were continuing to employ agents and occupy offices in Government buildings. The organizational bias of the program is indicated in the evaluation report, which notes that Phase I was a success "in achieving planned ranch development and the buildup of the National Agricultural Company (NACO)."[22] Since much of the remainder of the annex is devoted to describing the failures, inefficiency, and corruption of NACO, the reader is required at least to question whether the construction of such parastatal companies in nations with severely limited managerial skills is the ideal route to development.

Management problems were identified as a major issue in their own right in the evaluation, as was the critical financial position of the Tanzanian Meat Processing Company due to a cattle supply insufficient to maintain a profitable volume. A third main issue concerned the ujamaa ranches. The ranches were not progressing according to the plan and had departed from their original conception as a means of organizing dispersed population into village settlements. All of the ujamaa ranches had been established by the Government in densely populated areas, and thereby constituted enclosed grazing areas in districts already short of adequate pasturage. Hence, the evaluation report observed that IDA credits were being used to finance cattle purchases in overgrazed areas.[23]

---

[20]IBRD-IDA, Appraisal: Tanzania, Annex 1, p. 1.

[21]IBRD-IDA, Tanzania: Second Livestock Development Project: Report of the Review Mission (Nov. 6-Dec. 2, 1976; Mar. 8 -Mar. 12, 1977), Report No. 382-TA (n.p.: IBRD-IDA Agricultural Credit and Liveestock Divsion, Eastern Africa Region, 1977), Annex 1, p. 1.

[22]IBRD-IDA, Tanzania: review Mission, Annex 1, p. 1.

[23]IBRD-IDA, tanzania: Review Mission, Annex 1, pp. 6-7.

Following these "main issues" come the "specific problems,"[24] several of which concern the ranches.

Out of the grand total of 15 ujamaa ranches that accumulated in both phases of the program, only 3 had actually begun stocking cattle during the Phase II period of operations being evaluated. All of the ranches had stocking problems of one kind or another--some understocked, some overstocked at the time of observation. This was evidence that the "ranch" concept was simply not taking hold among transhumants or pastoralists: the ranches were being used more as holding areas, and the herds were being manipulated by their former or appropriating "owners" despite the official designation of the herds as communally owned.

In fact, the chief problem found by the evaluation team with respect to the ujamaa ranches concerned the fact that the members were allowed to continue to own private herds of cattle in addition to those they contributed to the communal herd. These privately owned animals were being grazed on the ujamaa land, and the members took full advantage of dips and other facilities.[25] The ranches were opportunities for "free riders" in the classic sense of Moncur Olson's analysis of the "public goods" problem in organizations like labor unions or cooperatives. The concept of ujamaa had simply not been communicated, nor was it being institutionalized. The Masai were probably interested in accepting the ujamaa ranchland as property and securing the free bulls and ranches they were given, but without accepting the production scheme or social obligations involved.

In the literature on the Tanzanian community experiments, a certain amount of confusion has emerged with reference to the nature of these entities. The program of communal settlements was given a final legal status by the Village Registration Act of 1975, which required villages to register with the Government as communal settlements if they so chose (or could be persuaded to do so by the Government agents). Registration of a village meant that it accepted the idea that all commercial production henceforth must be communal, that is, carried out collectively and the proceeds shared equally. That is, ujamaa, or at least village, registration did not require subsistence production to be communal. So long as livestock producers continued to gain some or most of their subsistence from the animals, they would be entitled to keep private herds. At any rate, the situation meant that all ujamaa ranches had this problem to some extent, and, by 1977, serious overgrazing was the common condition.

Ranch members were also found to be ignoring the Tanzanian

---

[24]IBRD-IDA, tanzania: Review Mission, Annex 1, pp. 7-13.

[25]IBRD-IDA, Tanzania: Review Mission, Annex 3, p. 3.

Livestock Marketing Company (TLMC) as an agent for sales and for purchase of stock. Low Government prices for beef made it difficult to pay adequate prices to Tanzanian farmers and pastoralists who had private buyers, especially in the north where Kenyan merchants were inducing farmers and pastoralists to "smuggle" cattle across the border. At the same time, the company was charging higher prices for cattle bought from it by the producers for breeding, feeding, and so forth, than they needed to pay in local markets. Since many of the ranches (not so much the ujamaa, but the NARCO and DDC) were required to buy from the TLMC by the terms of the scheme, this meant that book losses on animals were common.

The stocking up process lagged through the 1970s on all the ranches, but especially NARCO and the pastoralist ujamaa units. In 1976, the extended drought in Tanzania resulted in considerable loss of cattle, and this was blamed by some interim (19711972) World Bank evaluation examiners as the main cause of poor stocking rates. However, the 1977 team determined that on the two ranches with the worst stocking rates, no stock reduction in response to drought or with regard to pasture conservation took place until after the drought was broken, or at least until very late in the drought period. This suggests that the ranch management was thinking in pastoralist terms: never destock for drought since you may need the animals for subsistence or for herd rebuilding when the drought is over.

The one ray of light in the entire ranch situation in 1976 and 1977 was the DDC ranch, which was judged in the evaluation report as enjoying moderate success on all fronts: stocking, feeding, selling. These ranches were established to "improve the local meat supply"[26] and not to improve the tourist or exportsupply business. They were operated, as we noted earlier, by district development authorities. All steers finished on these ranches were sold to local butchers at local--that is, Government--prices plus whatever minor local adjustments were necessary. The success of the ranches was due to these practices, which put them into the local food chain, and also to the fact that they were all located in sparsely populated areas which had no competition for pasture or where land tenure was not in dispute. "This type of assistance [local support] contributed greatlx to the morale but also to the profitability of the ranch."[27]

One of the most important and useful parts of the IBRD-IDA 1977 evaluation report concerns its attempt to relate a number of variables that were never adequately interrelated in development planning. These concern the relationship of the ranches to the density of the human and livestock populations, and the relation-

[26]IBRD-IDA, Tanzania: Review Mission, Annex 2, p. 1.

[27]IBRD-IDA, Tanzania: Review Mission, Annex 2, p. 4.

ship of these variables in turn to the type of ranch established by Government and/or the development program. The team distinguished four situations:

- -- High densities for both human and livestock populations
- -- Low densities for both human and livestock populations (these were the types of areas selected in the project appraisal paper as ideal for new ranch development, but were not selected by the Government save for the few DDC ranches)
- -- Areas without previous livestock herds
- -- The special case of the Masai ranches (pastoralists expected to conform to intensive livestock production standards)

The high-human/high-livestock density situation was encountered in nearly every one of the ujamaa ranches. However, not all of the so-called ujamaa ranches were, in fact, based on ujamaa villages. As we noted earlier, the ubiquity of the "ujamaa" term often conceals a complex situation in which villages may have agreed to enter the process of ujamaa (which is really a matter of turning themselves into multipurpose cooperatives with communal-property trimmings) but remained a long way from attaining that status. This stage is equivalent to what is called a "Registered Village." The evaluation report recommended that attempts at establishing communal herds--which then compete with the private herds of the members--be replaced with what is in essence a grazing cooperative in which all the livestock would be owned individually but would be managed as a unit, with employed managers, stock limits, and so forth. These would be established in Registered Villages, which have the flexibility needed for such an organization. Whether this scheme would obviate some of the difficulties found with ujamaa ranches remains to be seen, but the writers hope it has at least been tried.

With respect to the NARCO ranches, the 1977 evaluation report is a chamber of horrors, with everything implied from embezzlement to cattle thievery:

- -- The lowest weaning rates occurred not on ranches affected by drought
- -- "Unacceptable" low per-cow costs of production (considered to be much too high for extensive cattle production)
- -- Bureaucratic milking [not a term used in the report] of the organization by the Government, that is, using it as a source of funds, employment, or the like

-- Poorly trained managers (although they were given some courses at the university, these were mainly concerned with technical matters of livestock, and not with the economic and managerial aspects of large organizations)

-- Obvious theft of pre-weaning calves (This was considered easy to do because of the method of record keeping: the reports simply recorded the total number of calves each month; hence, it was a simple matter to under-report by a few each month, these animals possibly being appropriated by employees or their relatives.)[28]

It would appear that any lessons to be learned must come from the DDC ranches, and their applicability on a broader base depends upon whether modes can be found to apply those lessons in the ujamaa ranch context.

2.3.2 The Masai Livestock and Range Management Project

In many respects, the Masai project was a bellwether for other livestock projects involving migratory pastoralists in eastern Africa, and the project attracted a good deal of professional interest from anthropologists, range specialists, resources people, livestock management technicians, and veterinarians. This was a USAID venture, inaugurated in 1969 and operating continuously from 1970 to late 1979 or early 1980, with elements still under way with Tanzanian Government sponsorship. USAID considered the project a crucial one; thus, the project was used as a locus for a number of research and interim evaluative studies, some of which have been published in professional journals in various fields. A reasonably complete bibliography can be found in the biblioqraphical section of the 1981 Nairobi conference report volume.[29] Other documents are contained in the bibliography to the present paper.

The Masai people originally inhabited most of the central and southern portion of Kenya and all of northern Tanzania (i.e., the prime range areas of East Africa). The Masai were in a process of expansion at the time of European contact in the mid-19th century. Both British and German occupations included attempts to "pacify" them and measures designed to restrict their grazing areas. In general, these efforts did not cease with the independence of Kenya and Tanzania, although they have taken different forms. In essence, the effort included four approaches: (1) an attempt to restrict grazing, often by indirect methods of permitting agricultural

---

[28]These criticisms are selected from IBRD-IDA, Tanzania: Review Mission, Annex 6 on the NARCO ranches.

[29]John galaty, D. Aronson, and P.C. Salzman, eds., The Future of Pastoral Peoples (Ottawa and Montreal: International Development and Research Center and McGill University, 1981).

settlers to move into range areas or by preventing grazing in the game parks; (2) attempts to clarify landownership and tenure by assigning grazing areas called "ranches" under varying administrative arrangements--group ranches in Kenya, village ranches in Tanzania, and so forth; (3) encouraging sedentation through the granting of social services at designated points; and (4) establishing a set of measures to improve animal husbandry through veterinary and other animal health programs, better marketing facilities, and encouragement of increased offtake, especially of younger animals, in order to assist in the development of a stratified production regime.

The accomplishments in all of these fields were meager, according to evaluation reports of the various projects. Yet there have been some accomplishments, and there is evidence that the Masai themselves are changing--sometimes in the directions desired in the project purposes and goals, sometimes in other ways. The effort to change Masai ways--both economic and social --has been massive in the sense that a large number of projects have been attempted, but it has been minimal in the sense that none of these projects--World Bank, USAID, and the country governments--has effectively incorporated the Masai themselves into the planning and execution. In some respects, they constitute a case study in the basic deficiencies or misconceptions of the "project" approach to structural economic and social change in developing countries--especially of the attempt to convert migratory pastoralists into sedentary livestock producers of beef.

The Masai program under consideration was the mainline effort of a series of projects enjoying support from a variety of development agencies and governments. The program was supported for a period of 10 years by USAID at a cost of US$10 million from its inception in 1969-1970 to the terminal evaluation and close of the project in 1979. USAID’s discouragement with the general results of the project was a major factor in bringing the Agency to sponsor a number of conferences and research studies, like the 1979 Harper’s Ferry Workshop.[30]

The program included separate projects designed to improve range and livestock management; control diseases; assist in development of security of land tenure; train Tanzanian specialists; develop training for Masai and Tanzanian livestock and range officers; and assemble baseline data on all facets of Masai

[30]U.S. Agency for International Development, The Workshop on Pastoralism and African Livestock Development, AID Program Evaluation Report No. 4. (Washington, DC: AID, 1980). The document available for the present analysis is the terminal report on the project, done by the Devres consulting firm: USAID/Devres, Terminal Evaluation of the Masai Livestock and Range Management Project (Washington, DC: Devres, 1979).

population, economic life, range conditions, climate, and other aspects. The anticipated benefits were the improvement of the well-being and "quality of life" of the Masai by raising income and by helping them establish village life. The Tanzanian Masai numbered about 156,000 persons in the mid-1970s; the project estimated that about 110,000 of these lived "almost entirely on livestock and livestock products.[31]

The project's "Logical Framework" and the specific goal were similar to all other projects reviewed: "to assist the [Tanzanian Government] in attaining its objective of self-sufficiency in livestock products and an exportable surplus to earn foreign exchange."[32] The sedentation of the Masai and the desire to integrate them into national life by helping them commercialize their production and, thereby, providing them more easily with social services (education, health services) would presumably follow from accomplishment of the economic purposes.

Annex 3 of the terminal report is the longest and most detailed Logical Framework document in all the East African development projects for livestock.[33] It contains a total of 41 "objectively verifiable indicators" of "goal achievement" and 38 "important assumptions." Of the assumptions, about 25 are distinct; the others are duplicates cited more than once for particular goals. In our opinion, the crucial assumptions and the experience under each are those listed in Table 2.

This list could be extended; no single assumption in the long list turned out to be completely valid. Many of them were really facets of the same issue; for example, about five assumptions were related to project personnel, technical equipment, prompt delivery of funds, and the like. All of these proved to be a source of frequent and persistent difficulty. In a project as ambitious and as delicately balanced as this one, even slight delays or failures might prove crucial for a particular objective.

The list of "verifiable indicators" had the usual problems associated with migratory pastoralist projects, as discussed in the Somalia and Kenya sections of the paper. This was particularly the case for the indicators of improved Masai status, which relied on the usual data on income, job-opportunities, number of "villages" or "ranching associations" established, and so on. Some of these, like outside job opportunities, do not measure welfare from the Masai point of view, but rather represent an attack on or failure of their own way of life:

---

[31]USAID/Devres, Terminal Evaluation, p. 2.

[32]USAID/Devres, Terminal Evaluation, p. 2.

[33]USAID/Devres, Terminal Evaluation Annex 3, pp. 102-9

> Furthermore, there is proof that up to 200-300 families in the Moipo division of Kiteto had moved into the "Saunyi" area east of Kitivei B, where there are no project or development inputs, in order to "escape" efforts to improve their quality of life. Likewise, such claims--i.e., claims on the part of the Tanzanian government that the Masai have "increased awareness" of their "rights" to village facilities, like wells, schools, shops, etc.--overlook the fact that certain project-assisted inputs stifle Masai efforts at selfhelp and self-reliance. For example, Tangov policies prohibited Masai fund raising to support dam construction at Monduli JU.[34]

The settlements formed under the various projects may have existed, but, on the basis of the research reports and the terminal report, most of them did so in little more than name only--at least so far as their contribution to Masai social change and welfare was concerned.

In two aspects, the Masai project could register certain gains from the standpoint of favorable reception from the Masai people.

The first of these concerned the projects involving new facilities for stock watering. In discussions with the Masai, the terminal evaluation team was told that new wells, dams, reservoirs, and tank trucks for emergency distribution were the "project's greatest contribution to them and it was the project activity they would most like continued."[35] A second area of relative success, in terms of both actual accomplishment and Masai attitudes, is in the field of animal health. The key items here were livestock dips, of which 60 were constructed, raising the total available in Masai areas of northern Tanzania to 94, about a 60-percent increase over the preproject period. About 28 million cattle were dipped, almost 6 million sheep, and over 7 million goats during the period of the project. Some Masai traveled long distances to reach dips, and in one district Masai contributed cash to the construction of dips. During the first 2 years of the project, Masai paid dipping fees. These services were also supplemented by improved veterinarian services, anthrax vaccine, rinderpest protection, and other services, some of them free, others available at cost.

The terminal report fails to mention the fact that animal health measures have been welcomed by pastoralists in Kenya and Tanzania since the days of the British and that, desirable as these may be, they have made a contribution to the increase in cattle numbers which has in turn formed the background for much of the contemporary problem of pastoralist development and change. This does not mean that animal health services should be withdrawn, only

---

[34]USAID/Devres, Terminal Evaluation, p. 79.

[35]USAID/Devres, Terminal Evaluation, p. 46.

that without other and compensatory changes, they can have the usual effects that health measures have had in both animal and human species.

2.4 A Comparative Essay: The Group Ranch Experience

2.4.1 Concepts, Definitions, and Rights of Tenure

The convergence of a number of related tenure institutions toward the "group ranch" concept is a product of the past decade of development work and the exchange of ideas among development specialists in various countries and agencies. In actuality, group ranches are varied in structure, and the variations reflect different national priorities and capacities to handle the problems of grazing, stocking, and marketing of animals. The relationship of institutions of land tenure and use to indigenous patterns of property ownership, grazing, and animal management constitutes another set of variables which makes generalizations about the relative effectiveness of different types of group ranches difficult and hazardous. If the experiences of the past decades with these instrumentalities provide any general conclusion, it is simply that group ranches must be adjusted to the distinctive social, economic, and resource conditions prevailing in particular districts, regions, and pastoralist groups. The only across-the-board conclusion one might reach is that restricting grazing opportunities for pastoralists without substantially modifying the communal tenure-household/individual herdownership system leads to serious abuse of resources and, in addition, seriously reduces the capacity of the herders to cope with recurrent drought.

The best, but all-too-brief, general description of group ranches in Africa is a paper by Clare Oxby. She defines the group ranch as "a demarcated area of rangeland to which a group of pastoralists, who graze their individually owned herds on it, have official land rights."[36] However, nowhere in Africa are the group ranches--usually quite large--fenced, like ranches in North America. Fencing is very expensive; no country has been able to afford such operations on the scale required, and no development project has attempted to fund them. The lack of fencing means that the boundaries, while often surveyed and marked with posts, are permeable to pastoralists who seek pasturage outside the ranch and to pastoralists on the outside who enter and use the ranch acreage for grazing. This lack of fencing is a major material factor which has accentuated many of the difficulties in enforcing sole use of the ranch territory by the designated "owners." That is, while the group ranch proprietors may understand and appreciate the

[36]Clare Oxby, Group Ranches in Africa, W/P3098 (Rome: Food and Agriculture Organization, 1981), p. 2.

assignment of land title to them, they distinguish between landownership, on the one hand, and grazing needs and rights, on the other. No African country has seriously resorted to armed force to compel pastoralists to stay within their ranch boundaries or to keep other pastoralists out--especially in periods of drought, which compel more flexible and expansive grazing movements. We are not implying that the problems of group ranches can be solved by fencing them, only that the lack of fencing aggravates the difficulties deriving from the distinctive production system of migratory pastoralism.

How are group ranches defined in relation to other modes of ranching? There are (1) "individual ranches," to which pastoralists have been assigned tenure rights on the basis of individual or household herding units; (2) "cooperative ranches," in which the livestock are owned jointly by the herding or household units; (3) combinations of the two; and (4) "grazing blocks," in which the pastoralists do not have tenure rights, but are simply assigned a given territory by the Government to use for grazing. The group ranch, then, consists of a tract of land collectively managed by herders who own their livestock individually or as household units. Of the several types, the group ranch is by far the most common and, on the whole, has had the most staying power.

Kenya is the country with the longest experience with group ranches and also with the largest variety of types. The first group ranches anywhere in Africa were established in the late 1960s and early 1970s in the Kajiado district of southern Kenya Masailand. These were planned partly on the model of demarcated, tenured grazing territories established by the British colonial Government in the 1930s in more northerly Samburu districts--schemes which the Samburu resisted and finally voted out of existence in the drought of the early 1960s. The concept, however, did not die and formed the basis of all subsequent experiments. However, there was an interlude of individual ranches. After independence, the Kenyan Government believed that the key to the incorporation of the Masai, Samburu, and other pastoralists into the new nation and its economy would be the assignment of land titles to individual herd-owning households on the familiar Western capitalist assumption that ownership of land is the key to successful market entrepreneurship. The individual ranches were failures. In the Masai districts in which they were established, the best tracts went to the few entrepreneurially inclined Masai, who promptly tried to exclude their poor neighbors and relatives. The idea of the group ranch, based on the earlier British experiments, was adopted as a way of guaranteeing the rights of a majority of pastoralists in a given territory to use pasture.

The crucial variables among group ranch models are the type of land title assigned to the pastoralists and the methods by which this title can be acquired. This is where differences between group ranches in various countries become apparent. In Kenya, the steps

are as follows: (1) The idea of a group ranch assignment may originate in a Government bureau or, to an increasing extent, in a group of pastoralist herders who apply to the Government for assistance. This assistance takes two major forms: first, arrangements to transfer land titles of grazing land, usually in Government ownership, to the pastoralists; second, plans to acquire a loan from the Government, via its Livestock Development Program, funded mainly by international development agencies (mainly World Bank and USAID). (2) After the decision has been made to establish a group ranch, the land selected has to pass through an adjudication process, which is simply a procedure to determine who might have to use the land. Customary tribal grazing rights, residual private rights dating from the colonial era, and Government titles dating from various periods all have to be researched. (3) If the land titles can be cleared, then a Government registrar assigns a title to the group of pastoralists which has been selected. That is, the title clearance procedure involves a determination of which herding households are most eligible for the ranch assignment--usually people who have used the land consistently over a long time and have customary rights to use it on a priority basis. (4) Next, the ranch is officially incorporated as a business enterprise, which entitles it under Kenyan law to engage in financial business (e.g., receive loans) and to be treated as a legal entity (to sue and be sued). The act of incorporation requires the ranch to create an Assembly of Members which must meet at regular intervals and a smaller group of assembly members to act as trustees ("Group Representatives"--the term deriving from the key piece of legislation, the "Group Representatives Act," which legalized the group ranch institution and established a collective ownership and management principle for land). A third body consists of the Ranch Committee which plans the development and management procedures. When all these bodies are formed, the ranch is declared in existence and it becomes eligible for loans from the fund established by the World Bank via the Kenya Livestock Development Project (a continuing program, described elsewhere in this paper).

Procedures for establishing group ranches differ in various countries, but the Kenyan system may be taken as a fair sample. In all cases, land titles must be established or cleared, and the putative "ranch" must be manifested by a social organization of some kind. That is, the ranch is not simply the activities of the herders; they must become "members" of or participants in a body that is recognized by the central government and that now has the rights and responsibilities granted to such legally recognized bodies in a nation-state. This is, of course, a big step for pastoralists to take if they have been clinging to an autonomous tribal or local existence, ignoring their incorporation in a new national social system. The cultural and political implications of this institutionalization process are not always appreciated by the government officials or by the herders themselves.

A classification of tenure rights held by group ranch members in various African countries is as follows: (1) what we shall call the "Kenya" system, in which ownership is granted to a group of herders which has been shown to have customary rights over the range or pastureland in question; (2) the "Botswana" system, in which long-term leases on designated grazing lands are assigned to "agricultural management associations"; and (3) the "Rwanda" system, in which the Government gives short-term grazing licenses to a number of individual and household herders to use the same tract of grazing land--the patterns of actual usage to be worked out by the herders themselves, but with numerous restrictions.

The implications of these differences in tenure arrangements may be described as follows.

In the "Kenya" system, the crucial element is the assignment of freehold title to a corporate group, a group which becomes the owner of the land in perpetuity. The organization can be terminated only if the group representatives vote to do so, in which case the land title reverts to the Government. The relation of this de facto group to traditional social organization is a complex question.[37]

In the "Botswana" system (also Upper Volta) the instrument of transfer is a common-law lease. This lease can be transferred to an Agricultural Management Association consisting of one or more household heads. The aim here is not, as in Kenya, to establish a permanent collective management-ownership body, but simply to assemble a group of producers who declare their intention of exploiting the land. Actual ownership of the land is retained by a quasi-government body, the Tribal Land Board, which receives rentals from the land paid by the producer association. Leases are for 50 or more years, at the discretion of the board, and can be renewed. Rights are inheritable during the tenure of the lease. The key legislation is the Agricultural Management Associations Act, which is concerned mainly with establishing the machinery for transferring benefits to the producers in the form of inputs, resource development schemes, assistance on new production regimes like forestry, and so on.

In the "Rwanda" system (also used in Senegal) the basic instrument of tenure is a land contract between the administrative head of the region and the individual pastoralists. The contract contains restrictions on grazing practices and on the transferability of the contract. It also requires the contractee to observe a number of management practices like stock dipping and adherence to stocking quotas. Contracts can be cancelled by the government if these practices are not followed.

---

[37]Galaty, "the Maasai Group-Ranch."

In very general terms, it is possible to say that the Kenyan system was devised primarily with the interests of the pastoralists in mind: their needs for grazing land and production facilities. The Rwandan system was designed with much more concern for control by government of range and stock production. The Botswana system falls somewhere in between: the pastoralists are expected to benefit from land leases, but ultimate ownership and control is vested in the Tribal Land Board so the Government can exert pressure on leaseholders. Oxby's survey of these schemes concludes, "The initial objective of encouraging the pastoralists' responsibility for the land they use, in the hope they will exploit it in an ecologically viable way, is therefore more likely to occur under the Kenya arrangements than under the Rwanda and Botswana arrangements, where the pastoralists, as tenants, have only limited responsibility for the land."[38] This is a logical assumption, based on the significance of a singlefactor: landownership. But the ecological viability of range use by pastoralists also depends on other factors in the social and management sphere. Pastoralists have tended to consider landownership as a good, but do not necessarily relate it to methods of grazing or stock management.

However, as Oxby also notes, lease and contract methods of assignment may be viewed by pastoralists as a way of diminishing, not granting, rights to land that had been used previously under customary-communal rules. Moreover, in two of the systems, the instruments can be terminated by government without consent of the users. Even the Kenyan system contains constraints: accepting a group ranch means that pastoralists have to terminate their grazing on lands outside of the ranch. The most frequently cited "problem" or "failure" of the group ranch system in Kenya and elsewhere has been the tendency for pastoralists to move outside of the ranch boundaries when their grazing requires it.

These failures--which we shall discuss later--should be viewed in relationship to the time dimension and to the complexity of the pastoralist system of production. The group ranch tenure experiment is recent, the schemes formulated in most cases by ministry experts and foreign technical advisers, and its objectives characterized by desires on the part of governments to gain economic and political control over migratory pastoralists. The welfare of the pastoralists has not been a consistent or dominant theme even in the Kenyan experiments. As time passes, the group ranch "solution" to the pastoralist development program can be expected to evolve into a variety of schemes adapted to particular conditions. As pastoralists gradually come to play a definite role in the national economy, their ability to influence the nature of their tenure position will also improve. Consequently, the group ranch schemes can be expected to change and evolve. The experiences summarized in the subsections that follow should be considered as the symptoms of

[38]Oxby, Group Ranches, p. 8.

immaturity and the basis for subsequent improvements.

2.4.2 Project Planning and Design

International development agencies were asked to fund group ranch-related projects beginning in the mid-1960s, and the first projects were established in Kenya. In most countries the group ranch component was included in larger programs and not as separately funded ventures. In Kenya, the World Bank and USAID projects were (with participation by CIDA and other national agencies) all part of the overall Kenya Livestock Development Program. Since expenditures related to group ranches were combined with many other items, it is often difficult to determine from the project papers just what benefits were received by the group ranches. Expected offtake percentage, for example, may be a figure based on or applied to several types of livestock producers: peasant farmers, pastoralists, commercial ranches, and so on. Funds for loans to pastoralists may be lumped into a general loan appropriation designed to fund all livestock producers and not just the group ranches. But some specific items--for example, water borehole work--may be designated as pertaining to the group ranches, or to "Masai herders," or to similar labels which connote group ranches.

Since details of project design and funding are provided in the earlier East African materials, we shall concentrate here on more general aspects of development planning and concepts.[39] Two issues are of concern: one is the sociopolitical genesis of the group ranch idea; the other is the conception of the group ranch and its needs and development as expressed in project planning.

The first consideration is the political situation in which the Masai found themselves after independence in 1963. Although the Masai, like pastoralists generally, were wealthy in the sense of the equity value of their grazing territories and herds, they were

---

[39]A number of documents assist this effort. An interesting early one is an unpublished paper by Oleen Hess, "The Establishment of Cattle Rranching Associations Among the Masai in tanzania", prepared for the USAID Mission at Accra, Ghana in 1976, but based on observations of the Tanzanian Masai group ranches, then receiving some funding from USAID and World Bank support for the tanzania Livestock Development Program. Accounts of the Kenya Masai ranches are available in the papers of John Galaty, in particular "Maasai Group-Ranch" (1980); and there are various paper published by Kenyan Government offices and research institutions. USAID Mission files contain numerous unpublished surveys and observational accounts. There is no dearth of materials, but there is no single comprehensive synthesis of the history and operations of the group ranches; perhaps it is too early in their history to produce one.

poor in the sense of cash derived from commercial operations. Moreover, their distinctive ethnic culture, preserved by the British policy of permitting them to remain as autonomous as possible, prevented them from taking part in the political decisions attending the granting of independence and the formation of a new national state. This state was dominated by the Kikuyu, the powerful agricultural tribe that had accepted British rule and education--in preparation for eventual freedom. The Masai were aware that Kenyan independence meant the beginning of the end of tribal autonomy and relatively free pursuit of migratory herding. Their feelings of vulnerability centered principally on issues of land tenure. The Masai were aware of the equation of pasturage with land--territory--by the Kenyan Government. These fears were rapidly documented as agricultural settlers and commercial and Government grain farms began appropriating large sections of the better rangelands. Other sources of anxiety have been mentioned--the early experiments with individual ranching and the disadvantages thereto for poorer herding households. These growing feelings of political vulnerability generated an awareness among Masai leaders that changes were in order. The people were therefore prepared for schemes which might guarantee some kind of political stake in land tenure.

Government actions with respect to the pastoralist problem in Kenya were, on the whole, prompt and generally serious. Protection of Masai and other pastoralist grazing lands was seen as a necessity, and legislation was passed enabling the Government to conduct land adjudication procedures; this was followed by a report by J. Lawrance which sketched out the basic concept of the group ranch.[40] Masai supported these proposals, and planning for group ranches began in various parts of Masailand: the first eventual formal assignment of title to a particular ranch occurred in Kajiado in 1975, although ranch development activities extended back into the mid-1960s. Masai approval was predicated not only on the land tenure issue, but also on the fact that acceptance of a group ranch entitled them to receive benefits they had always sought: animal health measures, breeding stock, and extension services. The point of all this is that the Masai were not opposed to the group ranch concept because their political situation had evolved to the point that they were prepared to accept any reasonable guarantee of economic continuity. If the system imposed difficulties in stocking and grazing, these were problems that could be met in the future.

From the point of view of the Government, it was hoped that the group ranch would provide the Masai with economic support, but this objective was probably secondary to two other aims: the need to reduce and control the number of cattle on the range and the

[40]J.C.D. Lawrance, Report of the Mission on Land Consolidation and Registration, 1965-1966 (Nairobi: Republic of Kenya, 1966).

amount of territory that the Masai considered open range. The philosophy of the ranch concept, as already implied, was that, by having title to a particular tract of land, the pastoralists would automatically reduce their herd size and cease to wander at will across communal lands. That is, the idea was to abolish wide-ranging communal grazing by substituting titled landholdings. Similar concepts have been at work in all the other countries in which some form of group ranch has appeared.

The language in Hess's paper is typical of development project planning during the late 1960s and early 1970s. The following quotation documents the primary objectives of the first Masai ranching associations in Tanzania:

> The major objective for the eight Ranching Associations initially selected to be fully activated is an annual average market offtake of 12 percent or more. In order to achieve this objective, the following targets have been established:
>
> a. Average live weight of steers slaughtered should increase from 550 to 650 pounds.
>
> b. Average age when steers reach market weight for slaughter should be reduced from six to four years.
>
> c. Average age when females have their first calf should be reduced from five to four years.
>
> d. Calf drop by females should increase from 50 to 80 percent per annum.
>
> e. Calf mortality should be reduced from 35 to 20 percent.
>
> f. Overall annual calving rate should increase from 35 to 50 percent with a comparable weaning rate.
>
> These goals may not appear very ambitious compared to levels in livestock production enterprises in developed nations. However, achieving them in a ten year period, given the initial conditions and constraints, will result in a vast improvement, and should move the program along to a point where it will continue to grow and develop on its own initiative.[41]

Although Hess may be correct in noting that the objectives were modest compared with "livestock enterprises in developed

---

[41]Hess, The Establishment of Cattle Ranching Associations Among the Masai in Tanzania, Occasional Paper No. 7 (Washington, DC: AID, 1976). pp. 11-12.

nations," the goals are extraordinarily ambitious viewed against contemporary knowledge of Masai pastoralism and its distinctive management style. Hess did observe that in order to fulfill such objectives "a host of supporting activities" would need to be mounted, and other passages in his paper testify to a general comprehension of the difficulties in converting a partsubsistence migratory livestock regime to a sedentary-intensive commercial one. But what Hess and so many other specialists in the country ministries and development agencies could not appreciate in this period was the complexity of the production system and the way this was geared to demographic and resource factors: that is, the way the Masai conceived of what Westerners called "conservation"--that God provided the grass and it was mankind's purpose to raise as many animals as possible on it, moving these animals around to make full use of available pasture and water in a sufficiently large territory. Territorial size was a variable, not a constant. While it might be argued that assigned ranch tenure could be interpreted as a limit on territorial size and therefore a limit on herd size, this point was not obvious to the Masai. In particular, the argument ignored the factor of intermittent drought, which had the effect of varying the productivity of the range, that is, of making "territorial size" a variable in terms of productivity.

Whereas in the recent past the pastoralists had operated their livestock regime alone, with minimal assistance from government and extension agents, with the group ranch system the number of supporting and supervising personnel from the outside increased. These people were employed by or were advisers to a series of new organizations and agencies. In Tanzania, Range Commissions were established in the more arid range areas, consisting of Masai representatives, the District Commissioner, and representatives from as many as five different ministries and Government agencies concerned with agriculture, range, livestock, and water. The commissions are supposed to encourage group ranch formation, supervise loans and technical assistance, and develop plans for range management and conservation programs. In one such commission, some 10 non-Masai persons regularly participated in commission activities along with Masai. Supplemental salaries for these people were, in part, paid out of World Bank and USAID project funds. Added to these people were numbers of specialists from Government and technical assistance (foreign) teams who visited the ranch area at intervals in connection with various services and programs.

This commission and its satellite technicians operated in the background of the ranch structure formed as a consequence of the legislation. Each ranch was governed by an association, with an elected Steering Committee to supervise all activities and Government inputs. The committee would outline plans, then the members would return to their districts to discuss the issues with their constituency; then another committee meeting would be held to hear criticisms and suggestions and so on. This procedure created an overlay of decision-making and political interaction that in

preranch times did not exist. In addition to the committee, each association was required to choose persons to function as managers and directors of the various activities, like water maintenance, stock dipping, and so forth. Dues were assessed by the association and the proceeds recorded and deposited. Government auditors supervised all accounting procedures and checked records. Some associations encouraged the building of schools and other social service centers, seeking Government help to do so.

This thumbnail profile of the bureaucratic structure of a group ranch can be taken as representative of most group ranches and related types of restricted grazing tenure institutions in other countries. The group ranch is not a free and independent entity, but must organize so as to provide accountability to the government and development authorities. Galaty, writing on the Kenyan ranches, makes the point that while these organizational structures represented something new in Masai social structure, the power and lines of authority and decision-making followed traditional social patterns of age-grading, clans, and territorial groupings. That is, the existing Masai social system tends to assume that the group ranch is another form of socioeconomic activity to be controlled by the same instrumentalities that herding always possessed. To the extent that this is the case, it can be expected that elements of the traditional production system and its interest in maintaining the largest number of animals will persist.[42]

Another element of the planning and development process in Tanzania concerns the interest of the Government in furthering sedentation or "villagization" of migratory herders--an objective shared by every African country with herding populations. The Tanzanian case is an especially instructive one because of the special ideological elements, namely, the ujamaa concept of cooperative-collective village organization.

The original Government plans for Masai areas included eventual settlement of the population in these villages with collective and cooperative institutions of social relations, production, marketing, and so on. The group ranches were seen as a first step in this direction, with the ranch headquarters becoming the village site. Foreign livestock specialists used by Tanzania and the development agencies consistently argued against this practice, since it was formulated for farming (cropping communities) and not livestock producing--another example, in its way, of the tendency in the new countries for agricultural tribal people to do the planning for migratory pastoralists. Hess observed, "The provision of requisite social services can be quite a different proposition with very limited crop production. Some food crop production can and should be practiced in the range livestock areas, but the sites

[42]Galaty, "The Maasai Group-Ranch."

for cultivation must be very carefully selected. Areas such as Masailand lend themselves to livestock production very well, but the majority of the soils cannot support sustained cultivation. . . . Settled for crop-production as large permanent ujamaa villages, they are likely to become a wasteland of weeds and eroded soil very soon."[43] And by the late 1970s many of them had become so, according to reports in the files of the USAID/Dar es Salaam Mission and evaluation studies made on USAID and World Bank projects.

Hess recommended that the "villagization" experiments be carried out in the form of small, scattered villages used as centers for delivery of services, schools, and retirement of the aged, and in subsequent years this policy was adopted by the Tanzanian Government, at least tacitly. By 1980, the Arusha area had approximately 15 such small settled loci, connected by new roads ("drought roads") constructed for assisting in livestock marketing. Reports on these communities in the USAID/Dar es Salaam Mission files leave no doubt that the Masai have begun to utilize these settlement possibilities, but that no real villages are forming (i.e., settlements with substantial permanent populations engaging in the full range of social activities). Hatfield's report seems to show that this degree of "villagization" in Masailand was caused less by the ujamaa philosophy and planning and more by the fact that stock dipping and other services have to be done at a given point, selected as convenient to the herding groups in that area or in a group ranch territory.[44] That is, the modification of _jamaa policy advocated by Hess and others in the early 1970s is coming to pass as a matter of evolution and not formal planning.

However, it would be necessary to study the situation in detail before one could be confident of trends. The Arusha region--the heart of Tanzanian Masailand--is the recipient of a comprehensive development plan headquartered in the town of Arusha. Tanzania has grouped supervision of all development projects affecting a particular region in a central regional office. This system has concentrated and coordinated development efforts in Masailand for the past decade, and Arusha has received a considerable share.

2.4.3 Problems of Operation

The history of group ranches is recent, and the sense of failure that pervades many development projects may well be the consequence of premature assessment. It is clear that group ranches are not simply instruments of production, but organizations that

---

[43]Hess, Establishment.

[44]C.D. Hatfield, "Masai Ranch Development Project, Aug. 1973-Aug. 1975: End of Tour Report" (Arusha, Tanzania, 1975).

must combine existing social patterns with innovative forms. The group ranch can be expected to evolve, with or without development projects, for the simple reason that pastoralists are coming to see that their political survival depends on some form of tenured grazing lands.

The most commonly cited problem of group ranch operation has already been mentioned in various contexts: the tendency for pastoralists to attempt to enlarge their individually or household-owned herds to take advantage of as much grazing as possible. The conferring of title, lease, or license to a restricted tract has not, on the whole, turned pastoralists into sedentary, intensive ranchers. In any case, no country has supplied the training and inputs necessary to transform migratory herders into irrigated forage-producing ranchers, if this is what is required to effect the full transformation. To pursue the North American analogy, group-ranch pastoralists are at the present time in a stage of development comparable to open-range ranchers in the U.S. and Canadian West circa 1870-1900. That is, they have acquired some "home" or headquarters land; have accepted small home-ranch or hamlet settlements for conducting business, animal health management, and marketing; but continue to utilize free or unsurveyed range to the extent possible and practical. Under such conditions, pastoralists--or open-range ranchers--cannot be expected materially to reduce or limit herd size. This might be accomplished by establishing cooperatively owned and managed herds, but, to do this successfully, marketing and price circumstances have to be more securely established. No African country can offer to meet such conditions at the time of writing--their agrarian systems are simply not this comprehensive nor are their markets so predictable.

Other problems emanate from the process of ranch organization. One of the difficulties in discussing group ranches is ascertaining precisely how many are in operation at any one moment. The organizations called group ranches are usually in various stages of formation, management, or disuse. Landownership and transfer is a long and complex process in all cases, and ranches can remain in a suspended state for years, caught in the midst of the process. Moses Olang, a Kenyan range ecologist now working in the Ministry of Natural Resources, notes that a Kenyan ranch cannot be considered to exist until it has been officially registered. This signifies that the land adjudication process has been terminated and all the land has now been titled to the ranching group. However, this can be accomplished on schedule only in cases in which the land is owned by the clan; when individual households hold titles, the process can take years, during which time the

ranch exists in a legal and economic twilight zone.[45]

Considering the fact that many, if not a majority of, group ranches are only partly constituted, it can hardly be expected that the full schedule of operations, inputs, and production can live up to the standards established.

Since a dominant objective of ranch establishment is reduction in herd size in order to reduce grazing pressure on constricted pasturage, all types of group ranches have grazing quotas. These take the form of a restriction on the number of animals allowed to use the range. A secondary objective of most quotas is to establish criteria for loans--when a pastoralist can prove that he has reduced his stock in accordance with the set number, he may become eligible for a loan. The quota system contains the assumption that all herders using the land in the ranch property will be equal in wealth (as defined by herd size). Aside from the difficulties in fixing and enforcing quotas because of the pastoralist conception of elastic and maximal herd size, other practices make it difficult to accept herd equality. As Olang notes, among the Masai a young man receives a cow at birth, and it is his duty as he grows up to increase the number of cattle he owns in his name--by purchase, reproduction, occasional raiding, and other methods. This dynamic process is ingrained in Masai social structure--Olang states that "we have no power to make them equal in wealth."[46] To enforce quotas at any point in time would mean that some households would have to accept a reduction in wealth, while others, the poorer herders, would be allowed to increase their herds. Since the normal process of herd accumulation does discriminate among herders in terms of ability and managerial acumen, the quota system violates basic entrepreneurial incentives and values. In addition, the purchase of additional animals by small herders requires cash or property which these people usually lack and have no means of acquiring. Consequently, few group ranches have been able to enforce quotas. The following passage from Olang's paper illustrates some of the problems in quota allocation:

> A livestock census is carried out for the purpose of grazing quota allocation. The figures which are obtained are then converted into animal units [A.U.] (which are later used in calculating grazing quotas).
>
> Example:

---

[45]Moses Olang, Organizations and Procedures in Group Ranch Development in Kenya, Pastoral Network Paper 13c (London: Agricultural Administration Unit, Overseas Development Institute, 1982).

[46]Olang, Group Ranch Development, p. 4.

Family Name	Livestock Numbers	A.U.	Grazing Quota Allocated
Family "A"	250	150	108
Family "B"	120	72	72
Family "C"	40	24	40
Family "D"	75	45	50
Total	485	291	270

> Let this group ranch be for only four families, for the purpose of grazing quota allocation. And also let its maximum permissible animal units be 270. So, the grazing quotas should not total more than 270. It has also been found out that a family of six will need 40 animals to provide the minimum home requirement. The allocation starts with the poorest family, which is "C." This family is given a quota of 40 A.U., then family "D" is given 40 A.U. Family "B" is left at 72 while family "A"'s quota is brought down to 108. If the ranch is overstocked then this is the figure used for destocking.
>
> This calculation is done in year 1 while loan repayment starts in year 4. But in the fourth year family "A" may have 170 A.U. In this case what figure should be used for loan repayment? It must also be realized that when the loan was being apportioned to the ranchers it was 150 A.U. which was used for family "A." And at the moment it is that figure (150) which is used throughout the loan period, because figures are never adjusted later on. So it is just in theory that the grazing quota is used for loan repayment. It is used only in destocking.[47]

We have noted that the establishment of the group ranch concept has required an elaborate government bureaucracy. This is deemed necessary in order to effect the needed changes, but it is also a requirement imposed on the country governments by the terms of technical aid. Accountability for funds and guarantees of successful outcome in order to maintain eligibility for future funding require governmental or parastatal offices for keeping records, maintaining pressure on the pastoralists to conform to standards, and delivering the inputs which facilitate performance. Galaty has observed that pastoralist development projects frequently contain an element of built-in failure or criticism due to this concentration on organizations and bureaus. When the objectives sought in the project are not met adequately, the pastoralists are blamed for not responding appropriately. That is,

[47]Olang, Group Ranch Development, pp. 4-5.

the targets of planned change are made responsible for the failure, not the organizations created to engineer the change.[48]

While large bureaucracies are created, key activities are often underfunded. For instance, adjudication in Kenya is done by a Government department with two sections: one that conducts the land survey, another that discusses the proposed ranch boundaries with owners of the herds who have been using the tract and that determines who is most eligible for membership. This has proved to be a time-consuming procedure, sometimes taking years before the necessary surveys and decisions have been made and the precise land area selected. Each ranch, once its adjudication procedure is complete, then falls under the jurisdiction of a Group Representatives Officer, whose duty it is to see that all members live up to the requirements and to advise the members on patterns of conformity. The problem is that there are too many group ranches for the available staff to service. A single officer may have 10 or 15 ranches to oversee, and, since the budgets are limited, he may have difficulty obtaining sufficient gasoline to make enough visits; during the rainy season roads are often impassable. Lacking close contact with the supervisory personnel, group ranch members tend to go their own way.

Water development has been an especially difficult problem--not only for group ranches, but for all pastoralist development schemes in the drier countries (Sudan has had considerable trouble, since water development is in the hands of a parastatal company which sets domestic human water supply priorities above those of wells and boreholes).

Such priorities are not idiosyncratic or completely reflective of domestic political pressures: foreign aid representatives in the 1970s pressed water development agencies in the country governments to reorient their expenditures toward villagers and other domestic users in line with the change in development policy involving the favoring of "basic needs" and poor people. Bureaucracy is another problem in water development. A plan for a borehole, requested by the agricultural ministries, must pass through many levels of officeholders before it can be acted upon; and equipment for the wells, once dug, may take as long or longer to obtain. Two years is considered about average for Kenyan group ranches.

Installing and servicing facilities for group ranches is usually a low policy priority in most countries--despite the need to make their dryland regions more productive and their populations more self-supporting. But pastoralists, usually a national minority and difficult to incorporate in national social and economic plans

---

[48]John G. galaty et al., "Organizations for Pastoral Development: Contexts of Causality, Change, and Assessment," in The Future of Pastoral Peoples.

and activities, are persistently downgraded as a priority population. They lack political power; their performance record in the livestock development projects has been disappointing to all concerned; and, despite the general awareness that the nature of the projects is a major factor in their failure, the limited returns and resultant indebtedness have not inclined governments to move vigorously. Even the welfare argument is difficult to apply: pastoralists evade simple classifications for members of the "rural poor" because their economic position is difficult to classify with the criteria used for farmers and villagers.

The very transitional or ambiguous nature of so many group ranches makes it difficult to apply the rules established in the various schemes. Loans and other services advanced to the ranches that require repayment or delivery of stock to marketing facilities are seldom enforced, since the ranch owners are usually not in full compliance with the ranching scheme and regime. In Kenya, failure to repay loans to the Government is supposed to be followed by a Government foreclosure and sale of the ranchland, but this has never happened despite many cases of default. Pastoralists do possess one weapon: they have a reputation for taking matters into their own hands if they feel they have been exploited or their rights violated. African governments are extremely nervous about unruly rural populations; they are not likely to move against pastoralists if the group concerned has a reputation for forceful action.

With some exceptions, notably Botswana, where members of pastoralist tribes have played important roles as Government officials and planners, pastoralists have not been consulted freely in the planning of group ranches. This is undergoing change, as pastoralists take increasingly important public roles in their own defense, but the difficulties remain. Again, one can find a transitional situation: language difficulties, hostility and passivity of pastoralists when confronted by government requirements, and unwillingness openly to subscribe to measures requiring modification of traditional livestock regimes have made it difficult for government planners to obtain cooperation from pastoralists. Still, the curtailment of free grazing movements becomes an imperative when alternative uses for the better rangelands arise, so the ranch schemes are legislated and put into effect. There is no doubt that many of the defects are the result of failure to consult the "target population," but there seems to be little alternative. As noted, this is changing as pastoralists come to accept the necessity for change.

The need for intensified extension services to assist pastoralists in managing group ranches is acknowledged by everyone concerned, but provision of such services on a regular basis has proved difficult and expensive. Since ranches are in a transitional status, with many or all of their members moving regularly at great distances from transportation or settlement points or beyond the

boundaries of the ranch, extension agents have found it difficult to reach them. Again, one finds a financial priority issue: extension work with pastoralists in many regions is at least twice as costly as with settled farmers due to the need for adequate vehicles, much gasoline, the long distances, and the salaries paid in relation to the results obtained. In Kenya, houses were constructed for range assistants near key boreholes, but, since the group ranchers were at some distance from the wells during much of the year and since the assistants lacked adequate transportation, most officers moved back into towns where their families could find better services and facilities.[49]

2.5 Some Concluding Observations

This paper takes the position that the key to change and development in pastoralist livestock production is to be found in the institutions of land tenure. The group ranch is the most obvious example of the use of land tenure to effect changes in economic activity and habits of settlement, and, in a sense, it is the inevitable or ultimate form that pastoralist transformation must take in most countries and regions. However, this is not equivalent to arguing that all group ranches are desirable or well planned.

In the first place, the group ranch system appears most suitable for the better range areas, where restricted grazing, better watering, and, consequently, improved possibilities for intensified production are obtainable. However, since these areas are precisely those for which alternative uses for the land are also in view, the group ranch is automatically in a situation of resource competition with farming, agribusiness, game parks, and tourism. The relatively low-priority status of many pastoralist populations means that group ranches tend to be established in compromise localities--not the best range, but, one hopes, not the worst. However, the poorer the range, the larger the ranch needs to be; and size creates financial problems for the delivery of services. Large size, plus marginal grazing, also encourages pastoralists to follow traditional migratory strategies.

Second, while a land tenure device may lie at the base of development, it is by no means the only important factor in the success or failure of ranches. Tenure has to be inserted into existing social systems--or, at least, if some aspect of the social system requires change, this has to be researched carefully in order to plan the ranch accordingly. The most essential factors are, of course, the institutions of property ownership and transmission: when land is considered to be held by a collectivity, a group ranch tenure tract may be more easily introduced than in cases in which land is a matter of fragmented household rights.

---

[49]Galaty, "Organizations," p. 10.

Colonial tenure arrangements have persisted in many countries; the presence of these residual rights complicates the transition to a group title. Clearly no group ranch should be formed until detailed research on property rights and institutions has been conducted. Governments and development agencies have tended to view group ranches as an opportunity: give the pastoralists land and let them accept the incentive to change production. However, as we have shown, the matter is not this simple. The group ranch is both a social and an economic institution; neither side of the equation can be neglected in its planning.

While the group ranch seems the likely outcome for migratory pastoralists, it is no solution for the many African mixed farmer-herder groups who practice both crop cultivation and transhumant or wet/dry-season pastoralism. This group, plus the migratory pastoralists in the exceedingly dry regions where farming is largely impossible, will require some form of tenure adjusted to their need for continued movement. For the mixed cases, large community pastures, such as those used in parts of western Sudan, may be the only suitable tenure arrangement. Such pastures are reserved for use in the dry season and maintained by the Government, but the farmer-herders may also become members and pay small annual fees for use and development.

For pastoralists in very dry regions, other solutions will be required. For the time being, there seems no good alternative to some form of migratory movement. Since the arid regions are also inappropriate for crop farming, there exists less competition from other types of land use. Grazing blocks, appropriately planned and administered, may be the best solution. These can be flexible, with monitored boundaries in order to keep herding groups reasonably separate, but, in periods of unusual drought or other dislocations of the normal annual grazing pattern, these boundaries could be opened and the herders permitted to move freely or to work out their own arrangements for range sharing.

These various solutions to the grazing problem must be considered experimental and transitional. The final disposition of migratory and transhumant livestock economies in Africa is bound up with many social and demographic factors, as well as with the changing vector of relationships of the herders to central governments and their planning processes. All of these factors are constantly changing and evolving. Pastoralists are moving into new occupations and playing new and different roles in the national and regional economies; their position in African countries is subject to constant review. The group ranch has much to recommend it, but it is not the only tenure arrangement, and its precise terms must be expected to vary by region and situation.

3. THE WEST AFRICAW EXPERIENCE WITH LIVESTOCK PROJECTS

Most of the projects of West Africa are relatively new in

comparison with those of East Africa. In a sense they give us an opportunity to see what has been learned, what the state of the art is in project design, and what land tenure issues remain to be addressed in future livestock development efforts. In this section we will organize our analysis around a framework of the relationships of these pastoral development projects to four related issues:

1. The creation or enhancement of existing social inequalities that have already proved nonresponsive to development initiative

2. The rights and obligations of the existing land tenure systems that are in place

3. Who actually owns the animals in the project zone

4. The pastoral-cultivator interaction that characterizes the project area

These projects, like those in East Africa, do not exist without historical precedent. The data on the amount of meat protein in the African diet have indicated to planners since the beginning of the colonial period a natural area for development. What better place to start than a vast range with hundreds of thousands of animals in one ecological niche and millions of protein-hungry consumers in another.[50] For the French administration of the Afrique Orientale Fransaise (AOF), the Sudan-Sahelian zone represented an ideal place to introduce Americanstyle ranches. By 1929 M. Piettre enthusiastically endorsed two large sheep-raising projects using Merino mixtures and also large-scale (for the time) cattle projects using Charolais crossbreeds.[51] All this activity was advocated and promoted by the AOF Director, M. Carougeau, at the 1928 International Congres du Mouton. Despite the early fervor, all these projects had failed before World War II.[52] The AOF veterinary service had learned to appreciate the skills of traditional herders in keeping animals alive in what was to the managers of the European ranching schemes a difficult environment. At the 1936 AOF Livestock Conference (Conference Consultative de

---

[50]Pierre, Les produits de l'élevage en A.O.F. (Paris: A Challamel, 1906); G. Francois, "Les productions de l'Afrique Oriental Francaise" (Meluni Impimerie Administrative, 1918), E. Aldige, Situation d'évage et disponibilité en viande de l'Afrique Orientale Francaise (Paris: Libraire Emile Larose, 1919).

[51]M. piettre, "Les bases d'un grand élevage colonial" (Paris: IEMVT files, 1929).

[52]H. Giraud, "L' élevage au Soudan: son avenir," Thesis, Ecole Vétérinaire, Maison-Alfort, 1946.

l'Elevage), held in Dakar, it was decided to develop the local economies rather than proceed with any more American-style ranching projects. The basic thrust of the new colonial policy was based on a report by M. Feunteum (livestock inspector of the colonial ministry) which pointed out the low animal protein intake in the traditional diet in the French colonies. The figure was then placed at about 6 kg per year (or about twice what it is today), and the new policy was to stimulate local production to double this figure. The way to do this was to overcome the inertia of tradition through experimental demonstration ranches, veterinary medicine, and, above all, pasture development.[53]

By the 1940s, then, there had developed the basic paradigm that is found in all of the subsequent and current livestock development projects in Francophone Africa: stimulate animal production on already overtaxed pasture resources through improved animal health (veterinary medicine), encourage waterpoint development to extend the range, and preserve the pasture through increased offtake to meet the existing demand for meat. In 1936 this was called une politique de la viande (meat policy), and today it is called developpement.

How has this generation of livestock projects fared in West Africa?

3.1 Mauritania

Projects, even well-designed ones, cannot control all variables. Nothing better demonstrates the dynamic character of land tenure institutions along several dimensions than the changes that have taken place in Mauritania's livestock sector as a result of the recent Sahelian drought. The idea of developing Mauritania's animal products sector had its modern inception in a number of Fonds d'Aide et de Cooperation (FAC), United Nations Development Program (UNDP), and Food and Agriculture Organization (FAO) studies initiated in the late 1960s. They resulted in a sector project designed by an FAO-financed team (Fond Europeen pour Developpement [FED]). The Government of Mauritania then asked the World Bank group for financial assistance, and in 1971 the project was finalized. This was before the major impact of the Sahelian drought had been felt.

The purpose of the project was to maintain and improve the production of the country's livestock herds in the southwestern section of the country (Administrative Regions 3, 4, and 5), where 50 percent of the population lived and 40 percent of the animals were kept. The major financial commitments of the project were to the improvement of a network of wells, veterinarian health

[53]Giraud, "L'élevage au Soudan," p. 9 and passim.

services, and the protection of pastures against fire through the rehabilitation of firebreaks.

The World Bank recommended that no changes be made in the existing transhumant and nomadic pattern of land use, even though the appraisal team felt that these were not conducive to modern techniques of animal husbandry. Any changes, the World Bank's appraisal document argued, would increase losses due to drought. The project designers took the position that any attempts to alter the traditional transhumant movement of the herds between the dry-season pasturage close to the Senegal River and the rainy season utilization of the fresh grasses to the north would be premature. Besides, the document noted that the various Western measures tried for controlled grazing in West Africa had not worked. Finally, it was not a pressing issue then, since over-grazing was not a problem at that time.

Yet tenure policy issues have emerged: (1) who has access rights to national range as it is improved, and (2) who controls and cares for the water points that enhance areas of this range?

Like most livestock projects, the designers left these issues to be worked out by the herders themselves. Their resolution is made difficult by the fact that there are at least four different herding strategies potentially competing for the same pasture resources. The first are the large Maure cattle and camel herds managed largely by the vassals of the noble families.[54] The second are the small stock herds of the vassals and poor herders who traditionally used the more marginal resources.[55] The third are the domestic animals of the sedentary populations that will be pastured close to or far from home depending on the conditions prevailing that year. Finally, there are the large herds of the transhumant and nomadic Peul (Fulani) who have been making increasing use of Mauritanian range since 1950.[56]

These are problems that will be encountered in most livestock projects in West Africa. In the Mauritanian case, there are several added complexities. The first is the changing power base for the

---

[54]P. Dubié, "La vie materielle des Maures," IFAN Mémoires [Dakar] 23 (1953): 111-252.

[55]C. Toupet, "La sédentarisation des nopmades en Mauritanie centrale sahelienne," thesis, Université de Paris VII (Parris: Librairie Honoré Champion, 1977); and P. Bonte, Etude du changement social: évolution des modes d'accumulation et transformations sociales en Mauritanie (Nouakchott, Mauritania: USAID/RAMS, 1980).

[56]P. Wadoud, Changements sociaux: le dévenir du pastoralisme (Nouakchott, Mauritania: USAID/RAMS, 1980); J. Grayzel, personal communication.

Mauritanian elite. Traditionally, they were all associated in some way with pastoralism. Water points could be appropriated at will by the nobles of a particular region. Which noble tribes and clans controlled a particular area had been determined by battle and treaty. This has been in a state of slow change since the establishment of French colonial dominance and subsequent independence in 1960. Still, in spite of constitutional guarantees, one need not travel far in Mauritania today to see the control of valuable traditional resources exercised in a most direct way by members of the ancien regime.

The tenure issue here is whether the resources provided for pastoralist development will enhance the Government's attempt to increase the equality of its citizenry in the economic sphere or or whether they will lend themselves to the old exclusionary practices. This is more than just an ideological commitment on the part of developers to liberal philosophical notions of economic rights. If Mauritania is to feed itself, those herders who are willing to use the range as efficiently and as effectively as possible must be allowed access to the pasture and water resources. Nobles may or may not be effective resource managers on an individual basis, but class-caste membership is no guarantee of this. Also, resource use by servile populations is never conducive to capital investment resource improvement. Any long-term return accrues to the dominant class and not to the user. How does this work in relation to the project's two components: improvement of existing wells, and new wells in areas where water is not available at the present?

The existing water points are associated with natural sources, the locations of which are not uniformly distributed in relation to the range. Wells can reach a depth of 75 meters, and the deeper the well, the more major the undertaking it represents to the group that historically supervised its construction and maintenance. Once the project improves these wells, who controls them? New wells, since they are put in place by the project, can be used by any herd. This will alter transhumant routes, introducing competition for the intervening water and grasses where none existed before. These are not insurmountable problems, but they clearly demand greater recognition than they received in the project documents, as well as the development of a strategy to deal with them.

The FAC/IBRD project we have been discussing was designed prior to the full impact of the drought of 1969-1974. At that time, 70 percent of Mauritanians lived off livestock production; today, only 30 percent do. Major droughts have occurred in Mauritania as a fairly regular climatic variation. In this century, there have been droughts in 1913, 1941, and the recent one. Learning what effects the previous droughts had on land tenure will have to await historical analysis. One thing we do know is that the last drought has had tremendous implications for the nature of land use and the attendant rights to use land.

In the past, as well as today, Mauritania has been an arid region best suited to livestock production. Traditionally, as mentioned above, local elites were usually large herd owners. Dryland farming could not compete with the returns possible from livestock production, and the majority of the population that was free to do so turned to pastoralism, leaving the labor of cultivation to those of the lowest social stratum. This historical fact has resulted in a situation in which the land used by many cultivators was (and is) claimed to be ultimately owned by non-cultivators.

As the pastureland became increasingly desiccated, pastoralists moved ever southward and competed with the settled agriculturists for the limited available resources. (The problem was worsened by the fact that during the 1960s rainfall had been higher than average and the herds had expanded. By 1968, the year of the highest recorded rainfall, the national herd was estimated at close to 10 million head.) The drought continued to worsen at a steady pace and, only 3 years later, in 1972, there was the lowest rainfall ever recorded for the region. The effect on livestock numbers was equally dramatic. The national herd fell from 10 million in 1968 to approximately 7.5 million.

This overall 24-percent reduction does not tell the whole story, however. Whereas the more drought-resistant sheep and goats were reduced by 14 percent and camels by only 7 percent, cattle, the mainstay of a majority of the pastoralists, were reduced by 55 percent.[57]

The rainfall continued below normal, and even the most desperate measures could not prevent herd after herd from falling below levels of economic viability. Consequently, a large proportion of pastoralists who had traditionally exploited an arid grassland environment abandoned that way of life and encroached upon the agricultural population. Thus, areas with the greatest development potential, such as water points or land in the recession flood basins, became crowded and fraught with conflict.

Today, range management projects must deal with the issue of developing some sort of principle of exclusivity of range use after just such a system, with all its attendant inequalities, has ceased to operate, and they must do so in the context of a range and herd composition that has been completely altered by the drought. Some form of policy will have to be developed that defines rights to range resources, with all the competing historical claims, before anything in the way of development can take place.

The foregoing explains why there are so few data on the actual

---

[57]Government of Mauritania, Third Plan of Development (Nouakchott, 1981), pp. 40-42.

land tenure systems in operation at any given project site, and why it has proved so difficult for the Mauritanian Government to formulate effective policy in these matters. One point is abundantly clear: traditional rules cannot be counted on to reflect the ongoing, day-to-day activities vis-a-vis the land.

The postdrought period has stimulated several project designs to help the devastated livestock industry recover. USAID is involved in improving livestock production in the Selibaby region through its integrated rural development project. This project rightly sees animal husbandry as just one aspect of a regional economy. Project personnel are working closely with animal inspectors and health services. The most startling result of this project in the area of land tenure and management, however, is associated with its natural range demonstration zone. The regional government allowed the project to fence off a small sector of the range to provide a demonstration of what the pasture would look like if it were not grazed. The contrast is startling.

On one side of the fence there is bare ground, with small tufts of grass here and there, while on the other side are waist-high, fully mature savanna grasses. One will remember that the World Bank appraisal team found no evidence of overgrazing in the predrought and immediate postdrought periods. The greater population concentrations in the southern regions of both people and livestock in the postdrought period have meant that overgrazing is a very real problem in all current livestock-related projects, and, as a result, current project solutions talk about "grassland protection." Grassland protection must inevitably push the land use and tenure issue to the fore, because it takes some land out of active production and use.

USAID is in the final stages of developing its new livestock project, but is viewing it--quite rightly, we believe--as part of an overall resource development effort. That is, livestock development will be integrated with reforestation, afforestation, grassland protection, and water-point development. The basic tenure issues are, of course, those we have outlined above. Who really controls the resources and allocates use and protection? Also, given the social constraints of vested resource control in Mauritania, its class structure, and strongly hierarchical institutions, and given the fact that more and more of the population are crowding onto the land closest to the Senegal and Gorgul Rivers, major tenure issues will have to be resolved by the Government based on a realistic land allocation policy. Mauritanian officialdom has so far been unable to formulate any effective land policy to carry it out in a systematic manner. All projects will have tenure problems, and the success or failure of a project may be beyond the control of the project personnel, depending instead on the host government’s willingness and capability to provide leadership in this area. USAID/Nouakchott is attempting to enhance the Government’s capabilities in this area through a combined

training and applied research project aimed at creating a cadre of competent land policymakers.

3.2 Senegal

The problem of just who will constitute the group holding use and allocation rights to land resources enhanced by a project is also central to a number of current livestock projects in Senegal. By 1971, the Senegalese Government realized that the combination of greater demands placed on the livestock sector by urban consumers and on the Senegal River basin for growing more grain meant that a plan had to be developed that would make these two sectors of the national food economy complementary. These needs were underlined by the Sahelian drought which reached a climax in 1972 and 1973 in Senegal and caused an estimated 15-percent drop in the national herd. Until 1972, Senegal was able to meet 80 percent of its meat needs, with the rest coming from Mauritania. With the greater devastation of the drought on the Mauritanian herds and the subsequent shift in the Mauritanian economy, greater productivity was going to have to be developed in the Senegalese national livestock sector.

In 1971 the World Bank prepared a project identification report; on the basis of this document and its findings the UNDP financed a project design exercise. This was done by the Societe d'Aide Technique et de Cooperation (SATEC) in 1973-1974. By 1976, when the first project was begun in eastern Senegal, (IBRD/ Eastern Senegal Livestock Development), the loan agreements and grants had reached US$13 million.

A 1.4 million-ha region was selected in eastern Senegal for the livestock development project, because the poor soils were judged to be unsuitable for cultivation. This area was said to contain perhaps as many as 30,000 livestock owners. The basic idea was to organize these people into 65 grazing units, each of which would be given exclusive land and water rights. In order to achieve resource parity among the 65 units, the project would construct an estimated 100 wells. In addition, 2,400 km of firebreaks were designed to serve as boundary markers between grazing units and to facilitate pasture rotation.

The World Bank project, however, did not cover the whole region and the Government of Senegal asked USAID to design a complementary livestock project for the area east of the World Bank's project.[58] The USAID design team followed the major outlines of the project proposed by the World Bank. The USAID Range and Livestock Development Project, similar to the World Bank project in

[58]U.S. Agency for International Development, Joint Assessment of U.S. Assistance Programs in Senegal (Dakar: USAID/Senegal, 1980), Annex 1.

its intention to introduce managed grazing reserves, comprehensive health programs, training, and fire-breaks, also differs in several important respects. The principal one is in terms of water-point development. Instead of the wells proposed by the World Bank project, USAID will emphasize catchment ponds, sand reservoirs, and dikes. If well executed, this would provide an ingenious method of range management, as the length of time water would be available for each part of the range could be engineered into the size of the catchment pond, and other water sources. In addition, the herder groups in the USAID project are to be organized around existing villages.

In both the IBRD and the USAID projects, the critical tenure issue is the transfer of exclusive use rights to the persons making up the herding groups. In both a legal and a sociocultural context this is recognized in both project documents to be a difficult task. Senegalese Law 64-46, formalized in 1964, nationalized all nonregistered land, to which individual citizens have use rights only.[59] This law was promulgated for a variety of reasons, but one among them was to help those who wanted to use land in more modern ways to escape the often feudal-like institutions that characterize the relationships between producers and controllers of land, especially along the Senegal River.[60] The impact of this legislation at the local level in eastern Senegal has been minimal, but projects will have to formalize the relationship of participants to improved land resources if the intent of this law is to be realized. The legal process faced by project personnel is cumbersome, to say the least. The Government would have to declare the area a development zone and then assign primary responsibility to an acceptable, established, parastatal organization. In this case it will be SODEFITEX (Societe pour le Developpement des Fibres Textiles), following a recommendation by the World Bank based on the parastatal's experience and previous record.

Once the request to have an area declared a development zone is made by an acceptable parastatal, it must be approved by the Ministries of Justice, Finance, and Planning; the Prime Minister; and finally by the President. The IBRD appraisal team estimated that the first step, if undertaken, would take at least 3 to 4 years. Once the land has been entrusted to SODEFITEX, or a similar organization, it cannot be transferred to the users until they are organized into legally constituted bodies, such as cooperatives.

It might seem that the USAID project would have an easier time of it in this regard since it plans to use already existing

---

[59]G.-A. Kouassigan, L'Homme et la terre (Paris: Office de la Recherche Scientifique et Technique Outre-Mer, 1966).

[60]Kouassigan, L'homme; Government of Senegal, Decree 1142, December 17, 1976.

villages as its range management units. However, the Senegalese Government does not include villages in its legal governmental hierarchy.[61] Rather, each village or village-group herding unit first will have to be organized into a precooperative with an elected council, grazing committee, and president.

The group (either the village in the USAID project or the herding group in the IBRD project) then must enter into a contractual arrangement whereby it agrees to follow grazing rotation, maintain firebreaks and water points, apply veterinary medicine measures, follow prescribed breeding practices, and participate in all education and training programs. In exchange for this, they will be given exclusive use rights to a section of the range and its improvements. Security, however, is there only as long as they follow all the rules. Therefore, land tenure is to be used as incentive for acceptance of development tactics.

Anyone who has worked in African livestock development knows that the changes in group resource control outlined above will not come easily. The projects, as planned, foresee the most profound changes in land tenure; yet neither project explores the social, political, and cultural ramifications of the contemplated changes in rights. The IBRD team was well aware of the difficulties of granting exclusive rights under Senegalese law[62] (presumably, the USAID project team did not feel compelled to investigate them as the IBRD team had already done so, since they are not discussed at all). What was missing in both cases was any investigation of, reference to, or speculation on the actual land tenure rules in operation.[63] Subsequent research and data gathering by project personnel, Senegalese social scientists, and Land Tenure Center (LTC) staff indicate that the project has a very different socioeconomic base from that assumed by the project designers.[64]

---

[61]Government of Senegal, Code de l'administration comunale (Rufisque: Imprimerie Nationale, 1974).

[62]David C. Korten, "Social Development: Putting People First," in Bureaucracy and the Poor: Closing the Gap, edited by D. Korten and Felipe B. Alfonso (Singapore: McGraw-hill, 1980).

[63]U.S. Agency for International Development Eastern Senegal Livestock Project, AID Project No. 685-11-120-202 (Washington, DC: AID, 1974), p. 44, expresses this need.

[64]Equipe SEPH [Secretariat d'Etat a la Promotion Humaine], "Etudes socio-économique de les zones Toulékedi et Sarré," in "Promotion Humaine" (mimeographed) (Dakar: Secrétariat D'Etat, 1980); C. Kane, "Rapport" (mimeographed) (Bakel: USAID/Senegal, 1980); and U.S. Agency for International Development, "Report" (Bakel: USAID/Bakel, 1980).

Both project documents assume that the dominant populations living year-round in the area are Peul and that they are primarily herders. In actual fact, they tend to be Toucouleur, that is, cultivating populations who keep cattle as a capital investment.[65] Cattle are allowed to roam unguarded during the day and are expected to wander home in the evening for milking. When the USAID project director and a consultant sat down with village headmen and showed them the degree of erosion that had taken place in recent years by comparing aerial photographs of their particular village area, they all agreed to the damage and to the cause--the village cattle were using the same low-lying areas as exit and return routes each day. When the rains came, these became natural runoff troughs since no vegetation remained. Most villagers cannot really control their herds and, when this is necessary as fields are reaching maturity, they must hire Peul herders from the north.

Toucouleur villages are noted for their caste-like, hierarchical organization. It was stated both in the written reports and in our interviews that all castes had cattle. We found that each village probably has a very few major herd owners and many small ones. This fact raises the issues of exclusive rights to resources in a village and of how broad-based the intended economic incentives will be.

Our interviews tended to indicate a remarkable autonomy for each village. This makes the role of the village chief critical in project administration. As a descendant of the original founder, the chief admits any new members, and all other residents owe the chief or his ancestors the recognition of this fact.[66] He is also the center of any conflict settlement--something that is bound to occur as rights in range and water resources become defined by the projects. Neither project document discusses the chief’s role in the new tenure relations that are proposed.

In the USAID project, the villages are unevenly divided between three long-established villages and six that have been established since the turn of the century. (Two villages are unaccounted for, because they will not discuss their history with project personnel.) The point is that the more recent a village, the more clear is the memory that it has been built on established transhumant routes. In a sense, the herds preceded the people, and the herders from the north have some residual rights in the area that may make it difficult for them to see why old migration routes and watering holes are being assigned to relative newcomers unless they are compensated in some way.

---

[65]Equipe DEPH, "Etudes," p. 23.

[66]Equipe SEPH, "Etudes," p. 36.

Although one expects to find some form of economic relationship between the villagers and the herders, there is very little interaction of an economic nature between the two groups. The migrating pastoralists do not herd cattle for the villagers, nor do the villagers charge for water or grazing. Large herd owners in the villages may hire herders from time to time during peak labor periods, but they contract individually with men looking for work. Smaller herd owners will group their animals and take turns managing the larger collective herd. However, this seems to take place only during the final months of the rainy season and during the harvest period.

Given the differential size of the herds owned by individuals, range resources are being developed and then assigned to individuals in a way that freezes social differentiation that has already demonstrated a nonresponsiveness to range management. Before such populations can form the nuclei of groups who will be granted exclusive rights to range and water, the problems of residual usage rights of the pastures by transhumant animalkeepers will have to be resolved. Finally, before tenure rights in these vital resources are changed, information needs to be gathered on who uses each range, when, and for how long, especially in light of the erratic rainfall patterns. In poor rainfall years who goes where, and how are these reciprocal emergency accommodations to be handled in terms of the new tenure system? The basic data have yet to be collected.[67]

Finally, if the projects are dealing primarily with cultivators who keep cattle on a haphazard basis, then perhaps a project design should be developed that has a more mixed farming orientation and in which domestic animals are used to enhance marginal soils. Cattle in this case would become an investment in the overall agricultural strategy rather than functioning as a form of savings for remittances or grain preservation strategies. Such an approach would of course raise quite a different set of land tenure issues.

3.3 Niger

In 1979 some of the authors had the opportunity to visit the field site of two livestock projects in Niger, one by USAID and the other by the World Bank. The World Bank's Livestock Project follows the basic design suggested by USAID in its Niger Range and Livestock Project, initiated in 1977 with a budget of US$5.3 million. USAID's efforts were prompted by a request from the Niger Government following a Society for the Study of Economic and Social

[67]USAID/Senegal, Joint Assessment, Annex 1, p. 17.

Development (SEDES) study financed by FAO and finished in 1976.[68] The Government was seeking assistance in revitalizing the livestock industry in the central and southeastern sections of the country, where over 50 percent of the national herd is found and where estimates of herd depletion during 1968-1969 and 1972-1973 due to the drought itself and to droughtinduced sales reached perhaps 60 percent or more.[69]

Much of Niger, like Mauritania, is suited to little else than range-related agricultural pursuits. Only 10 percent of the total land area is judged suitable for arable cultivation; 15 percent is semi-arid; and 75 percent is desert. The rural sector accounts for 40 percent of the GDP and 30 percent of exports, of which livestock account for 30 percent and 67 percent, respectively.

The pastoral zone, which is legally defined as the area with between 200 and 400 mm of rainfall annually, stretches from the Malian border on the west to Lake Chad on the east. Within this zone of 23.4 million ha, 600,000 pastoralists, predominantly Tuareg and Peul, are responsible for the greater part of a national herd of an estimated 6 million UBT.[70] Three problems of effective range revitalization were identified at the time the projects were designed. The first problem identified by the SEDES study was range deterioration. As more animals gathered on those parts of the range serviced by large Government wells, the range naturally deteriorated. The second problem concerned the fact that the two different ethnic groups dominating the pastoral economy each relied on a different system of range utilization. The third problem was the continual movement of cultivators and their small herds into the pastoral zone.

The Tuareg are the historically dominant population in the area. They have long been involved in markets, trade, and longterm relations with cultivator and urban populations to the south.[71] Traditionally, they were noted as camel specialists, with goats and sheep as a secondary specialty. Since the drought, they, like all Sahelian groups, have diversified their herds with an increasing

---

[68]Food and Agriculture Organization, "Food Composition Tables for Uuse in Africa (Rome: FAO, 1976).

[69]J.W. Sutter, "Commercial Strategies, Drought, and Monetary Pressure: Wo'Daa 'Be Nomades of FTanout Arrondissement, Niger," prepublication draft, 1980.

[70]Food and Agriculture Organization, FAO, Production Yearbook (Rome: FAO, 1980).

[71]Baier, "African Merchants in the Colonial Period: A History of Commerce in Damagaram (Central Niger), 1880-1960," Ph.D. thesis, University of Wisconsin-Madison, 1974.

dependence on cattle and small stock.[72] Traditionally, they remained relatively sedentary during the dry season in the south, and then, as the rains provided forage and new browse to the north, they would move to the Agades region for the cure salee (salt cure).[73] But since the entrance of the Peul into the region following the French domination, and also because of pastoral displacement due to population growth northward and the expanding Sahara southward, the Tuareg have become increasingly reluctant to leave their southern, dry-season pastures following the rains for fear others will overgraze them.

The Government of Niger has called for all land tenure policies in the projects to follow as closely as possible the traditional systems. In the Tuareg case this would have been simpler had the Peul not entered the picture. Tuareg range management traditionally centered around the control of wells and water points in the southern range. These wells were owned, and limits imposed on water access exerted a degree of control over who could use the surrounding pastures. Also, in the precolonial period the Tuareg were militarily dominant, and force of arms could be resorted to for control over a particular range.

The Tuareg may have dominated militarily, but they needed trade. With per capita millet consumption estimated to be as high as 150 kg per year, they had to have a source, other than oases, and the like in the north.[74] Tuareg nobles dominated certain villages in the south that had to pay tribute and provide hospitality for all of a particular noble's followers. These southern villages provided both the needed grain and a retreat in times of drought.

The need to be prepared for the possibility of drought in any

---

[72]E. Bernus, Les Illabaken (Niger): une tribue Touarégue et son aire de nomadisation (Paris: Office de la Reccherche Scientifique et techniquue Outre-Mer, 1974); E. Bernus, "Le contrôle du milieu naturel et du tropeau par les éleveurs Touareg Sahelines," in Pastoral Production and Society, edited by Claude Lefebure (Cambridge: Cambridge University Press for the Equipe Ecologie et Anthropologie de Sociétés Pastorales, 1979).

[73]Bernus, "Les Illabaken"; Susan Smith, "The Environmental Adaptation of Nomads in the West African Sahel: A Key to Understanding Prehistoric Pastoralists," in The Sahara and the Nile, edited by M.A.J. Williams and Hugues Faure (Rotterdam: Balkema, 1980).

[74]Stephen Baier and David J. King, "Drought and the Development of Sahelian Economies: A Case Study of Hausa-tuareg Interdependence," Land Tenure Center Newsletter No 45 (1974), p. 16.

herding season and strategy meant that the pastoral sector could exist only as part of a larger regional economy providing access to pasture in times of short rainfall and a market for the exchange of desert and Sahelian products. For this reason, the Tuareg noble lineages jealously guarded their rights to extract surpluses from the villages they dominated. In the retelling, the situation sounds nearly ideal.[75] By controlling both northern pastures and southern villages, the Tuareg were able to weld together a long-term, successful strategy for dealing with a harsh and parsimonious and unpredictable environment. The populations long dominated by the Tuareg, however, felt a nostalgia for old social and land tenure regimes once the French took control in 1918. This has two implications for current attempts to introduce control over specific pastures.

Following the onset of French dominance in the region, the colonial power saw the major threat to its suzerainty primarily in the Tuareg. Therefore, they supported the claims of villagers and all formerly subservient groups in matters of land tenure. And now, because a majority of the present administration in the project zone come from ethnic groups formerly dominated by the Tuareg, there is little chance that the Tuareg will be willingly given a great deal of control in the project zone.

This historical factor of dominance and competition for control of the region also helps account for the emergence of another major pastoral group in the area in the last 50 years. After the French removed the Tuareg as a military threat, Fulfulde-speaking herders (Peul in French; Fulani in English); who refer to themselves as Wo'daa'be in Niger and Bororo in Cameroons) began to herd extensively in central Niger.[76] In Niger they have a relationship with the Tuareg much like they have with the Maure in Mauritania. They are considered to be superior livestock managers, being able to create a new niche in existing pasturages due to their highly flexible and selfsufficient single-household herding units (compared with the Maure and Tuareg herding groups composed of family members, vassals, retainers, and subservients). They are primarily cattle raisers, but, like the Tuareg, they have

---

[75]See, for example, S. Baier and P. Lovejoy, "The Desert Side Economy in the Natural Sudan," in Politics of a Natural Disaster, edited by M.H. Glantz (New York: Praeger, 1976).

[76]Derrick J. Stenning, "Africa: The Social Background," in Man and Cattle, edited by F.E. Zeuner and A.E. Mourant (London: Royal Anthropological Institute, 1963); Marguerite Dupire, Peuls nomades: Etude descrriptive de Wo'daa'de du Sahel Nigérien, Travaux et memoires No. 64 (Paris: Institut d'Ethnologie, 1962); Michael M. Horowitz, "Ethnic Boundary Maintenance Among Pastoralistss and Ffarrmers in Western Sudan (Niger)," Journal of Asia and African Studies 7 (1972): 105-114.

diversified their herds since the drought and have even taken up camel racing like their Tuareg neighbors.[77]

In addition to the difficulties of range deterioration and multiple ethnic group use is the problem of the constant movement of Hausa cultivators north of the official line demarcating the pastoral zone. Since the loss of power by the Tuareg in 1918, almost all conflicts between cultivators and herders ultimately have been judged in favor of arable agriculture. Not only are farmers moving across a broad belt, in small villages north of the line they also are to be found at modern high-yield well sites that were put in for the benefit of herders. This movement of cultivators, in addition to the movement of the Sahara southward, means that each year there is less and less range available for any kind of management.

Cultivators take advantage of the free range created by the French in two ways: they plant their crops on the best soils of what is essentially a free commodity, and (2) they then put their small herds onto the surrounding range.[78] Even though each individual villager's herd may be small by comparison with pastoral populations, in the aggregate they are an important factor in the use of the southern dry-season pasturage. Taken together this means that the arable fields are controlled under land tenure rules traditional to the Hausa, and so on, while the remaining range is at once village commons for one ethnic group and dry-season range for another ethnic group. This has resulted in two changes for the pastoralists. For the Tuareg, there is an increasing reluctance to leave dry-season pasture unattended during the rainy season. For the Peul, it has meant an evernorthward movement of the dry-season range--increasing susceptibility to overgrazing and drought, on the one hand, and moving these herders ever farther from access to national and projectinfrastructure, on the other.[79] Ninety percent of Niger's population are cultivators and, until a viable solution is found to their problem, pastoralists will always come out second best.

The project papers for both projects address a series of tenure issues explicitly and implicitly. In the World Bank's project, the allocation of wet- and dry-season range resources as

---

[77]John W. Sutter, "Pastoral Herding in the Arrondissement of Tanout" (mimeographed) (Zinder, Niger: USAID/Ministry of Rural Development, 1978); Sutter "Commercial Strategies, p. 18.

[78]G. Mainet, "L'élevage dans la région de Maradi," Cahiers d'Outre Mer 18 (1965): 32-72: P. Bonte, L'élevage et le commerce du bétail dans l'Aderr Doutchi-Majya, Etudes Nigériennes No. 23 (Niger andd Paris: IFAN and CNRS, 1967).

[79]Sutter, "Pastoral Herding."

well as boreholes and wells seems more applicable to the Tuareg herding strategy than to that of the Peul. Any strict application would not provide adequate flexibility to deal with the dynamic environmental and social situations described above and will have to be modified as conflicting situations arise. The World Bank's project paper does not set any prescribed way for handling this, as does the USAID document with its ongoing research component.

While the USAID project paper states repeatedly that traditional tenure and use rights for land and water must serve as the basis for any plan, it is quite clear that changes are to be made--"the problem is one of who can take the first steps toward . . . a more limited land use system"--and that the project sees itself in the position of an activist "honest broker." The abuse of the range is seen as the "result of the inevitable clash between private ownership of livestock and the free and undirected use of a public resource." Therefore, following a succinct review of the evolution of western U.S. grazing management, it is suggested that "American land management policy and philosophy should capture the attention and interest of the GON [Government of Niger]." Once formal rights are given, it is envisioned that, ultimately, titles will be issued.[80]

The USAID project is impressive in its commitment to first studying the very complex mosaic of ecological, social, economic, and technical factors at play before taking any specific actions. Still, an underlying assumption is that more control is needed. Such control may very well prove impossible, given the almost constant state of flux as well as the still-evolving social relations between Tuareg and Peul. If Faure and Gac are right in their projections that the zone will return to a wetter-thanaverage rainfall and more favorable grazing and water conditions,[81] then the extension of the pastoral zone northward could change migration patterns dramatically and encourage the buildup of larger herds. This could cause a breakdown in herder associations and management plans as pastoralists see benefits in returning to less structured systems in times of more bountiful resources. The point is that any land tenure rules for the foreseeable future must also be dynamic and flexible and perhaps initially different for Tuareg, Peul, and sedentary populations, just as they are now. There is nothing to indicate that there is only one right system for everybody.

Where, then, would we begin to look for a foundation upon which to build a land tenure policy for rangeland in a country like Niger? In the project area, the major resource with value is water.

---

[80]USAID, "Niger Range and Livestock Management Project Paper," (mimeographed) (Niamey and Washington, 1978).

[81]Hugues Faure and Jean-Yves Gac, "Will the Sahelian Drought End in 1985?" Nature 291 (1981): 475-78.

It is with the issue of access to wells that a land tenure policy has its best chance for success, and we need to explore what rules are evolving in this domain.

Since the French conquest of the area, the Tuareg have lost control over the former serf villages, oases, trade routes, and exclusive use of pastures. Only their control over wells remains--a person or a group of persons who has put in a well owns that well. Over the last 20 years, the Peul have begun to follow suit and have purchased wells or hired someone to dig them in their summer range. When a well is owned by a particular group, that group can determine how much water can be used and how often and by whom. This right of ownership is recognized by all.

The matter is different when the well is put in by or in the name of the government. This well then belongs to all. It has been the policy of both the colonial and the postcolonial governments since the 1950s to put in modern, high-yielding wells. The intention is to open the range on a wider basis by providing predictable water sources for pastures formerly usable only in exceptional years. These wells have turned out to be the loci of innumerable conflicts, with fights over watering turns being common. In addition, since any herd can use the well, the surrounding pasture is severely overgrazed. Bernus cites a case where Tuareg petitioned to have a Government well turned off because of the lack of control and overgrazing in the immediate area, one that traditionally had been Tuareg prime dry-season pasture.[82] Also, it was felt that several pump failures in the region were the result of sabotage by traditional users of the range to rid themselves of outsider herds. Our own brief visit indicated that, when you asked any given herders where they would like to see a well put in at Government or project expense, they always indicated a location that was in the traditional range of another, usually of a different ethnic (Tuareg or Peul) group.

Yet, in spite of the fact that it is generally conceded that public-sponsored boreholes are a disaster, the projects (the World Bank's project in particular) envision putting in more--30 in the Bank's project alone. Putting in wells runs counter to any effective land tenure policy formation in several important respects. First, most studies report that traditional wells last only a dozen years to a couple of decades as opposed to the expected life of 50 years or more for a carefully constructed well. It is conventional wisdom that the longer something lasts the better it is. But is this necessarily the case in an environmental niche as dynamic and changeable as this? Perhaps not. Cycles of 12 to 20 years may be more convenient for realigning the actual pastures used by various groups and for redefining the groups themselves.

---

[82]Bernus, "Le contrôle."

This brings us to the second point. Traditional wells are not so expensive as to be beyond the scope of indigenous financing. Project papers and Sutter's work in the area indicate that the cost of a traditional well dug by Hausa "specialists" costs about the same as the selling price of a prime export bu11.[83] As wells are within the capitalization capabilities of the local population, they will potentially be placed with a regard to the social reality of range usage and competition.

The African country that has done the most thinking in regard to the land tenure implications of well placement is Botswana (examined in detail in Section 4). One point that the Botswana experience underlines is that local capitalization of wells stimulates land tenure formulation; Government wells do not. What is important is to space the wells so that groups who finance them are establishing water rights to different ranges. The range can be used only within a restricted distance of a water point, depending on the species of animal and, if wells are sufficiently far apart, the well owners controlling different pastures.

How the project is to pass on to others exclusive rights to allocate water from a well and its pumping apparatus is not just a problem in range management but also one in Islamic jurisprudence. It would seem most prudent to focus on those areas in which already well-defined principles of tenure rights in landed resources exist. The USAID project is the only one that makes systematic provision for a study that could determine the strength and extent of these principles. Herder association status would recognize and assist those collectivities of individuals that have access rights in the main resource to have value --well water. Research will be needed to see which other areas emerge as having value. The idea of a block of land as a commodity may prove to be one that does not occur. If we look at other tenure situations in Africa, we see that often, it is not land but trees, or long-term cash crops, that become the defining tenure element in any local system.[84]

These projects in Niger indicate the necessity of finding out which resources have value (in the local, ongoing system) before trying to identify the starting point for formulating a tenure policy. In terms of creating security of economic expectations and stable patterns of resource use, it may be that the essential first step is to confer tenure on resources other than land. Second, these projects indicate most clearly the power behind Barth's observation (1964) that pastoral economies do not exist in

---

[83]Sutter, "Pastoral Herding," p. 29; Sutter, "Commercial Streategies."

[84]T.O. Elias, Nigerian Land Laws, 4th ed. (London: Sweet and Maxwell, 1971); Polly Hill, Studies in Rural Capitalism in West Africa (Cambridge: Cambridge University Press, 1970).

isolation. If we formulate projects for only one sector of what is really a multiethnic, multienvironmental, niche economy, each aspect with its own specialization, we are not only doomed to disappointment but to the very real possibility of doing more harm than good by upsetting carefully evolved, but not overly rigid, mechanisms that allow an inherently dynamic and changeable desert-side economy to articulate with a nondesert one.[85]

3.4 Cameroon

In the Republic of the Cameroon, the highest political offices are held by people of pastoral tradition, and, as in Mauritania, the owners of livestock are still culturally dominant. Unlike Mauritania, however, northern Cameroon, has relatively abundant rainfall (1,000 mm or more per annum).

The USAID Livestock and Agricultural Development Project agreements (initially conceived of as a US$8.3-million effort) were signed in 1978. The project team did not assemble until 1980, and the initial research called for in the project paper was just beginning in the fall of that year. The project appears well thought out. The original USAID design teams rightly recognized that the problems of the northern region were larger than those of just herders or sedentary cultivators. The project therefore calls for an integration of the region's livestock production and cultivation, while halting and reversing environmental deterioration.

In the area selected for a pilot or demonstration effort it is estimated that as much as 80 percent of the land had been cropped at one time or another.[86] This is to be anticipated in an area with an expected annual rainfall in the neighborhood of 1,000 mm. Cultivation has exacerbated the range condition by the systematic elimination of grass species through plowing and weeding during the cultivation cycle, and thus making the land more susceptible to wind and water erosion. Although much is made in the literature of the symbiosis between pastoralists and cultivators in the use of

---

[85]S. Baier and P. Lovejoy, "Desert Side Economy"; Michael M. Horowitz, "The Sociology of Pastoralism and African Livestock Project," background paper for USAID Workshop on Pastoralism and African Livestock Projects, Harper's Ferry West Virginia, Septemer 24-26, 1979 (Binghamton, New York: Institute of Development Anthropology, 1979).

[86]USAID, "North Cameroun Livestock and Agriculture Development Project," AID Project No. 631-00044 (mimeographed) (Washington, DC, 1978).

fallow for pasture, it does not provide good grazing.[87]

The high level of rainfall makes cultivation a real alternative. The dominance historically of livestock management in the region is due to political factors. Even the most superficial survey of northern Cameroon makes abundantly clear that demographic growth among cultivators is much higher than among pastoralists[88] and that land pressure will be a factor in any livestock project. The project aims to meet these realities head on by increasing the carrying capacity of an already overtaxed range and stimulating farmers to grow fodder crops. The project sees water-point development, seeding, and range management as the key ingredients.

The project plans to introduce certain "proven" livestock management practices. Just where these have been proven in the African context is not spelled out, but they include rotational grazing, rest rotational grazing, and uniform grazing. Each of these techniques will be modified to adapt it to the northern Cameroon situation. All of this is contingent on the establishment of local-level organization for disciplined livestock resource management. The traditional land use systems and tenure rights are to form the basis for this transformation. Individual rights to range are felt by the project designers to be more developed in Cameroon than elsewhere in West Africa. As they point out,[89] there are indigenous forms of renting range and the like. A form of range management is in place that is hierarchically organized through the traditional Peul (Fulbe) offices of Lamido, Lawanas, and Sarku Sanu, that together form the basis of pasture use, rights, and transfers. The project hopes to marry this traditional system with modern herding theory through the development of local committees that will include these traditional officeholders.

There are several different kinds of people who will be affected by such a process, and each of them has had a different historical experience with this traditional Fulbe power structure. First, there are the sedentary non-Fulbe who have within not-too-distant memory been subject to conquest, infeudation, and enslavement by Fulbe cattle keepers. There is still considerable hostility just below the surface of everyday life that is quickly

---

[87]Georges C. boudet, "Quelques observations sur les fluctuations du couvert végétal Sahelian au Gourma malien et leurs conséquences pour une stratégie de gestion sylvo-pastoral," Bois et Forêts des Tropiques 184 (1979): 31-44.

[88]M. Podlewski, "Etude démographique de trois ethnies paiennes: Matakam, Kapsiki, Goude," Recherches et Etudes Camerouaises 1 (1961): 1-70.

[89]USAID, "North Cameroun," pp. 2, 18, and 13.

revealed in even superficial farm-site interviews.[90] This is one of the fastest growing populations in tropicai Africa,[91] and their constant movement into rangeland is, in all probability, an unstoppable process.

Next there are the sedentary Fulbe who have herds that are managed by hired herders and who cultivate relatively extensively around their homesteads. Because the cattle are corralled at night and are moved from field to field on a seasonal basis, their farming system is the most productive in terms of yields per hectare and represents the most efficient means of mixed farming in the area. These sedentary cattle managers are in conflict with the two remaining major groups in the area, both Fulbe-speaking. These two groups are at opposite ends of the political spectrum. One of them is composed of the Bororo, fully nomadic pastoralists who move their herds from northern Cameroon to Nigeria, Chad, or Niger, depending on conditions, market considerations, or national policy changes; the other is the towndwelling Fulbe herd owners.

There is a certain amount of ambivalence surrounding the Bororo. On the one hand, they represent the romantic ideal from which all Fulbe in northern Cameroon trace their ancestry. On the other hand, they are not constrained by local rules; their practice of Islam is suspect; and, as exceptionally good animal managers, they always seem to show up where resources are best. They are therefore formidable competitors when range resources are scarcest.

At the other end of the sociopolitical spectrum are the large town-dwelling Fulbe herd owners. In many ways these people will represent a greater challenge to project implementation than the more spectacular (from a range management point of view) Bororo. In contrast to the Bororo--who are openly discussed by almost all segments of society, Fulbe and non-Fulbe alike--the powerful town-dwelling Fulbe herd owner is, in our experience, never openly discussed. This is a common phenomenon all across Africa. The largest herd owners have tremendous prestige and power in many sectors (in this sense, Herskovits is still correct[92])--political, religious, social, as well as economic.

---

[90]David Campbell and James Riddell, "Ecological Consequences off Population Growth and Land Use Change in the Mandara Mountains of North Cameroon," East Lakes Geographer 17 (1982): 5-16; James C. Riddell, Land tenure and Access to Land in the Magui-Wandala Project Area, MSU/USAID Mandara Mountains Research Report No. 3 (East Lansing: Michigan State University, 1980).

[91]Podlewski, "Etude deémographique."

[92]Melville J. Herskovits, "The Cattle Complex in East Africa," American Anthropologist 28 (1926): 230-72, 361-88, 494-528, 634-44

This raises a certain problem with our usual paradigm. When we interview the Bororo we come away with the impression of a great shared egalitarian ideology.[93] This impression is often reinforced on a visit to the range, where we see numerous herds of between 50 and 150 UBT managed by each family. It is only when we try to change the system that it becomes important to find out whether or not the supposed equality of herd size on the range is the product of economic opportunity or an artifact of a management system in which the herder walks with the animals in his care. That is, it is very important to find out the types of rights that the herder has in each of his animals. In pedestrian herd management, a person is able to control only so many animals, and, for a family group, 100-150 appears to be the normal limit in Africa. The large beef herds of the American West represent an entirely different management problem in comparison with the herds on the range of Africa that must sustain the family on their byproducts. Labor is needed for milking, cheesemaking, smallstock care, and so forth, as well as for pasturing responsibilities.

Therefore, when an individual builds up a sizable herd, he will distribute many, if not most, of his animals to others through various kinds of loan, prestation, gift, and service arrangements. It was our impression during our interviews in the project area during 1980 that a majority of the stock on the range was owned by a small number of very powerful town- and city-dwelling elite Fulbe.

The tenure issue becomes one of how we enhance the role of the more efficient mixed-farming herd owners when the resources, political and economic, are controlled by large absentee herd owners. Since the animals represent, to these large herd owners, social, political, and economic alliances, the actual efficiency of the operation is not overly critical. If the animals die, the relationship between lender and lendee still holds and is still politically efficacious. That is, the small mixed-farming herd owner has everything to gain from range improvement, while the large absentee herd owner has relatively little to gain. Yet it is the latter through whom we will have to work if we have any hope of succeeding in changing the kinds of rights producers have over range and range resources. In tenure terms, at least, this is a much bigger problem than that posed by the nomadic Bororo.

In conclusion, there will be several major tenure problems to be worked out in the proposed pilot project. The first will be the necessity of finding some kind of effective policy regarding the

---

[93]Paul Riesman, Freedom in Fulani Social Life: An Introspective Ethnography (Chicago: University of Chicago Press, 1977); Claude Lefebure, "Introduction: The Specificity of Nomadic Pastoral Societies," in Pastoral Production and Society, edited by Claude Lefebure (Cambridge: Cambridge University Press).

continual movement of cultivators (Fulbe as well as nonFulbe) on to areas legally declared as range. Already, the pilot project area has had perhaps as much as 80 percent of its land in crops at one time or another. Resort to legal codes is of little avail in this matter. We spent a week in the spring of 1980 in an area where there was an attempt to enforce the cultivatorherder boundary. Fulbe herds were turned loose on sorghum and other fields, while the hapless and helpless farmers looked on abjectly. Even though feelings were running high, we were able to interview, both individually and en masse, about a hundred of the affected household heads. Most had been through this sort of thing before, and they planned to try the following year to put their now-destroyed farms back in operation. Even the Fulbe herders with whom we talked seemed resigned to the eventual victory of demographic pressure over legal provisions.

The second major tenure issue relates to the nature of range rights for mixed farmers. The above legal codes do not apply to Fulbe mixed farmers, only to non-Fulbe. On one side of a seasonal water course (Mayo) will be dispersed hamlets of non-Fulbe, with their domestic animals penned during the growing season, while on the other side will be the large homesteads of Fulbe cultivators, who have their herds out on the range for the day. It is our impression that tenure and development efforts should try to encourage mixed farming along lines that enhance soil fertility. Opening up the range to all will not do this, as it will reduce the amount of fertilizer available for already overtaxed poor soils; and, yet, it seems inherently wrong to restrict access to range resources along ethnic lines. We need to look for tenure rules that will reward those producers of livestock who manage the range and other resources best.

The final tenure issue is the question of who owns how many of the animals actually using the pilot zone and the project area. As has been pointed out by so many observers of the African pastoral scene, the animals in a family herd represent more than a collection of commodities. An animal can also symbolically represent a number of different residual claims and relationships. A cow is at the same time a commodity; a process owned by the herding family (milk production, and other byproducts); and an encumbered good that may have to be returned to a lender, is promised in a future relationship (such as marriage), or in some other way represents a future opportunity value. If some large proportion of the animals is tied in one or more ways to the future opportunity options of a few powerful absentee herd owners (as we suspect is the case), we must be on double guard against the possibility that the project rules end up resulting in enclosure.

3.5 Mali

Mali, after Nigeria, is West Africa’s leading producer of meat. Even though it is a Sahelian country, it has a higher pro-

ductivity than its neighbors due to the large interior delta of the Niger River and its branches, which flood from the waters coming from the Guinea highlands in August through October. The annual floods provide predictably good dry-season pasturage. Herds leave the delta as the rainy season approaches, using the Sudano-Sahelian pastures replenished by the new rains from July to October. As the surface water available dries up, the herds move back to the interior delta where, from November to May, excellent pastures are progressively uncovered.[94]

Until 1970, the exportation of beef, both refrigerated and on-the-hoof, accounted for more than 50 percent of Mali's exports. Ghana was the major importer until its economy collapsed in the 1960s. Since then, the Ivory Coast has accounted for 85 percent of Mali's exports.[95] The drought of 1969-1974 saw a dramatic shift in the central Government's livestock policy. With the loss of an estimated 30 percent of the national herd due to the drought itself or through forced sales, the Government tried to stimulate more internal marketing to meet the country's internal demand, especially by the urban population. In addition, with the severe food shortfalls during the drought, grain production became the paramount focus of development activity.

Export taxes were imposed, cattle head taxes were initiated, and prices were frozen at 1970 levels. The general shortfall in meat supplies in the Ivory Coast drove prices up, and it made more sense for pastoralists to sell their animals there rather than within Mali, where the support prices were not reflective of real costs or demands. In order to rebuild the herds and to forestall political deterioration in the urban centers as the real purchasing power of local salaries (mostly Governmentrelated) began to fall, the Government in 1975 closed its borders to animal exports.[96] The Ivory Coast turned to the world market and bought frozen beef, largely from Argentina and the European Economic Community (EEC).[97]

---

[94]Jean Gallais, Le delta intérieur du Niger (Dakar: IFAN, 1967).

[95]J. Dirck Stryker, "The Malian Cattle Industry and Dilemma," Journal of Modern African Studies 12 (1974): 441-457; J. Staatz, The Economics of Cattle and Meat Marketing in the Ivoryy Coast (Ann Arbor, MI: Center for Research on Economic Development 1979).

[96]Victor D. DuBois, "Food Supply in Mali," American Universities Field Staff Reports, West Africa Series, vol. 16, no. 1 (1975); Joseph W. Glauber, "National Development and the Malian Pastoralist: An Analysis of Fulbe Land Use," Paper presented at the Land Tenure Center, University of Wisconsin-Madison, 1980.

[97]Staatz, Cattle and Meat Marketing.

Throughout this crisis the Malian Government was in no position to invest in rural development, especially in the pastoral sector which received less than 1 percent of the national budget. Many donors responded in the livestock sector, but by far the largest were USAID and the World Bank (IBRD).

IBRD identified its project focus in 1970 and developed it through a series of studies done by SEDES and the Institute for Animal Husbandry and Veterinary Medicine in the Tropics (IEMVT) and paid for by FAC. The IBRD appraisal team recommended the project in 1974, and the Livestock Development Project was initiated in 1975. The project, at a total cost of US$17.5 million, aimed to help the herders of the interior delta rebuild their herds through the following measures:

-- Introducing livestock extension services and grazing control in three special development areas

-- Providing improved animal health services throughout the Fifth Region

-- Constructing 70 wells and 50 ponds

-- Constructing and managing an abattoir and hide-drying facilities at Mopti-Sevare

-- Constructing and managing five livestock markets

-- Establishing and managing a 150-ha livestock and pasture trial station

-- Providing personnel training, and testing a functional literacy program for pastoralists

-- Preparing a second-phase livestock project

USAID responded to Mali’s request for help in its livestock sector with three projects and a cadre of experts, at an estimated total cost of more than US$50 million. These three projects were designed to provide assistance in all major aspects of the livestock sector, from initial production problems to marketing. The first project, Mali Livestock Development, identified pilot farmers who would be extended credit for animal purchase. The project then initiated controlled grazing and developed feedlots. The second project, Mali Livestock Sector, was designed to introduce range management for 800,000 acres and 100 new water points. In addition, it would attempt tsetse-fly control and vaccine to open new pasturages for more intensive use. It also envisioned a livestock-fattening component.

The third USAID project, Mali Livestock Sector II is designed to put 1 million acres under controlled range management with the

development of 200 additional water points. Again, tsetse-fly eradication is important, as is animal health. The animal owners are to be organized into associations, and the hope is to combine controlled grazing with the fodder production essential for a dry-season feedlot.

That all four projects have run into major difficulties in implementation is to be expected. Mali has all of the difficulties we have discussed for other West African countries. Cattle management is multiethnic, with the Peul (Fulbe), Tuareg, and Maure the dominant pastoral populations, but the sedentary farmers also comprise a very large animal-owning group, with a fair proportion of the national herd. The herds of these sedentary populations cause a major point of friction in the overall range management of Mali. While the main herds are away at rainy season pastures, the local herds are eating the grasses that will have to sustain the total herd in the coming dry season. When the transhumant herds return, they find not only that the home pastures are depleted, but that the water holes are not replenished and are dirty and disease-ridden.

Also, as Mali emphasizes the development of grain production, the same situation exists of needing to use the Niger River more effectively that exists with the Senegal River. More and more land is being taken out of pasture and put into irrigated rice. This land is claimed by different ethnic groups practicing differing economic specializations (farmers, herders, and fishermen) with competing residual rights.

Land tenure problems have emerged as paramount in each of these attempts. Yet Mali is one of the few countries in Africa with a well-developed, traditional range management land tenure system. We have seen earlier that both the Maure and the Tuareg had pasture-control systems based on ownership of wells and general territorial claims based on contest of arms, treaty, and tribute. But Mali presents us with an indigenous planning effort that took shape over two centuries.

In the 14th century, Peul (Fulbe) herders began entering the Niger River delta area in ever greater numbers. They were expanding out of the Toucoulor-controlled State of Tukur. At this time, they most likely were coming in small family groups in a fashion that would represent our classic model of a nomadic pastoral society. This would conform to the somewhat idealized picture we have of the Peul from the work of Dupire, Stenning, and Hopen. However, as a USAID social anthropologist points out in a seminar paper, the Peul have always been associated in some fashion with state

organization.[98] In the 17th century, they conquered the delta, establishing a semiautonomous state, Macina, which now forms the administrative Fifth Region of Mali. Conquered villages and villages of captives, the Rimaibe, became part of a general economy dominated by Peul values.

As natural as the interior delta region is for transhumance, it is also conflict prone. Herds can compete with each other at fords when moving out of the delta at the beginning of the rainy season. There can be competition for pastures, water, and transhumance routes. It is the return trip, however, that is more likely to produce potentially strife-ridden situations. The herds must leave the northern pastures before the water holes to the south dry up. This puts many herds on the periphery of the delta at the same time. The herds must wait in the peripheral zone until the pastures in the delta itself have dried out sufficiently to sustain large numbers of animals, without turning it into a morass or trampling all the grass into the soft earth. To be most effective, the herds should wait until the grasses are maturing before they cross. Crowding and conflict can potentially take place at each ford.

Once the herds enter the delta they must confine themselves to the higher pastures and follow the receding water throughout the dry season. The rate at which pastures become available and the ranges which are best can change from year to year, depending on the level of flooding. This again became an area of competition and dispute as the number of herds and animals increased.

By the l9th century, the level of conflict over pasture rights had reached a level severe enough that Cheikou Ahmadou, after establishing a hegemony over the Peul of Macina, instituted a reform of herding rights. The result was a code of herding rights and schedules of herd movement called the Dina. In the Dina, Cheikou Ahmadou established four types of pasturage that would constitute a group's range (leydi).[99] The best dry-season pasturage for the animals of the whole group was the bourgou. Outsider herds were permitted to graze on a group's bourgou for a variety of reasons, but most common would be that one group's range was better than another's in the early dry season, and the two would reciprocate grazing rights later on. Such access is usually accompanied by a payment of some sort. This has changed over the years, but most herders will keep a few extra male animals in a

[98]John van D. Lewis, "Range Use and Fulbe Social Organization: The View from Macina," (mimeographed) (Los Angeles: American Anthropological Association, 1978).

[99]Gallais, Le delta intérieur.

family herd just for this purpose.[100]

Cheikou Ahmadou also allotted each group a pasture (harrima) for the milk herd that stayed behind during the transhumance to the rainy season pasturage. Since this herd was expected to deteriorate as a result of being left behind in contact with the diseases borne by the insects that accompanied the rains and the flooding, the main milk herd had to be moved further away. Therefore, each group had a pasturage, called benti, which was for short transhumance compared to that taken by the main herd.

Finally, the main herd (garti) made its movements out of and back to the delta in relation to all other herds that would use the same ford and same transhumance route (burtol) as itself. The Dina defined the departure date and the sequence for each moving group (egguirgol). Herds now left the delta and returned in a sequence that would take them back to their bourgou in conformity with the relative date when their pasture would be ready, the route they would take on the delta (gumpel), and the relationships between the group leaders (dioro).

Cheikou Ahmadou undertook this reorganization of herding regimes for two basic reasons. The first was to stem the rising level of conflict, and the second was to strengthen Islam[101] by attempting to settle the herding populations and to change nomads into seasonally migrating populations with a home village (ouro). Land was divided between the various Peul herding groups, and, in addition, several Maraboutic (religious) Peul groups were introduced and given their own range.

The system probably never did work with the precision it appears to have in Daget and Ba's description. Minor or even major adjustments would have to be made each year between the various groups, depending on rainfall, flood levels, or drought. Even so, it provides the model of the operating rules for cattle movement in the delta today. The paper by Lewis describes the current definitions of the system for the Jafaraabe egguirgol.

It would appear on the surface that any project, in order to succeed, would have to work within this system. While this is certainly true, there are some difficulties that must be faced. First, the Dina has been responding to a series of pressures at least since the beginning of the French colonial intervention. Initially, the French agreed to sustain the Dina (Convention No. 88, 1904). The establishment of French suzerainty, however, also had the effect of opening the delta to new groups. Over the

---

[100]Lewis, "Range Use."

[101]J. Daget and Amadou Hampaté Ba, L'empire peul du Macina (Bamako: IFAN, 1985).

intervening years, Tuareg, Bella, and Maure have been bringing in their herds. Conflicts between the Peul groups have continued, especially between the aristocrats who were descendants of the original founders and those of the Maraboutic groups installed by Cheikou Ahmadou. As the conflicts grew in severity, intervention became more necessary. Table 3 gives the dates of the major administrative interventions.

Table 3. Dates of Major Administrative Interactions in the Dina

Besides the conflicts that occurred between the various established herding groups in the delta, there were the pressures associated with the droughts of 1913-1914 and 1969-1974. Both of these brought new herds into the delta at a critical time. More animals led to environmental deterioration. Additional pressures have been placed on the livestock sector and indirectly on the effectiveness of the Dina.

Colonial policy promoted meat production as part of an economic package that saw the establishment of private ranches. Then, during World War II, meat was required for the war effort. Meat also was needed for the growing Office du Niger irrigation project after the war. The expansion of cultivation by the Office du Niger and its colonization schemes[102] initiated the process of gradually reducing the amount of pasturage available, often in the best dry-season range (see Table 4).

Table 4. Land Use Change in the Interior Delta Between 1951 and 1975

Source: J. Gallais and G. Boudet, Projet de code pastoral concernant plus specialement la region du delta central du Niger au Mali (Maison-Alfort: IEMVT, 1980) .

Since the creation of the Office du Niger there have been additional development efforts, each of which demands new uses for existing pasture. These are Operation Mil for sorghum, Operation Riz for rice, and Operation Peche for fishing, in addition to projects of the Office de Developpement de l'Elevage de la Region de Mopti (ODEM) for increasing livestock production.

In the 1950s Marcel Drahon installed an effective animal vaccination service which helped augment an already rapidly growing herd. By the 1960s the herd had grown to four or five times the

[102]René Dumont, False Start in Africa(New York: Praeger, 1969).

size it had been when the Dina was created.[103]

The Dina was designed for a relatively homogeneous Peul group holding all the power. This is no longer the case. The Peul-proper make up only about 20 percent of the population of the interior, which is their stronghold. In the Seno region to the south, 64 percent of the Peul families have cattle, but then so do 39 percent of the Dogon cultivator families.

In summarizing the difficulties with the Dina faced by development agencies, Gallais and Boudet cite the lack of any juridical or institutional legal machinery for handling problems when they arise. When conflicts occur, there is no set policy; rather, problems are handled on an ad hoc basis, and there is no precedent from one situation to the next. There is a need for a code to provide predictability. Second, Gallais and Boudet say that there is a lack of a clear hierarchy of management for using the range, and there is a need for a formal structure of articulation between the Government and local leaders. Finally, they cite the lack of any mechanism for including the herders themselves in the management of existing or future pastoral codes.

Gallais and Boudet go beyond criticism, however, and elaborate a modernization of the Dina which they call a pastoral code. Their suggested code is divided into three major parts: organization of communities of herders, territorial organization, and pasture management. They attempt to set forth the policy mechanism that will result in local as well as regional and national areas of initiative. A brief description of the code follows.

Article 1 of their proposed code establishes a hierarchy of responsibility within the interior delta (Fifth Region). This allows for a coordination of the changes taking place in cultivation (especially rice), fishing, and herding, and indicates who is responsible at each level. Article 2 then defines the nature of the pastoral and agropastoral communities. These units are recognized on the basis of existing operational uses of land, exchanges of services, and other factors. It recognizes in policy formation that these communities will be multisectoral and will involve herders, cultivators with animals, and fishermen, all using the same territory in overlapping time-space frames. The basic policy unit, therefore, is an ongoing resource management unit.

Article 3 recognizes the fact that each of these multisectoral units will have to have administrative and policymaking flexibility vis-a-vis the national bureaucratic structure. Therefore, this article establishes that each community (in the sense outlined in

---

[103]Gallais and g. Boudet, "Projet de code pastoral concernant plus spécialement la réegion du delta central du Niger au Mali" (Maison-Alfort: IEMVT, 1980).

Article 2) will have a council that reports directly to the commandant de cercle. The situation is recognized as dynamic, and the communities as initially defined may change. The policy for accomplishing this is set out in Article 4, in which responsibility is placed on the councils themselves to initiate any redefinition, which must be affirmed by the governor of the region.

One of the problems facing all attempts to create herder associations is the allocation of any power of enforcement. While action is expected of the newly constituted social collectivities created by a project, the juridical functions are vested elsewhere. Herders are expected to give up some rights in a range they have been using in order to reap the benefits of project improvements, while allowing juridical functions to pass from their local control to some higher level. It is small wonder that such newly created units seldom survive the project.

Gallais and Boudet propose that these juridical functions be vested in the communities (as constituted in Article 2) themselves. This is set out in Article 5, which stipulates that community councils are expected to assume the responsibility of imposing local taxes, financing their own budgets, establishing markets, hiring their own agents, creating their own production, founding buying and marketing cooperatives, and establishing the fines and rules of enforcement of pasture usage. The national governmental hierarchy need concern itself only with application of national law rather than taxing already thin local administrative personnel for decision-making about things that are better understood by the local population.

One of the strengths of the Dina was that it coordinated movement and pasture use rights throughout the interior delta. This strength is preserved in the proposed pastoral code through the mechanism by which each community council would send a representative to form a regional council. This body would be the level at which any adjudication would take place in the transhumance routes. This unit would replace and serve the function of the now-existing Conference des Bourgoutieres (see Table 3). Finally, in Article 7 there is the provision for the establishment of a commission of arbitration to resolve those problems that do not fit within the defined policy precedents.

These first seven articles define the nature of the responsibility units, the scope of their powers, judicial as well as managerial, and their relation to the national administration. The next eight articles concern themselves with matters of territorial organization. For example, Article 8 establishes the definition of rights of usage and responsibility of management in general. Article 9 does this for the lands of the communities established in Article 2. Article 10 does the same for those landed resources that are utilized by more than one community. These would include, but not be limited to, wells, salt cures, recession areas, and the

like. Article 11 defines the nature of the use rights and responsibilities associated with national domain--for example, public range, water ways, and national parks.

Article 12 recognizes that traditionally there have been social groups that have had restricted access to resources, such as conquered groups of cultivators. This article states that all social levels have equal use rights to a community's resources. Any conflict between members of a community is to be resolved at the level of the council. Also left at the local level is the power to determine the length of use rights and their suspension (Article 13). The next two articles (14 and 15) cover the types of land contained within a community and the use of a community's soils. Again, control and decisions are vested at the local level.

The last seven articles concern pasture management. Article 16 sets forth that it is the local council's responsibility to establish the annual carrying capacity. This leaves the local level responsible for its decisions. If it makes bad or uninformed decisions, the situation can be rectified the next year. The point is that the people using a particular pasture have the responsibility of drawing up use plans establishing carrying capacity and the juridical power to back them up. They also have (Article 17) the responsibility of seeing to the marketing of local animals. Since the local area has control over proceeds and budget, it is to its advantage to fulfill the article's mandate that this marketing be done officially and be properly codified.

We have mentioned before the problems in the Sahel associated with range fire. Range fire control is necessary, but it must be done at the proper time. By placing control over this aspect of pasture management with the local council, any contravention can be handled quickly and efficiently. Also, this article recognizes the flexibility needed, given micro-environmental niches that will differ from one pasture to another.

Articles 19, 20, and 21 establish the responsibility of setting aside some pastures for recovery, preservation of woody plants, and periodicity of exploitation. Finally, Article 22 puts the local policing agencies at the disposal of the local councils to enforce management decisions.

We have discussed this important document at some length because it should serve as a model for the kinds of factors that must be considered when forming herding associations, with their attendant tenure rights and responsibilities. In addition, the authors recognize the necessity of a very thorough knowledge of the historical, social, and ecological framework in which tenure rules operate. Also, the Project for a Pastoral Code is in agreement with the guiding principles set forth in USAID's Workshop on Pastoralism

and African Livestock Development[104] and hence represents a building on experience and not a break with current efforts.

This project, if implemented in a pilot zone as intended, will have to face a number of additional problems not addressed in this otherwise detailed work. Given the real nature of control in the Malian livestock sector, there will be a very serious problem of how to reduce the concentrations of power and prime landholdings that are currently in the hands of a few individual families. Also, an important issue not addressed is what the criteria will be for deciding who gets excluded from the delta in years when climate or other factors cause a reduction in the established carrying capacity. Although most of the power is slated to rest at the local council level, this issue involves national citizenship. Can Mali realistically expect some of its people to forego use of one of the country's major refuge areas in times of drought? In this case, a contingency plan will surely have to be drawn up at the national level. Finally, what will be the ultimate persuasive or coercive mechanism (beyond local police), particularly in critical initial phases of realigning boundaries and social groupings when resistance occurs?

4. BOTSWANA'S TRIBAL GRAZING LAND POLICY

Botswana's approach to problems of pastoral change and development, although motivated by similar problems of population growth, ecological degradation, and the changing structure of traditional society, has taken a distinctly different path from strategies found elsewhere in Sub-Saharan Africa. This is particularly the case in the realm of land tenure, or in the extent to which land tenure is seen as an important contributing factor to the realization of policy objectives in agriculture and rural development.

A major focus of attention in the livestock sector has been upon the inhibitory effects of communal tenure, or the unrestricted grazing of individually owned herds upon open range, in contributing to low levels of animal productivity, in acting as a constraint to investment, and in leading to the cumulative deterioration of the land resource. The corrective for these problems was to be the Tribal Grazing Land Policy (TGLP), first announced in July 1975, after a long period of what proved to be only preliminary planning and negotiations with donor agencies, including the World Bank and USAID.

The TGLP is a complex policy and program for the development of commercial livestock production in Botswana. At the heart of the policy is the granting of exclusive, long-term leasehold rights to

---

[104]USAID, Workshop on Pastoralism, especially, pp. 6, 7, 10, 11.

extensive areas of previously communal rangeland to cattle owners commanding sufficient capital resources and management expertise to engage in strictly commercial cattle ranching enterprises. The grazing policy includes a strong rhetorical commitment to equity and fair income distribution, and at least initial program plans provided that rents generated by ranch leases would be invested in projects to improve the management of the remaining communal ranges, still occupied by smallholders.

Nearly 10 years have passed since the announcement of the policy to the Botswana Parliament by the late President Seretse Khama. The intervening years have been marked by the execution of an elaborate planning exercise. The applied research associated with the planning exercise has suggested conclusions that challenge the validity of some of the assumptions upon which the policy was built, including those related to land tenure. In some instances research conclusions have gone beyond the cautionary and pointed to alternative models for tenure change based upon a perceived better understanding of the social, economic, and ecological interrelationships that underpin pastoral production.

Although the tenure debate in Botswana tends to be characterized by a confusion of goals, and by the quiet clash of clearly different long-term policy objectives, the Tribal Grazing Land Policy provides a particularly rich example of the role of land tenure change as an instrument for rural transformation. The following paragraphs constitute a case study of the TGLP. The historical antecedents and contemporary assumptions that contributed to the formulation of TGLP as a policy for tenure change are given close attention; these bear similarity to many of the assumptions that inform thinking on tenure reform elsewhere in Africa, particularly in those countries experiencing rapid commercialization of livestock production.

4.1 The Colonial Era

The antecedents to Botswana's present-day approach to pastoral issues took shape in the colonial period, from 1889 to 1966. The colonial period saw the necessary modifications and evolution of social relations and the establishment of the market and infrastructure conditions which created the logic for present-day policy toward livestock development. But unlike the experience in East Africa, colonial policy toward livestock generally favored pastoral production. Recent histories of colonial policy toward livestock emphasize the widely held perception of colonial officers of the 1920s and 1930s that Botswana's comparative advantage in export markets was in livestock production--and that Government

policy should be directed toward promoting that advantage.[105]

Isaac Schapera observed that "the Tswana do not hoard cattle for mainly social and ritual ends," but rather produce for a variety of mainly subsistence or market and, on the main, economic purposes. Although cattle as social currency continued to play a role, particularly for purposes of bogadi, or bridewealth, these customs did not contribute to what writers of the time would characterize as "hoarding," or undue accumulation and retention of cattle for mainly social purposes. However, most cattle owners sold only one or two head at a time to purchase essential goods, particularly grain during deficit years, and to pay taxes; in other words, "the primary motive was to secure a means of livelihood.[106]

4.1.1 Achieving Free Marketability of Cattle

Commercialization of production had, however, required significant changes in the customary system of ownership of cattle. Parsons characterizes premarket relations in cattle in terms of a semifeudal system, whereby chiefs granted usufructuary rights in cattle to kin and vassals in return for political loyalty. Ultimate ownership rights resided with the chiefs. It was Khama I who in 1875 harmonized emergent commercial ambitions of large stockholders with rights to trade in livestock as a commodity.

> [Khama's] first action (as chief) was to summon the Ngwato to the Shosbeng kgotla. To the royal headmen and to the batlanka vassal headmen he renounced any royal rights to the ownership of the cattle that they held: the cattle (and therefore the serfs with them) were now "private" property. To the "settlers" Khama renounced taxation in the form of regular tribute, and allowed them property rights to their produce. As a result, Khama later claimed: "I was left without any personal stock of my own . . . so far as prosperity was concerned, practically on the same footing as any individual member of the tribe, and like each of them I had to struggle hard for my subsistence; a matter unprecedented in the whole history of our tribe as well as of the other native tribes in

---

[105]E. Roe, Development of Livestock, Agriculture and Water Supplies in Botswana Before Independence: A Short History and Policy Analysis, Cornell University Occasional Papers (Ithaca, New York, 1980); C. Colclough and S. McCarthyy, The Political Economy of Botswana (London: Oxford University Press, 1980); Marcia L. Odell, Botswana: First Livestock Development Project: An Experiment in Agricultural Transformation (Gaborone: Government Printer, 1980).

[106]Isaac Schapera, Native Land Theure in the Bechuanaland Protectorate (Johannesburg: Lovedale Press, 1943), p. 213.

general . . . .[107]

Parsons notes that, true to expectations, it was the large cattle owners who gained the most by the freeing of livestock from royal ownership, by realizing cash from sales of cattle and purchasing imported goods, first from the long-distance wagon traders and later from established European trading points in Ngwato territory. Furthermore, larger holders used cash to purchase additional cattle from smaller holders, effectively building up their herds even further, only now freed from "burdensome political reciprocities (of mafisa)."[108]

Although chiefs and associates faced a loss of political power, their economic positions were clearly enhanced, for the private holdings of traditional authorities, accumulated by virtue of past prerogatives of traditional office and kinship, formed the basis of large-scale commercial livestock enterprises.

The less favored had essentially two alternative incomeearning options, arable crop production or labor migration, typically to mines in South Africa. Each option, or combination of options, was often pursued in concert with some form of animal husbandry, though for slightly more varied reasons than the commercial production objectives of the larger holders. For households engaged in subsistence crop production, ownership or at least access to cattle was necessary to successfully plow the arable field.

Skewed patterns of livestock ownership have given rise to differential production goals, which in turn have had implications to the framing of livestock policy. That skewed ownership patterns have their origins in traditional social relations has already been noted. Schapera observed that among the Kgatla in 1932 "nearly one-quarter of all cattle in the tribe were then owned by five men: the chief had about 5,500 head, his uncle Isang 2,500 head, two other uncles 500 cattle each, and a prominent commoner 600 head."[109] The 1975 Rural Income Distribution Survey (RIDS) showed that cattle distribution had in the intervening years become even more skewed. The RIDS survey classified ownership by three cohorts, in part distinguished by the economic goals of cattle production.

The first group is those households that own no stock--about 45 percent of all rural households. This group is highly dependent

---

[107]N. Parsons, "The Economic History of Khama's Country in Botswana, 1844-1930," in The Roots of Rural Poverty in Central and Southern Africa, edited by N. Parsons and R. Palmer (Berkeley: University of California Press, 1977), p. 119.

[108]Parsons, "Economic History," p. 120.

[109]Schapera, Native Land Tenure. p. 219.

upon arable crop production and labor migration of household members to meet the basic subsistence budget. Cattle for plowing must be hired or borrowed, effectively limiting the extent of area actually cultivated. Due to the higher propensity of most household heads to migrate, these households are often headed by females. "Thus households without cattle are also characteristically short of labour, and ploughing, which is traditionally regarded as men's work, is often difficult."[110]

The second group of farmers comprises those with up to 50 head of cattle. This group accounts for about 40 percent of rural households and owns about one-quarter of the national herd. Cattle ownership by this group allows for pursuit of a mixed farming strategy. Land under cultivation is typically much more extensive than that of the nonstockholder group, and yields per area cultivated are higher. "On the other hand, these farmers are not wealthy enough to acquire exclusive ownership of a borehole for watering their cattle, and consequently have to use the heavily overgrazed areas surrounding communal water points."[111]

The third group, or remaining 15 percent, owns an estimated 75 percent of the national cattle herd. For this group, arable production may not be as important in contributing to aggregate income requirements. "This group is quite small but includes some enormously wealthy individuals including the President, the Vice President, and many other leading figures in the [ruling] Botswana Democratic Party.[112]

Differential production goals are in large part a function of these differential patterns of cattle ownership, with large stockholders producing for the market and smallholders pursuing more variegated strategies, with beef production for market having less overall importance. Furthermore, large holders of commercial herds are typically of the same families that held large herds as social capital, and who generally commanded easier access to land and other productive resources by virtue of their social position. The rapid evolution of market relations and the associated differentiation of production goals have had important implications for policies toward land and water rights in Botswana. Before describing those implications a fuller description of traditional tenure rules is in order.

4.1.2 The Traditional Tenure System

Grazing land in the broadest sense was and continues to be

---

[110]Colclough and McCarthy, Political Economy, p. 111.

[111]Colclough and McCarthy, Political Economy, p. 111.

[112]Colclough and McCarthy. Political Economy, p. 112.

communal; that is, group rights, typically vested in a territorial chief and later in a land board, assured group members access to land for grazing within the confines of the group territory. As is typically the case with systems of communal tenure elsewhere in Africa, complex rules existed, often grounded in kinship arrangements, for the distribution of territorial rights among group members and, to a certain extent, for the regulation of land use once new territories were fully occupied. In the Tswana case, blocks of land for homesteads, arable fields, and grazing areas were allocated by the paramount chief on the basis of ward associations. Land was selected for various uses on the basis of its suitability and its proximity to homesteads. An effort was made to reserve areas of more favorable soils for cropland, while more distant areas also possessing the requisite naturally occurring water sources were set aside for grazing. The notion of concentric zones, with quite large residential villages forming the core, surrounded by fields and their extensive grazing areas, more or less accurately describes the organization of Tswana agricultural settlement. The maintenance and continued order of the system depended upon the prejorative rights of the chief in allocating land rights in harmony with this system.

Land for residential and arable purposes was allocated in blocks by the chief to ward heads. The ward heads in turn would distribute land to households on the basis of need. Fresh allocations of arable land would be made, for instance, to men of the group upon marriage to women of the group or from other wards. When a block allocation was fully occupied, a new allocation would be made by the chief. Rights to residential and cultivated land were inheritable.

Allocation of land for grazing purposes followed a slightly different and less formal procedure. Areas distant from field and village were designated as grazing land. Several wards would be assigned grazing rights in a single large block, called naga (plural, dinaga), for which an overseer (modisa; plural, badisa) was appointed. A modisa may or may not have been a ward head. One of the modisa's functions was to ensure that only group members (that is, members of qualifying wards) established cattleposts in the naga. He also encouraged adequate spacing of cattleposts to inhibit isolated overgrazing.

There is no conclusive evidence that badisa acted as supernumerary range managers, regulating the aggregate stocking rate or directing the grazing patterns of individual herds. Rather, badisa acted primarily to protect the land rights of the group against infringement by outsiders. They provided very little in the way of actual regulation of grazing practices or control of stock numbers among group members. Furthermore, their effectiveness at executing these rather modest regulatory powers appears to have been limited to times and places of general resource abundance. Schapera had by the early 1940s already observed the breakdown of the institutional

basis for grazing assignment by groups in the smaller tribal territories of the Bamalete and Batlokwa:

> Among the Malete and Tlokwa, the members of each ward formally had their cattle posts in one area, which was assigned to them by the chief for their common use. Outsiders, however, could be and were often admitted on request. Owing partly to this, and partly to the limited amount of grazing land available, the old system of separate ward areas has apparently broken down completely. Today [1943] a man may graze his cattle freely anywhere within those parts of the reserve that are recognized as pasture ground, i.e., he does not require special permission to move from one place to another.[113]

Dinaga as the territorial basis for assigning group grazing rights was retained longer by tribes with sufficient land for territorial expansion. Most notable were the Ngwato, the largest Tswana tribe, who during the colonial period occupied over onehalf of the tribal trust territories, including a large area of relatively unsettled savanna on the edge of the Kalahari, in the western portion of their territory. Hitchcock relates decreasing levels of supervisory control by Ngwato badisa to changing group composition, resulting from labor migration and other influences of the industrial and commercial economy that was coming to envelop rural life:

> Changing social and economic circumstances of wards, combined with the practice of sometimes granting land to non-ward members, resulted over time in a blurring of ward boundaries and a mixing of claims to specific areas. The gradual breakdown in ward association with specific blocks of land has, in turn, affected the efficiency of land supervision. If an overseer of a grazing area died without a son to succeed him, the office might shift into the hands of an unrelated person. A kind of positive feedback resulted in less and less land being granted to the original ward members, and the process of ward disintegration speeded up. Today there are relatively few areas which belong solely to individual wards without some non-ward members having customary rights there.[114]

Thus, customary practice regulated grazing in two ways. First, badisa, or grazing overseers, limited access to allocated grazing districts, or dinaga, to group members; and second, isolated

---

[113]Schapera, Native Land Tenure, p. 223.

[114]Robert K. Hitchcock, "Tradition, Social Justice, and Land Reform in Central Botswana," in Land Reform in the Making: Tradition, Public Policy and Ideology in Botswana, edited by Richard P. Werbner (London: Rex Collings, 1982), p. 7.

overgrazing around water points was ameliorated by the spacing of cattleposts.[115] Typically, the group's year-round grazing requirements were provided within the confines of the nage. During the dry season, cattleposts were situated near perennial wells or boreholes. With the coming of the rains in October and November, cattle would be moved to more favorable grazing areas near ephemeral or seasonal water sources, including pan surfaces, shallow wells and dams, and pools in seasonal riverbeds. Patterns of movement on a group level were, and are, too irregular and informal to be characterized as transhumant, or regular, movement between a permanent village and a wet season grazing area. Rather, movements are opportunistic in character, and vary with highly variable rainfall patterns and range conditions. The ability to distribute seasonal grazing pressure by moving among a variety of water points in the grazing district remains a central aspect of Tswana herding strategy. A 1980 survey of water usage found that 80 percent of herds used at least two water points in the course of a year.[116]

Although rights in grazing land were communal, with each and every stockholder allowed access within the rather modest regulations provided by the dinaga territorial organization, rights in water were somewhat more complicated. Customary law with respect to water distinguished between essentially communal group rights to naturally occurring waters, such as rivers and ponds, and water supplies which are secured through physical improvement and individual investment, such as hand-dug wells or machine-drilled boreholes. While private rights could never be claimed over the former, individuals did exercise exclusive rights over the latter. Before the 1930s, these permanent, privately held sources were almost exclusively hand-dug wells or hand-constructed dams of one variety or another. The 1930s, however, saw the introduction of deep borehole-drilling technology that, for reasons of higher water yield, higher development and maintenance costs, and the extended ecological zone of cattle occupation that boreholes permitted, brought on major changes in land use patterns, the distribution of cattle holdings, and de facto rights in land. The introduction of the borehole at once dramatically increased the potential for livestock development in Botswana and posed hitherto unforeseen challenges for ecologically sound resource use and equitable resource distribution.

The boreholes permitted permanent colonization of the drier sandveld of western Botswana. Permanent water allowed permanent ranching, and hundreds of boreholes were drilled in the 1930s, 1940s, and 1950s, not only in the sandveld but in the hardveld as well. Borehole development was seen both as engine for the real-

[115]Schapera, Native Land Tenure, p. 231.

[116]Roe, Development of Livestock.

ization of the Protectorate's fullest potential as a beefproducing nation and as technological solution to the overgrazing that was becoming increasingly associated with already existing boreholes in mixed farming areas. In fact, the conventional solution to overgrazing during the 1930s and 1940s lay simply in the provision of more boreholes. A direct effect was the contribution by boreholes to the dramatic increase in the size of the national herd, from 600,000 in 1940 to nearly 1.5 million at independence in 1966.

But the borehole had other implications. As boreholes were expensive to drill, equip, and operate, their development within the private sector was typically limited to those who could generate the investment capital, usually by sale of a portion of the herd, necessary to cover the costs of borehole development. Furthermore, the production advantages that borehole ownership afforded contributed to an increasingly skewed distribution of livestock ownership. In the larger tribal territories, most new borehole development was concentrated in the relatively unsettled sandveld that, in contrast to the mixed livestock and cultivation activities of the densely settled hardveld, became almost exclusively devoted to cattle production.[117]

The preceding has sought to trace the preindependence antecedents to the framing of tenure policy, especially with respect to grazing land. Highly skewed patterns of cattle ownership, grounded originally in traditional social relations, were preserved and exacerbated by the cumulative but differential effects of relaxed market restrictions, drought, and new water-lifting technologies. More important, skewed ownership patterns contributed to the emergence of differential livestock production strategies, with smallholders pursuing a mixed crop/livestock strategy, their small cattle herds providing milk, a pool of draft oxen, and the occasional animal for sale, while largeholders came to produce primarily for the market. The widespread introduction of the borehole, particularly in previously underdeveloped grazing lands on the edge of the Kalahari, ascribed de facto land rights to those, typically market-oriented stockholders, who under traditional tenure law already enjoyed virtually exclusive rights to borehole water supplies. The social, economic, and, to a certain extent, spatial differentiations that evolved between a predominantly traditional production sector and an emergent, entrepreneurial, commercial beef-production sector (with strong ties to the political and future administrative elites) provide the essential political context to the framing of new land tenure policy during the postindependence era, to which we now turn.

4.2 The Evolution of the Tribal Grazing Land Policy

[117]Schapera, Native Land Tenure, p. 249; Hitchcook, "Tradition, Social Justice," p. 8; Roe, Development of Livestock, p. 45.

Independence was soon followed by important changes in land administration, reflecting the new freedom for expression of the claims of national constituencies. Picard has described the ruling political leadership in Botswana as representative of "a coalition of the educated, cattle-owning elite committed to a programme of rapid economic growth and the development of a nonracial democratic state."[118] In 1968, Parliament passed the Tribal Land Act, which provided for the transfer of land allocation functions from chiefs to new administrative bodies, District Land Boards. The establishment of land boards did not involve the conversion of customary rights in land. Chiefs were in fact often retained as members and sometimes as chairmen of District Land Boards, and their network of village headmen was still needed to advise on local customary allocations. Land boards were meant preeminently to be administrative bodies, to have the benefit of the requisite professional and administrative capabilities in the form of trained staff, that chiefs, it was felt, could never provide. In a major sense, land boards were seen as a solution to perceived problems with traditional allocation procedures, which were considered too inefficient, inexact, and potentially unfair to the less well-connected or influential members of the tribal community. Loss of direct control over the land allocation apparatus led directly to an even wider loss of influence of traditional authorities in the public affairs of the tribe, perhaps to the extent that certain functions, particularly in the area of law and order and local judicial matters, have been inappropriately downgraded.

Considerations of individual ties to ward, community, and place took on less importance in land allocations now made by professionally staffed land boards (civil servant staff for land board cadres were drawn from a unified local government personnel pool and were assigned without regard to tribal affiliation). While traditional land allocation procedure had been both a legal and a territorial expression of individual rights, based upon kinship relations and drawn from group rights, the inherent neutrality of land board procedures to these questions below the most general level of tribal membership has contributed to a sharp decline in residence and field patterns reflective of group ties. One effect of this, although contrary to what was intended by the rationale of the Tribal Land Act, has been the potential loss of an important institutional form, the local social territorial association, for organizing and advancing public policy in the areas of resource use and land use planning.

On a political level, the transfer of the land allocation function from chiefs to land boards, conceived as socially and politically neutral administrative units, had important implica-

---

[118]Louis Picard, "Rural Development in Botswana: Administrative Structures and Public Policy," Journal of Developing Areas 13 (1979, p. 283.

tions to the evolution of Botswana's land and tenurial policies. Of greatest importance was the dramatic diminution of the real and potential ability of chiefs to use control over land as an instrument of wider political influence. Although the Government was loathe to alienate chiefs openly, it was determined to convey to the public an unambiguous sense of where power and authority lay after independence. While the chief's administrative responsibilities with respect to land were transferred to land boards, their less obvious but ultimately more important prerogatives to make land policy were now reserved for the Minister of Local Government and Lands and the Cabinet. The Tribal Land Act explicitly provides that on matters of policy, land boards will act at the behest of the minister. Land policy, then, became the virtually exclusive concern of the central Government.

The Tribal Land Act of 1968 for all intents and purposes resolved a potentially critical political complication to the framing and eventual implementation of any future land policy. The power to make land policy was now clearly in the hands of central Government elites. And the land boards themselves provided the administrative and organizational means for implementing policy. The Tribal Land Act was a critical instrument in reforging institutional arrangements and channels away from rural-based, traditional centers of power, toward modern-sector elites, possessing more cosmopolitan economic outlooks and less tied to constraints of reciprocity and social obligation characteristic of leadership roles in customary society.

Picard suggests that, at independence in 1966, the political and the administrative elites were faced with two major questions: what was the proper institutional relationship between the central Government and the districts, where policy was to be carried out; and "what rural development strategy should the central government adopt, considering limitations of resources and the ideological preferences of socioeconomic elites?"[119] The establishment of land boards was the answer to the first question, at least in the area of land policy. In terms of the second question, we have already traced the broad historical antecedents of tenure change to the evolution of differential livestock production strategies and to the widespread adoption of deep borehole technologies by large stockholders, which, in relatively unsettled sandveld areas at least, gave rise to de facto rights to areas of grazing land. Given this broad background, what were the contemporary, postindependence factors which contributed to the framing of land development strategy?

Land policy was the product of the interplay of a number of concerns, interests, and often conflicting national policy objectives. At the risk of slightly oversimplifying the essential

[119]Picard, "Rural Development," p. 283.

concerns of the policymaking process, most of the subsequent debate can be said to have centered upon reconciling the preeminent goal of increasing national income through the progressive commercialization of the livestock sector with the desire to preserve opportunities for the widest possible participation of the rural population in livestock production. Inherent, however, in most of the remedies suggested for assuring sustained and increased commercial production were management practices and private costs which presented highly effective barriers to the participation of the great majority of smallholders and those who pursued mixed farming strategies. One of the most consistently advanced and eventually most important aspects of the land policy was a shift in land tenure from common property grazing to exclusive rights of individual or group associations to specific areas. "Privatization" or "individualization" of land tenure in the grazing sector was seen as a necessary first step to accommodate a number of largely physical improvements, such as fencing, and to create the conditions for improving range management and productivity on a sustained basis.

Virtually all assessments made of Botswana's economic future in the early 1970s shared three, interconnected themes: livestock was the basis of the rural economy, the major source of subsistence and cash income for the great majority of the rural population; livestock represented Botswana's single most important export base, and despite the increasing relative contribution of minerals to national income, livestock promised to provide a long-term and well-distributed source of export income; and the status quo and future gains to be realized in the livestock sector were threatened by an increasingly degraded land base, in large part attributable to antiquated communal tenure arrangements. Most observers agreed that unless steps were taken to correct the tenure problem, Botswana's valuable livestock base would be subjected to cyclic, drought-induced fluctuations in output, accompanied by a general decline in range productivity and ever-increasing maldistribution of the national herd.

Perhaps the single most influential contribution to the framing of grazing policy was a consultancy undertaken in 1972 by economists Robert Chambers and David Feldman. Financed by the Ford Foundation, the consultancy had a broad mandate to assess the main constraints and opportunities for rural development and to make recommendations for a comprehensive rural development strategy. A key conclusion was that "livestock is, and will continue to be, the main basis of rural development in Botswana," and the central, unresolved issue was how to "achieve production on a sustained basis, that is, how to ensure that the two main natural resources used for livestock--pasture and water--are not so depleted as to restrict production in the future." The resolution of a number of subsidiary technical and economic issues constraining sustained livestock development was considered "critically dependent on

evolving new methods of land tenure."[120] Before needed pasture management practices could be adopted, certain institutional arrangements which governed access to land must be reformed.

> We believe there is an inherent contradiction between the present institutional structure of private herd ownership, communal land control and the sustained development of the livestock industry . . . . The introduction of pasture management requires generally that those responsible for the cattle are also responsible for the pasture used by the cattle. This can only be achieved effectively in the tribal areas through changes in the tenure structure to enable pasture rights in a piece of land to be identified with an individullal, a defined group, or a responsible organization.[121]

Chambers and Feldman were not insensitive to the implications of tenure conversion in communal areas. "Such changes have major implications, particularly in terms of income distribution and opportunities for increasing herd sizes."[122] Small farmers would have to be organized into viable production units, perhaps on the model of a joint stock company "in which each member has a right in share proceeds but does not have any individual rights to any animal" or through group ranching arrangements, whereby individual herds are managed collectively, with stockholders covering costs in proportion to the size of their holding while retaining marketing and other prerogatives. But unless some means of cooperation is found for smallholder participation in commercially viable, restricted-tenure pasture units, their survival in an increasingly competitive, more costly, and restricted access production system will, in the long run, be doubtful.

---

[120]R. Chambers and D. Feldman, Robert on Rural Development (Gaborone: Government Printer, 1973), p. 55.

[121]Chambers and Feldman, Report, p. 57.

[122]To achieve "sustained offftake," Chambers and Feldman reckoned that a minimum herd size of 50 head was necessary. Two Hundred head were needed to finance the water and fencing improvements necessary for pasture management units (p. 57, 59).

> If such institutions do not emerge then the long-term participation in the livestock industry by small herd owners will become increasingly difficult. Without such cooperation the national herd will divide between the expanding, managed, large herd developments, and stagnating, subsistence-based small herds maintained on progressively reduced pasture resources.[123]

That the potential for widespread alienation of smallholders from future income-earning opportunities was already evident in current trends did not go unnoticed by Chambers and Feldman. Publicly provided boreholes were being sold at low cost to individuals and syndicates, and "the net effect has been to provide cheaper water to fewer, better off people, while squeezing out some of those with smaller herds, forcing them to move to the already overgrazed areas near communal water supplies.[124] Proposed tenure changes, in the absence of safeguards and redistributive mechanisms, would undoubtedly lead to widespread landlessness, and in the absence of readily attainable incomeearning opportunities in other sectors of the economy, widespread rural impoverishment. For these reasons, Chambers and Feldman argued for a "balanced" approach to land development, involving tradeoffs between maximizing income through creation of larger, more efficient herd sizes; improving management practice through tenure conversion and associated technical improvement; and maximizing income distribution by promoting smallholder participation in large-scale ventures and by redistributing rents generated by leasehold operations to those unable to participate.[125] Chambers and Feldman's recommended land policy rested upon two basic principles:

> . . . the identification of individual stock-owners or of groups of stock-owners with exclusive rights to particular land surfaces. . . .
>
> That wherever an individual or a syndicate acquires exclusive grazing rights, the tribe and community as a whole should be compensated.[126]

Another important recommendation of the Chambers and Feldman report that became a key aspect of Government strategy was the notion of land use zoning, initially involving four categories:

1. Reserved land, which would be areas currently not uti-

---

[123]Chambers and Feldman, Report, p. 59.

[124]Chambers and Feldman, Report, p. 117.

[125]Chambers and Feldman, Roport, p. 123.

[126]Chambers and Feldman, Report, pp. 123, 125

lized that would be set aside for future use and reclassified among one of the following three categories.

2. Commercial ranching areas, which would be areas unsuitable for arable production. "Tenure would be leasehold, with payment of a rent, and ranchers would be eligible for National Development Bank loans."

3. Mixed farming areas, which would have a high proportion of land suitable for crop production as well as smallholder livestock production. "Tenure would be leasehold, perhaps with payment of a rent which might be subject to a rent-free 'allowance' of a certain standard acreage for each household," that is, that area of land necessary to support subsistence production.

4. Communal grazing areas, which would be areas near villages reserved for communal grazing or cooperative ranches. "Tenure would vest in groups, without payment of rent, and with subsidized services and inputs."[127]

Louis Picard, in his detailed study[128] of the relationship between expatriate advisers and administrative elites in the formulation of Botswana's grazing policy, argues that the main outlines of that policy had in fact already been determined and enunciated in a Government White Paper[129] published in March 1972, a year before the Chambers and Feldman mission.

> By 1973, [and previous to the Chambers and Feldman mission] policy directions had been set, though nuances of policy remained to be fleshed out. Of the three choices available, two were unacceptable politically. The first choice, radical redistribution of the land and a retention of communal land use, was unacceptable to the nation's socio-economic elite. The second choice, rapid commercialization of all land, was politically unacceptable for the vast majority of rural Botswana who were the cornerstone of Democratic Party support. Government's choice in the short run was to maintain the status quo in areas close to the major villages while

---

[127]Chambers and Feldman, Report, pp. 133-134.

[128]Louis A. Picard, "Bureaucrats, Cattle and Puublic Policy--Land Tenure Changes in Botswana," Comparative Political Studies 13 (1980): 313-356.

[129]Government of Botswana, Ministry of Finance and Development Planning, "Rural Development in Botswana," Government White Paper No. 1 (mimeographed) (Gaborone, March 1972).

providing for commercialization of land in the west.[130]

Commercial interests were elite interests, and Picard's central thesis is that the policy as framed bore little real political commitment to income redistribution or, for that matter, to range conservation, but rather was concerned with the creation of the legal framework and the extension of financial assistance necessary to a dvance essentially commercial interests. "At the heart of the new policy would be the creation of commercial land."[131] What Government thinking had lacked and the consultants had provided, however, was what Picard characterizes as a "rhetoric of policy" necessary to sell an essentially commercially oriented policy to a much wider political constituency.

In May 1973, the Government issues a response to the main recommendations of the Chamers and Feldman report. Predictably, granting of exclusive rights to "individuals or groups provided nobody else has valid claim over thhe areas they want to fence and can support their claim with evidence they have used the land in recent years, or have the capacity to uuse the land in the future,"[132]

> In addition, Government made two other provisions. First, fencing was also to be allowed to a limited extent in the communal areas (near the major villages) by syndicates as well as by other groups and organizations. Second, those who leased commercial land would still be allowed to keep a certain number of cattle in the communal areas. Chambers and Feldman had argued that those who leasedd commercial land should be required to remove all of theirr cattle except those borrowed by others (mafisa) from the communal areas. The White Paper of 1973, on the other hand, in effect gave wealthy cattle owners the best of both systems of grazing.[133]

As expected, the language of the forthcoming Government White Paper describing the new Tribal Grazing Land Policy adopted the rhetoric of balanced and even-handed development provided by the consultancy report. The real measure of commitment to a balanced policy may be discovered in an assessment of its implementation, to which we can properly turn only after a brief description of the

---

[130]Picard, "Bureaucrats," p. 327.

[131]Picard, "Bureaucrats," p. 327.

[132]Government of Botswana, National Policy for Rural Development: The Government's Decisions on the Report on Rural Development by R. Chambers and D. Feldman (Gaborone: Government Printer, 1973), cited in Picard, Bureaucrats, p. 329.

[133]Picard, "Bureaucrats," p. 329.

official policy document.

The policy has three aims: "to stop over-grazing and degradation of the veld; to promote greater equality of incomes in rural areas; and to allow growth and commercialization of the livestock industry on a sustained basis.[134] Existing problems of overgrazing and low output are attributed to the communal grazing system. The policy paper opens with reference to a recent speech by the president.

> Under our communal grazing system it is in no one individual's interest to limit the number of his animals. If one man takes his cattle off, someone else moves his own cattle in. Unless livestock numbers are somehow tied to specific grazing areas no one has an incentive to control grazing . . . .[135]

Exclusive tenure is seen as only the first condition to the creation of more productive ranching enterprises, to be managed and improved along Ministry of Agriculture guidelines.

> All that is needed is some fencing and some piping of water. Land can carry more cattle if it is fenced and watered than if it is open. Properly run group and individual ranches can carry twice as many head as under uncontrolled grazing. The improved system also provides more incentive and makes it easier to build firebreaks and control veld fires.[136]

According to the White Paper, the present system "is a free for all," and proper herd management and sustained land use practice will follow only when stockholders are "given complete control over the areas where they graze their animals."[137] This characterization of the existing system as essentially beyond repair, with but limited potential for improvement, appears to exclude Government action, at least in terms of TGLP, for improvement of grazing practices in the communal areas themselves. The policy, in its provision for land use zoning, admits that communal zones will have to be retained, but suggests, "Until stocking rates are brought into line with carrying capacity of the land in all communal areas, it will be impossible for farmers in

---

[134]Government of Botswana, Ministry of Finance and Development Planning, National Policy on Tribal Grazing Land, Government White Paper No. 2 (Gaborone: Government Printer, 1975), p. 1.

[135]Government of Botswana, Tribal Grazing Land, p. 1.

[136]Government of Botswana, Tribal Grazing Land, p. 5.

[137]Government of Botswana, Tribal Grazing Land, p. 5.

these areas to make any real progress."[138] The policy provides for the dividing of grazing areas into the following three zones:

1. Commercial ranching areas, where traditional, communal rights will be alienated, and groups or individuals will be given exclusive rights to specific areas of grazing land. Leases will be granted, with rents accruing to local authorities (land boards). Allocation policy provides that commercial areas "are not meant only for the large individual cattle owner," but rather, "First priority will be to help groups of smaller owners to run commercial ranches."[139]

2. Communal grazing areas will be essentially those areas presently grazed near villages and in mixed farming areas. Here tenure will not change, and the policy provides no communal program beyond the rather vague suggestion that "We must find ways to teach people better management and how to solve the problem of overgrazing."[140] It is hoped that the movement of large herds to commercial areas will bring about a decrease in grazing pressure in communal areas, but there is nothing in the policy to restrict large holders from keeping herds in both communal and commercial areas.

3. Reserved areas are areas that will "be reserved and guaranteed for future use by those who have only a few cattle at present," as well as for wildlife, mining, and cultivation.

Part V of the policy document roughly outlines planning procedures for land use zoning and allocation and for the granting of leases. Zoning is described foremost as a means to ensure continued access of smallholders to sufficient communal land to meet subsistence needs. Commercial zones would be delimited only after sufficient reserved lands to meet future smallholder requirements were identified and set aside. Furthermore, land boards were to establish maximum individual herd sizes permitted to remain in communal areas. Holdings that exceeded the limit "should move to commercial areas."[141] New, privately owned boreholes would no longer be permitted in communal areas.

The primary objective of granting long-term leases to stock-

---

[138]Government of Botswana, Tribal Grazing Land, p. 7.

[139]Government of Botswana, Tribal Grazing Land, p. 6.

[140]Government of Botswana, Tribal Grazing Land, p. 7.

[141]Government of Botswana, Tribal Grazingg Land, p. 11.

holders in the commercial area is to "give the security of tenure necessary for the taking and granting of loans and for the introduction of improved management systems." Lease rents would "ensure that local authorities receive a return from those who acquire the privilege of exclusive use of tribal land."[142]

4.3 The Search for Smallholder Livestock Policies Under TGLP

4.3.1 Background

Although various official policy statements have ascribed range conservation and improved income distribution as important goals of the TGLP, it is preeminently a program to promote beef output by way of more efficiently operated, large-scale ranch enterprises. In the course of program implementation, conservation and equity objectives have consistently given way to production objectives when decision-makers have judged them to be in conflict. At the heart of the policy is a model of efficient, commercial beef production, represented by a fenced ranch of about 6,400 ha, with a more or less standard package of ranch infrastructure, including at least one borehole, internal water reticulation, paddocks, bull and weaner pens, and firebreaks. Professional ranch managers would be trained at a Government training center. Rents would be charged for the exclusive, longterm lease right to the land.

The lease might include provision for stock limitations, set to proper stocking rates. Loans for ranch development would be available from the National Development Bank. A major portion of the financial costs of the TGLP was provided by a World Bank loan administered under the aegis of the Second Livestock Development Project, which began in 1977 and is scheduled to end in 1985. The Project extends "credit for the development of up to 100 TGLP ranches in the areas zoned 'commercial,' in addition to providing funds for group ranch development, trek routes, livestock related research, and f or ranch manager training,"[143]

The model ranch envisaged by the policy will support a herd of at least 500 cattle (400 livestock units), considered the minimum necessary to generate an offtake sufficient to finance private water development and other ranch costs. That there were few privately held herds of that size outside of the small (but economically important) freehold production sector did not discourage project planners. Sufficient scale of operation would be achieved by amalgamation of smallholdings into large herds on

---

[142]Government of Botswana, Tribval Grazing Land, pp. 14, 15.

[143]Carl Bro International, An Evaluation of Livestock Management and Production in Botswana: Main Report, 2 vols. (Gaborrone and Brussels: Ministry of Agriculture, and European Developmentt Fund, 1982), pp. 328-329.

group ranches. Largely negative experience with pilot group rances was becoming known to project planners only during the final stages of TGLP design.0

Virtually from the time of the formal announcement of the TGLP as Government policy, planners and policymakers have been concerned with the problem of how to extend assistance to small stockholders within an overall policy framework oriented to the commercial sectorr and attendant assumptions concerning such things as scale of operation and management practice. Eventually, many came to realize that the model of the leasehold commercial ranch was not, with rare exceptions, a realistic or appropriate production model given the overall land and labor use strategies of rural smallholding households. New policy paths were charted in the areas of extension and farmers organizations, land use planning, and cooperative resource management that took more realistic account of real world constraints and built upon the lessons of past mistakes.

This section examines some of the major efforts at smallholder livestock development in communal areas undertaken since 1975. It focuses on how new policies and strategies have dealt with the overarching problem of improving the management of pastureland under circumstances of communal land tenure.

4.3.2 The Environment of Smallholder Production

What is the environment in which smallholders of livestock develop their economic strategies, and how does this affect the applicability of TGLP prescriptions?

National data on the distribution of livestock holdings reveal a highly skewed pattern of ownership. As indicated in Table 6, in 1980 about 45 percent of farming households owned no or fewer than 10 head of cattle, while an additional 34 percent held between 11 and 40 head. Only 21 percent of farms held more than 40 head of cattle. As subsequent data will indicate, the approximately 80 percent of farms holding fewer than 40 head of cattle pursue livestock production strategies that do not conform to the production behavior required for widespread adoption of TGLP prescriptions. Table 6 reveals the relationship between increasing production of food crops and increasing herd size.

As would be expected, the freehold, or commercial sector, supplies a disproportionate share of market offtake. While cattle held by commercial enterprises represented about 16 percent of the national herd in 1980, about 33 percent of gross cattle sales were attributable to the commercial sector. Nonetheless, the total market share of the so-called traditional sector is impressive, and increasing at a fairly rapid rate.

In 1980, gross sales by the traditional sector accounted for

190,000 of the 287,000 total animals sold. Thus, the traditional sector accounted for nearly twothirds (66.2 percent) of the gross sales of cattle in the country during this period. When these sales are placed on a net basis (i.e., purchases are deducted from gross sales), the traditional sector accounted for just over 73 percent of total net sales in the country--149,500 of 205,000 animals.[144]

Table 6. Relationship Between Cattle Herd Size, Average Area Planted and Harvested in Food Crops, and Average Number of Smallstock Held, Traditional Farms, 1980

Source: John G. Litschauer and William F. Kelly, The Structure of Traditional Agriculture in Botswana (Gaborone: Ministry of Agriculture, February 1981).

Average offtake for the national herd during the years 1978, 1979, and 1980 is an estimated 9.0 percent; the traditional sector had an estimated 8.1 percent offtake, compared with 15.6 percent for the commercial sector. (Offtake is calculated on the basis of gross sales plus home slaughter minus purchases, divided by ending inventory.)

A close examination of livestock ownership patterns reveals a typology of production orientations that limits the "commercial" management styles to the cohort with at least 40 and typically more than 80 head of cattle. Litschauer and Kelly develop a simple typology of production orientation, based upon an analysis of "different sized cattle holdings, average crop areas planted and harvested and average smallstock holdings,"[145] Households are classified among three groups:

1. For the smallest farmers--those with 10 or fewer cattle --primary emphasis is on crop production. However, as a result of input constraints--whether draft power, capital, or other--the average hectarage planted measures from 1 to 2 ha. Smallstock holdings are at best a peripheral production activity.

2. For medium-size farmers--those with from 10 to 40 cattle --there seems to be a definite indication of mixed production activities. Hectarage planted, on the average, may range from 1 to 7 ha, and the number of smallstock

[144]John G. Litschauer and William F. Kelly, The Structure of Traditional Agriculture in Botswana (Gaborone: Ministry of Agriculture, February 1981).

[145]Litschauer and Kelly, Traditional Agriculture, p. iii.

held becomes more important in the overall production picture.

3. For large traditional cattle farmers--with more than 40 cattle--the production picture may be either specialized or mixed. A significant number of farmers in this size range plant little or no cropland. However, when crops are planted, the area planted tends to be larger than in the previous two farm-size groupings. At least a portion of this increase may be due to increased capital holdings and/or management skills. The number of smallstock held by this last group also tends to be larger than that held by the smaller farmers.[146]

Carl Bro Consultants, in reporting on the first year's findings of an extensive study of livestock management and production in communal areas, suggest that higher productivity values do not strongly correlate with increasing herd size, at least among herds held in communal areas.

> The picture which emerges from the Management Study at this stage, roughly a year since its inception, is one of great diversity among the herds. It is in marked contrast to the orderly patterns which appear in the tables of statistical studies. For example, the Aaricultural Statistics Report for 1980 (Table 21) shows a strikingly close inverse relationship between herd size and mortalities and also between herd size and calving rate. Our own sample exhibits no such correlation, herd size being outweighed in its influence by other factors some of which are apparently accidental and some directly related to human fallibility.[147]

Though the study sample was small (17 herds totaling 1,200 head), there appeared to be no correlation between herd size and mortalities, or between herd size and net herd increase. Calving rates were found to be considerably better than the 47.3 percent rate "mentioned by the Animal Production Research Unit (APRU) as the norm for cattlepost herds."[148] Most significantly, increasing herd size "seems to act more as an enabling than a determining factor. The large herd owner is able to spend more (of his own time, labor, money, and so forth) and demand less (of milk and draft power) of his herd than the small one."[149] Many smallholders wishing to increase their herds to a level that provides a good

---

[146]Litschauer and Kelly, Traditional Agriculture, p. 25.

[147]Carl Bro, Evaluation, p. 4.23.

[148]Carl Bro, Evaluation, p. 4.56.

[149]Carl Bro, Evaluation, p. 4.52.

team of draft oxen, permits a regular, sustainable surplus for market, and provides reasonable assurance of surviving a drought with breeding capacity intact encounter a threshold range of 20 to 30 head. Herd growth during this critical phase must be subsidized by the farmer, which typically requires household labor migration (often by the male household head). The resulting labor shortage detracts from the attention to herd management needed to sustain the desired growth rate, especially during the calving season. Most smallholders (and especially those owning fewer than 20 head) find themselves tottering between marginality and possible self-sustaining growth, although "it seems that a combination of management factors, economic pressures and natural disasters tend to erode the viability of the small herd."[150]

> The important point is that a herd below a certain size, preliminarily set at 20-30 heads, is difficult to manage well, because it cannot provide its owner with enough to live on; therefore, he tends to make excessive demands on it, and he usually lacks the resources to care for it properly. It is a vicious circle, a poverty trap, in which men and cattle are caught.[151]

The Carl Bro study provides an extremely useful model of the evolution of management strategies through the family life cycle, equating age and general social and occupational status of the male household head and stockowner with changing herd size, labor use, and investment and management strategies. During the "early phase" of family and herd development, interest is focused upon maintaining at least a modicum of herd growth in the face of the kinds of high consumption pressures common to supporting grrowing households. For many the aim of herd accumulation, bough at the price off years of austerity at home and savinggs from migrant wages, is eventually to leave paid employment and return to the rural homestead. By age 40, most men have lost the strength for hard labor and are looking to return home permanently. "For this to be possible, they should already have laid the basis for their livelihood, and for the majority the possession of an adequate herd is the only feasible basis for an independent living."[152]

Those herders who enter a "mature phase," verry roughly defined in the study as that group which can secure an "independent living" from their herds, at present constitute a small minority off herders. Many herd owners aspire to this status, and, once achieved, may adopt a "traditional" or a "commercial" production style. But the orientation adopted--traditional or commercial--is

---

[150]Carl Bro, Evaluation, p. 4.77.

[151]Carl Bro, Evaluation, p. 4.78.

[152]Carl Bro, Evaluation, p. 4.83.

less a function off actual herd management practice (from the point of view of calving rates or herd structuure) than a matter of willingness to make expenditures on livestock inputs and to make plaanned and fairly reggular market sales. Commercial herds have a higher offtake tthan traditional herds not because potential offtake (in terms of comparative herd growth) is significantly greater, but because commercial herders are predisposed to realizing a higher proportion of overal income from market sales than are traditional herders. The study draws an instructive distinction between the production orientations held by "traditional" and "commercial" herders in the nonfreehold sector:

> Moreover, the production of cattle specifically for the market is a subsidiary aim to the provision of milk, drauught power, bogadi cattle for a son's marriage (or even a second wife for the owner), a store of wealth against the coming of evil days, the social status associated with a well established herd, the ability to help people with loans of cattle when they are in need and the sheer delight of owning cattle. The ability to select one orr more animals for sale without significantly reducing the herd's capacity to provide forr these needs is also valued, but that is the function of stock which are surpluc to immediate needs, not of stock reared specifically for the purpose. On the other hand, commercially oriented herd owners are those who are prepared to spend money on their herds, both in terms of capital invested (e.g., breeding stock, bulls, boreholes, etc.) and of recurrent costs in the expectation that they will reap the benefit financially and in the growth of their herds. They often share the objectives of the traditional owner, thus enjoying social and aesthetic as well as pecuniary rewards.[153]

TGLP failed to incorporate the circumstances and logical implications of smallholder livestock production into its prescriptions with three main results:

1. Livestock production orientations among smallholders are diverse and utilize livestock as inputs into the farming enterprise; for subsistence, consumption, and a depository of savings; and as a marketable commodity. Herd management styles are for the most part not consistent with the commercial models posited by TGLP. This has implications for policy assumptions concerning the willingness or ability of producers to incur the kind of capital or recurrent costs envisaged by commercial models, and to adopt the kinds of herd management strategies recommended to maximize beef production.

2. The TGLP ranch model is a rather idealized development

[153]Carl Bro, Evaluation, p. 4.85.

package that a priori requires relatively high levels of commercial efficiency which are necessary to finance the capital improvements, which in turn promote the desired higher beef production levels. In fact, the economics of commercial beef production on the TGLP model may never favor the circumstances of the smallholder, insofar as it is generally agreed that holdings under 100 head cannot achieve the economies to finance private water development and other improvements necessary to achieving the measure of land and herd management control that would make commercial production viable over the long run.

3. "The distinction . . . drawn between 'traditional' and 'commercial' herd owners applies more to their methods of management and to their planning of sales than to their attitudes towards the market as such or to their levels of offtake."[154] Smallholders do not consider the market unimportant. Rather, they are constrained from producing exclusively for the market by other demands on the herd and by the fact that small herd size precludes realizing more than a small fraction of total income requirements from cattle production alone. Small scale and the dispersion of herd uses that result combine to undercut the chances of the herd achieving the threshold size necessary for self-sustained growth, typically considered to require between 30 and 40 head. Even then, those herders owning fewer than 100 head will often act to "keep down expenses" by not making the kinds of investments in water development and range improvement recommended by the TGLP model.

For the great majority of livestock producers, a commercial production strategy is not economically feasible from the points of view of scale of operations, labor availability, and access to requisite investment capital. It is not an option to hope that smallholders will somehow adopt TGLP ranch-style solutions on a smaller scale. This is not to suggest that the development of livestock policy should be put in abeyance until the industry restructures itself along lines more amenable to conventional policy prescriptions. Rather, it suggests the need for a less deductive approach to the problems of smallholder production, and the design of policies more appropriate to the specific conditions and problems of that sector.

The most cursory examination of the circumstances of small-holder production would indicate that the priority concerns of the sector lie less in the area of increasing livestock productivity and output than in issues related to range management and

[154]Carl Bro, Evaluation, p. 4.88.

conservation. Overgrazing and range degradation are encountered throughout the communal grazing areas of eastern Botswana. Losses of cattle due to localized drought are common each dry season in Botswana. More generalized drought, such as occurred in the middle and late 1960s, has devastating national effects. An estimated one-third of the national herd was lost between 1965 and 1967. In addition to being an ephemeral condition of belowaverage rainfall, drought under circumstances of overstocking has long-term implications to the resource base. The ecology of pasturelands is permanently degraded to lower levels of natural productivity with each successive drought.

Instability is the dominant feature of smallholder production because aggregate herd size surpasses the carrying capacity of the communal range during periods of low resource productivity. Individual herd owners are either unable or unwilling to coordinate their range use decisions such that carrying capacity is not exceeded or that an appropriate response (destocking) can be made in time of drought. Conventional approaches to livestock development only exacerbate the situation.

4.3.3 Improvement of Communal Resource Management

How in this environment, and given smallholder strategies, can communal resource management in Botswana be improved? The question of devising viable range management strategies for the communal areas has preoccupied policymakers and planners virtually since the inception of the Tribal Grazing Land Policy in 1975. We can categorize most "communal development" efforts among three differing approaches: incremental group development, best represented by the gradualist extension approach of the Ministry of Agriculture; communal area land use planning, fostered mainly by the Ministry of Local Government and Lands; and what may be called models for the collective management of communal grazing land, represented by a few special land use planning efforts and consultancy reports. Although the first and second type of approach are more of the mainstream, the third approach has engendered widespread interest and speaks most directly to the long-term problems of smallholder production in communal areas, and specifically to the question of how smallholder production, which from the point of view of land utilization requires some form of communal tenure, can be regulated so it accommodates resource management (stabilization) objectives. In broader terms, the question is classically one of how the nature of rights, private or communal, affects the management of grazing land.

Whereas questions of resource rights in the development literature have traditionally been limited to comparison of tenure models for effects upon output, resource distribution, and equity, the debate in Botswana has been expanded to include the comparative outcomes of differing tenure models on resource conditions. An important argument advanced in favor of TGLP (and other

privatization models) is the assertion that assigning private rights in land is a necessary precondition to achieving individual responsibility for resource condition. Under individual tenure, the cost of abusing the range will be fully assessed against the user, and his rights in grazing will be limited to the territorial unit over which he has exclusive jurisdiction. This tenure, it is argued, will lead to two desired outcomes. Herd management will become more efficient in terms of the ratio of inputs (grazing land) to outputs (cattle) because the full valuation of grazing costs will now be made against the individual production unit. And, second, the manager will feel compelled to regulate the intensity of resource use so as to ensure sustained production of grazing, finding that the options for exploiting grazing at a less-than-cost price have been finally constrained.

But assignment of individual smallholders to discrete areas of land is not feasible. Private grazing lands require individual water supplies, which cannot be capitalized by the modest offtake of smallholdings. Once again, market offtake from most small herds is not planned to meet a steady stream of variable costs associated with livestock production requirements per se. Sales are typically undertaken in response to extraordinary or irregular cash requirements, and every effort is made to keep variable costs associated with herd management tto a minimum. Finally, even normal, seasonal variations in rainfall require a much more extensive grazing range than could be easily accommodated by private grazing tenure. Private tenure would actually limit optimal utilization of the range, or would entail enormous information and transaction costs to permit anything like the easy adjustments to available ggrazing now accommodated by communal tenure. Indeed, TGLP does not require universal transformation of tenure rights. Tenure in crowded communal grazing areas will remain communal. But the rationale in favorr of a new normative model of commercial production on privatized land strongly implies that communal tenure is an obstacle to economic development and inherently destructive of the resource base.

In recent years, several planners andd advisers have argued for modifying the communal tenure system to allow forr stricterr protection of the public’s interest in sustained natural pasture production while assuring continued access of smallholders to the range. Not to work toward imaginative rresolution of communal tenure problems, it is argued, effectively condemns the vast majoritty of livestock enterprises to low levels of productivity, and probably to chronic instability in individual herd sizes. Designing feasible models for collective management of communal areas has proved, in Botswana and elsewhere, to be an extremely difficult undertaking, appropriate to the enormity of the problem.

Most approaches to the problem have begun with the assumption that the main challenge is one of identifiying existing or constructing new social institutional forms, at the level of the

local community, which possess the social legitimacy and can apply the sanctions required to enforce range use controls and management standards. The Carl Bro Consultants report provides a typical statement of the problem and a rather general solution.

> It is the contention of the Evaluation Unit (EU) that under present circumstances communal grazing areas are inherently unmanageable and that nothing can be done about the problem of overgrazing, except to wait for the next drought, which is not a very imaginative or durable solution. It is therefore necessary to create the conditions under which communal range can be managed. The administration and continuous enforcement of the necessary controls cannot be undertaken by any agency other than the local community itself.[155]

In the following pages we examine two important and broadly representative approaches to the problem of creating effective community-level resource management rules and institutions: Ornulf Gulbrandsen's Agro-Pastoral Production and Communal Land Use: A Socio-Economic Study of the Bangwaketse, and relevant sections of the Carl Bro International consulting report, An Evaluation of Livestock Management and Production in Botswana.[156]

The main body of Gulbrandsen's study is devoted to a description (based upon the analysis of survey data) of the circumstances of crop and smallholder livestock production in the Southern District, the home territory of a large Tswana subtribe, the Bangwaketse. Bangwaketse cultural and economic patterns are typical of those found throughout eastern Botswana. The picture of communal production that emerges is one of continued vitality in both small-scale crop and livestock sectors. (The two sectors are highly interrelated, with success at crop production largely dependent upon success at producing sufficient numbers of cattle to inspan a team of draft oxen.) But rural households are increasingly limited in the extent of agricultural enterprise by household labor shortages brought on by the need to migrate to towns to raise needed and reliable cash incomes. In fact, Gulbrandsen's and other studies of household labor use present a picture of a highly mobile workforce, combining urban wage employment and subsistence farming into an overall strategy for securing a sufficient aggregate (cash and subsistence) income. The strategy is not necessarily one of

---

[155]Carl Bro, Evaluation, p. 2.13.

[156]Ornulf Gulbrandsen, Agro-Pastoral Production and Communal Land Use: A Socio-Economic Study of the Bangwaketse (Gaborone: Uuniversity of Agriculture, 1980); Carl Bro, Evaluation. Many of the ideas of the latter document appeared in somewhat different form in a report of the Evaluation Unit of the Ministry of Agriculture's Ranch Management Center at Ramatlabama (The Management of Communal Grazing in Botswana, Evaluation Unit, 1981).

maximizing total income, but rather one of satisfying a range of income demands in a fashion that matches the household's relative resource endowments.

Gulbrandsen's primary concern is the ability of the land base to sustain its critical portion of the household incomeearning strategy in light of relentless demographic pressures for more intensive use. The rural population is projected to increase by 56 percent between 1971 and 1991. Gulbrandsen estimates that "the number of households owning cattle will increase by no less than 40 percent by 1990." He deduces the latter conclusion from an expected increase in urban wage levels, in that cattle are a major area of investment for migrants in transferring savings to their rural households. Combining the population trends with the growth in livestock numbers, Gulbrandsen estimates that by 1990 the overall "stocking rate is likely to drop to 4.2 hectares per livestock unit (ha/lsu), whereas 12 ha/lsu represents the recommended rate." Gulbrandsen considers this a conservative growth estimate, and hastens to underline the importance of steady growth rates to the maintenance of the entire farming enterprise. "Let me emphasize that because the vast majority possess little or no stock, the conditions for raising the off-take rate are certainly not favourable. Most farmers need to save all the cattle they can in order to have enough draught power.[157]

An outcome of drought-induced ecological collapse can be averted, according to Gulbrandsen, only if one or both of two broad policy goals are adopted: "(a) to limit the cattle population of communal areas, and (b) to improve the organization of range utilization in the communal areas whereby grazing is exploited optimally without being degraded." He considers three strategic options for pursuit of these goals: increasing the offtake rate, transferring cattle from the communal areas to designated commercial areas, and "regulating the number of livestock units kept in communal areas by means of legislation."[158]

Under existing market and investment conditions, the prospects for increasing the offtake rate by means of price incentives are limited. Instead of producing cattle for cash income, many Botswana buy cattle as a sound investment and a hedge against inflation. The cumulative effect of interventions aimed at accommodating higher offtake rates by enhancing herd productivity is higher aggregate herd sizes, putting ever greater pressure on the communal range. The logic of this outcome becomes obvious when the household's overall income-earning strategy is analyzed in all its complexity, and not simply on the basis of an assumed dominant reliance upon livestock production for market sale.

---

[157]Gulbrandsen, Agro-Pastoral Production, p. 207.

[158]Gulbrandsen, Agro-Pastoral Production, pp. 212, 216.

One of the few immediate improvements envisaged by TGLP for communal areas was decreased grazing pressure resulting from the exodus of large, commercial herds to the newly developed commercial ranches in the sandveld hinterland. Gulbrandsen's analysis of the distribution of holdings in the Southern District leads to the conclusion that, in fact, "this strategy does not contribute much to protecting and improving communal ranges, because it does not mean significantly less pressure on the communal grazing areas, since only a small part of the total herd in the communal areas belongs to men who can afford to take part in commercial schemes." Gulbrandsen estimates that only about 10 percent of the communal cattle population belongs to herds larger than 70 head. Even in the unlikely event that all of those larger herds should leave the communal areas, the remaining 90 percent could breed up to and surpass previous population levels within 1 or 2 years. Furthermore, the TGLP does not include provision for restricting a single owner from keeping herds in both communal and commercial areas, or from transferring cattle between communal and commercial area holdings. Gulbrandsen is concerned that higher levels of cattle productivity achieved on commercial ranches might actually result in increased pressures on communal areas.[159]

Given the rather negative prognosis for market or other indirect measures for relieving grazing pressure, Gulbrandsen turns to the details and feasibility of his third alternative: regulating livestock numbers by applying limits to individual herd sizes. Gulbrandsen's discussion focuses upon the necessary economic and ecological preconditions for successful application of administered controls. Most commentators have approached stock limitations as an essentially technical problem of reforming administrative and allocative procedures so that desired stocking rates are achieved. For Gulbrandsen, circumstances of identifiable self-interest in range conservation at the level of the household must first appear before collective action can be pursued or external sanctions for resource control can become politically tenable. Gulbrandsen postulates two preconditions for pursuing local-level stock controls: the achievement of a widely held perception among stockholders that stock controls will pay off, relative to the likely devastating losses resulting from inaction; and the assurance to farmers who adopt stock-control measures that they will not "be carrying costs from which uncooperative farmers will benefit."[160]

Crucially, the assessment of payoff will vary from farmer to farmer as, once again, farmers pursue a variety of income-earning strategies, with the relative importance of livestock varying significantly in its contribution to individual household budgets.

---

[159]Gulbrandsen, Agro-Pastoral Production, pp. 219, 220.

[160]Gulbrandsen, Agro-Pastoral Production, p. 227.

Because control mechanisms which would provide the assurance of the second condition themselves involve costs, each and every farmer "is likely to try to compare the profitability of adapting an individual strategy to a strategy involving participation in a communal organization. "The matrix of cost and benefit factors would include the degree of overgrazing; the number of cattle a man owns (the more cattle, the greater the vested interest in local pastures); the size of the pasture unit utilized and its territorial coincidence with a potential coordinating institution (the larger the territory and the greater the number of cattle owners, the greater the problems of coordination); the household's dependence on animal husbandry; and the availability of manpower.[161] Gulbrandsen evaluates, in turn, the factors noted above, only to reach unpromising conclusions:

1. Because overgrazing is concentrated around water points, and because there remain effectively utilized but not overgrazed areas nearby, few farmers "express recognition that their area as a whole is overgrazed."

2. The majority of livestock holdings are very small (in Southern District, 51 percent are fewer than 30 head), underlining the fact that though cattle are critically important as a source of income and a factor of production, other aspects of economic life (for instance, arable agriculture, labor migration, housekeeping, food and beer production) compete for the household's attention. If anything, the demonstrated ability of cattle to pretty much fend for themselves, and, of course, reproduce themselves, has given rise to attitudes and practices that tend to detract from good animal husbandry. Other pastoral groups in Africa, less integrated into a wider network of economic activity and labor-use demands, would likely be dismayed by the apparent inattentiveness many Tswana demonstrate toward herding.

3. The basic organizational unit for possible collective action is today a very large one, "the tribe or the district numbering thousands of people."

4. As suggested in (2) above, the small size of herds and the shortage of labor due to migration indicate "that few families can depend to any significant extent on animal husbandry for consumption." Hence, the overriding economic interest and the obvious payoff presumed necessary to voluntary organization would appear not to exist.[162]

---

[161]Gulbrandsen, Agro-Pastoral Production, pp. 227-228.

[162]Gulbrandsen, Agro-Pastoral Production, p. 228.

Gulbrandsen concludes that "as far as the interest of the management units themselves is concerned, we can say that currently the conditions for spontaneous organizational processes and so-called group formation are not very favourable." Gulbrandsen then sets aside his practical skepticism concerning the current structure of incentives at the level of the household, and turns to the question of what political and economic resources might be mobilized to encourage cooperation for range management in the long run and what institutional framework might be devised to better regulate range use. In Gulbrandsen's words, what are "the possibilities of creating organizational conditions for stimulating the farmers themselves to take the responsibility for the pastures, and to act accordingly"?[163]

Gulbrandsen approaches the problem of institutional context by searching for an existing organizational framework with which nearly all farmers could identify. He properly rejects the efficacy of "village" or "village organizations," because the institutional authority and territorial integrity of these constructs have, in the main, given way to political and economic influences beyond the realm of the traditional social territorial unit. The decline of the chiefs' authority to regulate land use and coordinate agricultural patterns has resulted in extensive mixing of land uses and a mixing of places of farmer origin and traditional association.

While rejecting village-level associations, Gulbrandsen concludes that at the level of the tribe, members share a common cultural identity. His argument goes as follows: In past times, an attribute of traditional (trial) society was the office of modisa, or grazing overseer, who had certain regulatory duties invested in him by the chief, over a naga, or demarcated grazing area. (This system was described in Section 4.1.2.) Because grazing territories came to be used by members of a variety of wards, "many of the cattle owners have nothing in common tother] than being under the administration of the same overseer." Gulbrandsen admits that "there are few indications that the overseer-system is functioning today," but claims that the grazing areas are still formally "supervised" by the chief or by his representatives. Gulbrandsen asks, "Since this system was simply a way of dividing the tribal territory into administrative zones, containing no corporate body of farmers (apart from some unrelated factions of kinship-groups), and since it does not seem to function today, can this system be at all useful for the organizational tasks in question here?" Gulbrandsen's answer is yes, although not without reservations. "Even though the system is not practiced today to any significant extent, it is based on a complex set of well-codified rules which,

[163]Gulbrandsen, Agro-Pastoral Production, pp. 229, 231.

as a part of the people's culture, still exists in their minds.[164] As evidence of the institution's potential usefulness, Gulbrandsen suggests that older members of the tribe are still familiar with the zoning of grazing areas, are aware of its purposes, and understand the responsibilities of the overseer. But more important than its former functions, the concept of dinaga, or grazing territories, provides an institutional framework for the pursuit of contemporary resource management objectives.

> In other words, a conceptual framework is available which, in many respects, has previously facilitated just those organizational tasks which currently are being recognized as so crucial. It should be stressed that such a system is quite flexible. It is not necessary to follow the traditional territorial zoning literally, because this has certainly always been pragmatically adaptable. "Traditional" rules defining responsibilities, distribution of authority, and status relations have also been modified pragmatically, according to changing circumstances. This traditional system could thus be modernized according to the organizational demands and the ~resent politicalorganizational structures.[165]

Updating of the system would be achieved through legislation and by legally upgrading the authority of the chiefs to regulate land use. Critically, Gulbrandsen emphasizes "that it is difficult to see this traditional system, even in a modernized fashion, working properly unless the tribal authorities are given back some power to administer land."[166]

Assuming establishment of an overall authority to administer and sanction resource use measures, Gulbrandsen next turns to a model for grazing control. "It is unlikely that people's shortterm interests in maximizing individual profit from exploitation of the pastures will be overruled by a long-term interest in preservation of it unless each farmer is assigned to one and only one specific zone."[167] Furthermore, more or less free flow between zones would defeat the purpose of establishing discrete grazing units. The units would be limited in area, and include a minimal number of stockholders. The overriding purpose of this recommendation is to create the conditions whereby farmers' attention will be drawn to the finite dimensions of theirr grazing area, thereby inducing them to apply self-generated control measures to keep other oeople's

---

[164]Gulbrandsen, Agro-Pastoral Production, pp. 233, 234.

[165]Gulbrandsen, Agro-Pastoral Production, p. 235.

[166]Gulbrandsen, Agro-Pastoral Production, p. 235.

[167]Gulbrandsen, Agro-Pastoral Production, p. 236.

cattle out and to control their own stock numbers.

> It will be in every farmer's interest to ensure that other farmerrs keep as few cattle as possible in theirr zone, and they will . . . be greatly interested in establishing an upper limit for the number of cattle a farmer can keep in a zone. If a farmer reaches such a ceiling, the others would benefit from noting it and demanding that he should not exceed the limits agreed upon.[168]

Some of Gulbrandsen's conclusions may be queried. First, by requiring that "each farmer be assiggned to one and only one specific zone," Gulbrandsen overlooks the importance of the "fallpoints (and grazing areasd) in the course of a year in response to variable seasonal rainfall.[169] This is a critical ecological adaptation to highly seasonal, and seasonally variable, rainfall patterns typical of savanna regions such as Botswana's. To restrict stock numbers to single, presumably small territories, would require drastic cuts in the current stocking rate to levels that could be supported at the lower levels of estimated range productivity. This is not practical, or even advisable from an optimum resource use point of view. The alternative would be to delimit grazing territories of sufficient size to incorporate "fallback" grazing requirements. The disadvantage of this approach is that by so doing the large numbers of stockholders that would be included in the unit would defeat a major purpose of keeping the territorrial unit small: minimizing the number of herding units that would have to be coordinate.

Second, the kinds of farmer responses to a finite resource situation predicted by Gulbrandsen ruun counter to what his earlier profiles of farmer income strategies indicate. Those profiles give a strong impression of diversity of strategy and of ddiverse interests in the utility of livestock. Gulbrandsen does not explain how a presumed sense of common interest in the welfare of the resource base will be translated into the practical assignment of rights to those resources, simultaneously scaled to an infinite combination of legitimate economic (subsistence and market) interests in cattle. This, of course, is an awkward issue often leading to cumbersome administrative constraints, and Gulbrandsen's instinctive reaction is to defer to the local group in making these kinds of valuations.

Third, the conscious realization of imminent ecological

---

[168]Gulbrandsen, Agro-Pastoral Production, p. 237.

[169]See D.G. Sisler, Some Economic Aspects of Managing Land, Cattle, Waterpoints, and Arable Agriculture in Botswana: A Report to Cornell Waterpoint Survey Team (n.p., 1980), for a full description of the fallback strategy.

collapse at the level of the locality will not necessarily provide the catharsis for action that Gulbrandsen predicts. This might have been the case if the economic interests of individual households were commensurate with those of the group. But a unity of interests no longer exists, as a large portion of household income is (or can be) derived from sources other than local economic networks and other than from cattle. Indeed, all farmers, to differing degrees, share a basic common interest in a productive resource base. But those who derive a larger portion of their income from cattle may be motivated to act sooner and in ways different from those who are less reliant upon cattle for current income needs. The challenge becomes one of reconciling an obvious group interest in sustained pasture production with a multiplicity of individual perceptions of what action is appropriate given individual needs and constraints.

A publication of the Evaluation Unit of the Ranch Management Centre in Ramathabana provides a model for communal resource management similar in many respects to Gulbrandsen's.[170] The paper summarizes cases of communal pasture management, existing and no longer functioning, in the Hebrides of northwest Scotland, Lesotho, Central and Southern Districts in Botswana, and among the Herero of western Botswana. The Hebrides example is the most elaborate and is the only case which provides for the assignment of specific and limited grazing rights to individual farmers. The African examples are somewhat idealized and general in presentation, and appear to rest on circumstances of social structure, political control, and modes of production characteristic of traditional society and economy, but which have been transformed as a result of interaction with now dominant, new economic factors beyond the village level. Nevertheless, the examples are offered in support of the principle that "the commonage is not inherently unmanageable.[171] The critical lesson drawn from the comparative analysis of communal management systems is the importance of scale to the success of the group management endeavor.

> A common factor in all the cases mentioned is that small communities control small grazing areas. The people live close to each other, many are related, and there are strong informal, as well as formal, pressures within the group to urge conformity on its members. The examples therefore strongly endorse the arguments of Hitchcock and Gulbrandsen that communal grazing management is possible only when the scale of operations is small by the contemporary standards of

---

[170]Government of Botswana, Range Management Centre, Ramathabana, The Management of Communal Grazing in Botswana (Gaborone: Ministry of Agriculture, 1981).

[171]Range Management Centre, Communal Grazing, p. 26.

Botswana.[172]

The author of the report (Paul Devitt, a sociologist and planning consultant) is skeptical of the group ranching approach to range management, arguing that it would lead to increased inequities among communal stockholders. There are many factors which mitigate against participation in groups, especially among the poor. He is also dubious about the notion that specialpurpose organizations, such as borehole syndicates, drift fencing groups, and the like, can be transformed into ranching groups.

> Such transformations occur but they can seldom be relied upon to endure, unless the objective the group has set is essential for survival. Despite enormous financial, logistic, and organizational problems, borehole syndicates, for example, are remarkably resilient, largely because the stakes of the members are very high and the consequences of failure are immediate and drastic. The direct connection between non-cooperation and lack of water is usually sufficient to keep syndicates working. This is not the case where the resource to be managed in common is a tract of land and its vegetation. No direct connection between lack of management of the range, depletion of forage and death of cattle can be observed. Thus, the incentive for individuals to accept painful and onerous restrictions in herd movement and growth is not present.[173]

Although the inability to relate management practice to range condition would appear to mitigate against the group ranch as a model for cooperative range management, the author does not see an equivalent obstacle in his own model of resource management based upon another, still larger corporate body, the village. The model appears to be drawn from two critical first conditions: the necessity of smallness of scale, and the need to instill an institution with jurisdiction over the delimited territory with the authority to enforce management standards. The minimum size geographical unit with an institutional apparatus coincident with boundaries of the territory is the village. "It seems that the most appropriate 'local community' to deal with is the 'village,' with its headman or chief's representative and kgotla.[174]

The village is in no sense a small-scale unit, and would normally encompass a few hundred square kilometers, when including, as the author himself does, residential, arable, and grazing areas,

---

[172]Range Management Centre, Communal Grazing, p. 26.

[173]Range Management Centre, Communal Grazing, p. 29.

[174]Range Management Centre, Communal Grazing, pp. 30-36; the quotation is from p. 32.

and from two to three thousand citizens, and as many as fifteen thousand cattle. It quickly becomes clear that the essential ingredient to the author's plan is not smallness of scale, but an effective, overall institutional apparatus that can (ultimately) regulate range use while ensuring the continued rights of all members of the community to land for small-scale livestock and crop production.

The actual process of assigning individual rights to a portion of the commonage would be modeled roughly on the Hebrides practice of distributing equal shares of grazing rights to community members, which in turn could be freely traded within the community so that grazing rights could be adjusted to individual grazing needs.

> There are at present no local institutions experienced in pasture management and stock control. Some years ago Reynolds (1977) suggested that the local community be given the status of a "company," with its shares corresponding to the carrying capacity of the communal grazing area. In current terms this company would resemble an Agricultural Management Association, except that all community members would be members and share-holders. Each household with grazing rights in the area would be allocated equal shares. The sum total of shares (i.e., the current carrying capacity) would be reassessed each year at a public meeting, and at the same time those with shares in excess of their current requirements would put the year's lease on their surplus shares up for auction. At the end of that year the shares would revert to their owners.[175]

This model would appear in broad outline to meet the requirement of assigning individual grazing rights "so that overstocking is avoided, social and economic equity is upheld, and individual progress is possible." It assumes the existence and viability of a local authority to manage and police the allocative process. On the latter point, Devitt believes "the kgotla would provide the forum for these decisions and transactions and a sub-committee (called the Grazing Committee?) could deal with registration of shares and their lease, and the administration of the system."[176]

Gulbrandsen and Devitt, as well as a number of other analysts of smallholder grazing management, have drawn attention to the need for action at the institutional level and have significantly advanced the thinking on possible models of collective resource

---

[175]Range Management Centre, Communal Grazing, p. 34.

[176]Range Management Centre, Communal Grazing, p. 34.

management.[177] They have been motivated by the obvious need to find practical solutions to problems that are fundamental to the economic welfare of Botswana's rural majority. They have recognized the critical importance of identifying a social institutional form that can regulate individual behavior within an overall framework of community interest. They also have recognized that smallholder land rights will be preserved in the long term only if some form of cooperative resource management is put in place. The recommendations have in common the following themes: (1) reinvesting traditional authorities at the local level with control over land allocations and over land use management; (2) assigning communities or groups to designated resource territories; and (3) establishing grazing territories that are small in area.

It is suggested that cooperative management models as currently constructed are flawed and will probably not succeed in creating the kinds of institutional and management conditions required to meet the goal of sustained smallholder production on communal ranges. The models have failed to take proper account of the changed economic circumstances of smallholder livestock production, of the implications of economic change to the traditional institutional order, and of the extent to which economic and institutional changes have redefined the set of practical policy options. Furthermore, enhancing the authority of traditional institutions over land matters is not only politically infeasible but perhaps even socially undesirable. It will also be argued that because range condition, and for that matter smallholder livestock production, is peripheral to the sustained operation of the overall economic system, there exists no automatic mechanism within the system to enforce "self"-conservation of communal grazing. If conservation is to be achieved, it must be imposed by a legislatively sanctioned institution that is the product of a perceived state interest in sustaining a smallholder livestock sector.

4.4 The Limits to Collective Action at the Village Level

An important aspect of social and economic organization relevant to consideration of the role of traditional management models has been overlooked in the debate concerning modern roles for traditional institutions. This is the extent to which traditional authority was largely based upon a network of local economic interdependencies, many related to the allocation and management of common resources, which have declined in importance commensurate with the emergence of powerful economic institutions beyond the political jurisdiction of local communities. Put another way, the economic frame of reference of individual households today is

[177]See especially Odell, Livestock Development; Stephen Sandford, Keeping an Eye on TGLP (Gaborone: National Institute of Research, 1981); and Hitchcock, "Tradition, Social Justice."

predominantly oriented toward networks of production and exchange at the regional and national levels. This fundamental reorientation of economic interest has made moribund community-level institutions which had acted to ensure individual economic security in the context of locally derived agricultural and material production. The new, dominant economic institutions are wage labor markets, commercial livestock and grain markets, and commodity markets.

The new economic order has had far-reaching implications for the authority of the traditional leadership. Schapera traces the decline of the effective political power of chiefs:

> The breakdown of the tribal system has been further stimulated by other factors [in addition to labor migration]. Of these not the least significant was the decay of the chief's economic functions. This is partly the result of a policy deliberately carried out by the administration since the middle of the last century. The chiefs were still recognized by the Europeans as a means of government, but their jurisdiction, more particularly in criminal matters, was gradually transferred to European magistrates and commissioners. They were induced to accept fixed salaries from the government, in return for which they had to surrender their right to fines imposed on their people. They were also deprived of the power of making war against rival tribes, and were thus discredited in the eyes of their people, who looked to war as one of their principal means of acquiring cattle. In this way chiefs were deprived both of their most important functions in native life and of the chief source by which they derived revenue from their people.[178]

Substantial and reliable sources of income earned outside of subsistence farm production and intragroup exchange had the effect of supplanting the traditional role of chiefs in coordinating land use, regulating the agricultural cycle, and redistributing surpluses in rough harmony with individual requirements.

> Instead of working for their chief they now worked for themselves: the accumulation of wealth became a motive in the life of every native. Travel and the absence for longer or shorter periods from their home environment widened the breach between the chief and his subjects. The economic reciprocity which entered so strongly into the relations between chief and subjects, and which formed one of the vital features of the native economic system, has broken down almost completely. The chief no longer plays the part of tribal banker: his function as the holder and distributor of all the surplus wealth has

[178]Schapera, Native Land Tenure, p. 150.

been obliterated by the new economic forces.[179]

Although enhancing local-level powers might in fact promote desirable resource management practices at the community level, the arguments in favor of such reforms typically fail to recognize the extent to which the social and economic aspects of resource use and agricultural production are of a totally different order today than they were under the "traditional" dispensation. Not to account for these changes may result in the design of institutional reforms not scaled to the relevant factors which policy aims to affect.

A second change which renders ineffective resort to traditional institutions for range management concerns the changing role of livestock in household income strategies. Most analyses of communal range management in Botswana begin with an empirical examination of the household enterprise--its land, labor use, and herd management practices--as the primary decision-making unit in matters of resource use and factor allocation. This emphasis is a sound one, as households are relatively autonomous economic entities, in the sense that they form discernible units of production and consumption interacting with a larger economy. These descriptions, including those provided by Gulbrandsen and Devitt, tend to present a picture of relative heterogeneity among farming families, in terms of their income mixes, asset distribution, and degree of dependence upon wage labor migration.

Indeed, the household was relatively autonomous as a production unit under the traditional dispensation. As noted, chiefs performed critically important redistributive functions and appeared to coordinate resource use by assuring the fair distribution of grazing rights among tribesmen, but the chiefs did not coordinate production decisions in the sense that the tribe formed a corporate, or communalistic, production unit. Rather, the redistributive function operated at the margin, essentially as a tax on a portion of the surplus production of households for reallocation to the less fortunate, or as reward to the loyal.

It has already been noted that the production strategies of different households differ considerably. One can outline some of the generally relevant, known varieties in smallholder production strategy:

1. The economic uses of cattle vary among households, as does the relative importance of livestock in contributing to the total household budget. Production objectives, and hence resource use strategies, are anything but homogeneous. This is important for at least two reasons. First, a plan that allocates grazing rights among members of a community cannot assume shared objective functions with respect to cattle-keeping. A household’s reasons for

[179]Schapera, Native Land Tenure, p. 150.

keeping cattle, and hence its perceived minimal requirements in terms of numbers and market offtake, will vary by a number of factors, such as stage in life cycle, proportion of income met by other sources, extent of involvement in crop production, and overall reliance upon cattle for subsistence and/or cash income. And as the extent of reliance upon livestock varies, so will the household's real interest in resource conservation. Gulbrandsen has noted the increased significance of this latter phenomenon in Southern District.[180]

2. Households adjust their overall land and labor use allocations and resource use strategies in response to variable opportunities in several sectors of the economy. Households, through time, shift their factor allocations among a number of income-earning sectors, with the net effect that decisions relative to cattle-keeping are determined by weighing the availability and relative importance of modern sector wage opportunities, agricultural product prices, and comparative savings functions, among others. For example, Gulbrandsen suggests that rising urban wages and successful policies for increasing cash crop production will lead increasingly to treatment of cattle as an investment good, rather than as a source of current income (assuming the continued paucity of alternative investment opportunities providing comparable returns).

The point to be drawn from the preceding discussion is that household decisions with respect to cattle-keeping are not simply defined by relative resource endowment and attitude toward the livestock market, but by a much larger decision matrix determined by parameters of risk and income opportunities in other sectors of the economy. We can see the particular importance of this to the Botswana case, where data indicate that very few households ever achieve a significant measure of economic independence based upon earnings from their herds, and less so from crop production.[181] This suggests that, if all of the critical factors affecting resource use are to be captured, resource management policy must be approached, in part, from the perspective of national economic policy. Effective policy measures at this level are difficult to implement in Botswana, not least of all because several important aspects of economic policy are beyond the direct influence of the Government. But the Government does have some choice of action, as will be suggested in the following section of this paper.

4.5 An Institutional Framework for Resource Management

---

[180]Gulbrandsen, Agro-Pastoral Production, p. 245.

[181]See especially Government of Botswana, Ministry of Finance and Development Planning, Central Statistics Office, The Rural Income Distribution Survey in 1974/75 (Gaborone, 1976).

Land tenure reform has an important role to play in the process of institutional change, especially in the long run. In the short and immediate term, the circumstances of smallholder production (e.g., insufficient herd size to capitalize a private water source, the need to preserve a "fallback" option in light of environmental variability) require that forms of collective tenure be retained. Although the long-term trend should be toward more specific formulation and assignment of rights to grazing land, the pace of change should be flexible. Even the Taylor Grazing Act of 1934, which had as its main thrust the granting of exclusive leasehold grazing rights to qualified ranchers, provided that the privatization process itself would be a long-term process. In the early years of implementation, upward of 50 to 60 private herds were assigned to individual pasture allotments. The managers of the act sought to build upon existing patterns of land use, and through new rules and regulations to incrementally improve management standards.

Contrary to the arguments brought forward in support of TGLP, tenure conversion is not necessarily a precondition to the introduction of recommended management practice. Many of the necessary conditions can be created through judicious land use planning and by the applications of range use controls.

Only action in the political and institutional spheres can provide the necessary impetus. Tradeoffs between unleashing entrepreneurship and assuring universal access are political tradeoffs, with the ultimate choice expressed through tenure policy. We have argued here for a long-term commitment to smallholder entrepreneurship, with tenure reform implemented at a rate commensurate with the widespread adoption of entrepreneurial management styles and with the growth of absorptive capacity in other sectors of the economy. This will require direct institutional action on at least three fronts. First, some institutional form will be necessary to provide rules and procedures for collective range use. This has always been needed, but never more so than now. Next, only direct institutional intervention can establish standards of management practice and impose the land use plans and controls necessary to encouraging (and accommodating) improved resource management and increased entrepreneurship. Finally, only formal supralocal institutions can provide the authority and sanction required to enforce the kinds of interventions needed.

The conditions of smallholder production, and of the potential limits of authority in traditional and modern institutions, delimit a set of political and economic circumstances upon which some promising institutional relationships can be constructed. The main constituent parts of an institutional strategy are the following:

1. Preservation of individual sovereignty over herd management decisions. In some special instances, group ranching can work, but

most coproduction models do not normally permit participating households the flexibility of herd use and disposition characteristic of smallholder strategies. While coproduction is in most cases not feasible, smallholders do share a sufficient range of common interests (especially with respect to maintaining a productive grazing base) to facilitate a variety of comanagement efforts. Drift fencing projects and dam and other water projects are examples of comanagement. Experimentation with various comanagement projects can go far toward developing workable range conservation and entrepreneurial models. The collaborative experience afforded by comanagement endeavors may in the long run actually lead to the kinds of cooperation characteristic of group ranches. But presently, household sovereignty over the daily management of herds is virtually sacrosanct.

2. Enhancing community or village-level cooperation on range management. We are speaking here of a whole range of collaborative efforts between households, alluded to above, which will have the effect of improving the productive capacity of the communal rangeland. A number of area plans provide good examples of sometimes voluntary activities, often originated by farmers' groups, for coordinating range use. The potential for this kind of effort is quite great. Some examples would include periodic stock rotations to relieve grazing pressure in selected grazing areas during critical periods in the grass-growth cycle, and much more vigorous land use zoning within communal areas. Suggestions made by Devitt, Gulbrandsen, and others for delimiting grazing areas on the basis of village territories, thereby focusing community attention on the finite character of the resource, constitute another example. Local-level institutions, including the headmen and the kgotla, do have an important role to play here in providing a forum for agreement on how communal plan guidelines might best be applied in each community. The headmen might also act to administer certain aspects of plan implementation and to monitor the progress of management controls and innovations on behalf of the land trustee, the land board.

3. Creating the authority and applying the sanctions necessary to enforce improved management practices. This is the essential element that is so rarely included in planning constructs. Traditional leaderships structures lack the authority necessary to enforce management standards. Real authority can be reinvested in traditional offices, but Botswana has made a commitment to another institution, the District Land Board, as the instrument of land administration. It is likely that this commitment will be sustained. Despite the obvious appeal of reinvesting authority over land matters in traditional, village-level leadership structures, there are a number of arguments in favor of concentrating authority in land boards. A major consideration in the application of resource management controls is the problem of enforcement. Village-level leaders are too directly subject to the vicissitudes of local-level pressures to apply a firm hand. Furthermore, an

important element of communal development should be to implement a communal management program that has certain common elements nationally. Most important among these would be the pursuit of longer term policy goals for the development of family agriculture, especially for the modernization of smallholder livestock production. Finally, land boards are in a position to adjudicate intervillage disputes over grazing rights and to credibly enforce grazing boundaries between groups and between villages.

What is being advocated here is the active involvement by land boards in matters relating to resource management, a role which goes well beyond the traditional allocative functions which the boards inherited from traditional authorities. This assumes, however, the development of new land board capacities in communal area resource management. Some of the key demands which appear necessary are the following:

1. Elaboration of an integrated institutional structure that specifies the responsibilities and rights of land boards in relation to stockholders, as well as to village institutions and national agencies would be needed to constrain the range use behavior of stockholders within a set of rules and management practices which, as far as possible, are worked out at the village level. Local-level plans would be required, however, to incorporate a variety of management standards prescribed by the land board, with land board guidelines themselves taking into account local variations in resource endowment, social structure, and so forth. Land boards would enforce new rules and would encourage adoption of new management practices through appropriate use of police powers and incentives.

2. Imaginative land use planning would be a key element in promoting improved management practice. Land use planning is capable of establishing a spatial framework within which desirable management practices can be promoted, while at the same time assuring land for other management styles (for instance, fodder for draft oxen, and itinerant livestock keeping). Likewise, it may be possible to introduce stock limitations in some of the zones, if it were understood that excess herd numbers could be kept in other zones where limits are not applied. This approach might permit the progressive introduction of improved pasture management techniques in a fashion that minimizes the contentiousness usually associated with stock limitations.

3. Enabling legislation and administrative rules would be needed to legally expand the scope of land board responsibility for resource management.

4. Strong political oversight would be necessary to ensure that land boards, in making plans and enforcing regulations, work to a development policy that advances national economic policy goals, and not to a limited set of special interests.

4.6 Framing New Policies: Their Institutional Implications

The following discussion focuses upon the role of institutional structures in regulating and managing the interrelationships among what appear to be the three critical policy components: resource management practices, household income strategies, and land tenure. It is the judicious framing of policies and strategies with respect to the interplay among these three policy components that should constitute the basis for any effective overall policy on resource management and for the stabilization and development of smallholder livestock production.

4.6.1 Institutional Structure

The viewpoint expressed here is that traditional authorities, that is, chiefs, headmen, and bodisa (grazing overseers), offer little promise for asserting the kind of authority necessary for regulating communal herd management practices under current social and economic circumstances. Traditional offices appear historically to have exercised a modest measure of coordination in grazing behavior during a time of relative resource plenty. However, the ability to perform these functions did not stand up to population pressures, human or livestock.[182] More important, the economic functions of traditional authority dissolved in the face of a substantial reorientation of household economic interest away from primary dependence upon subsistence modes toward a much larger economic system incorporating distant wage-labor and livestock markets. It is with reference to nontraditional economic institutions that household land and labor use decisions are for the most part made today. Combined with a deliberate government policy of neutralizing any potential political challenges by the traditional leadership to modern government authority, chiefs have lost whatever effective political power they once possessed over land and resource allocation matters.

District Land Boards were established in 1970 to take over the land allocation function from traditional authorities. Technically, land tenure did not change, insofar as customary rights in land were retained. Changes of a more subtle character did result, some of which were expected and considered desirable, as well as others which were unanticipated. More important, the establishment of land boards provided a direct political and administrative link between the making of land policy by modern political institutions at the national level and the detailed planning and execution of policy at the local (district) level. Also, land board members tended to be drawn from nontraditional institutions and to represent models of agricultural enterprise and economic behavior more representative of "modern" political and economic interests.

---

[182]Schapera, Native Land Tenure.

Levels of land board efficiency, in terms of staying apace with applications for customary land grants and in maintaining land records, have been fairly low. At their establishment, land boards lacked trained staff and administrative experience. Furthermore, the infeasibility of a single, relatively centralized body making informed judgments on the merits of thousands of individual applications for land quickly became clear. This problem was in part redressed by the establishment in each district of a network of Subordinate Land Boards, but these bodies still lacked the on-site knowledge that the chiefs' network of village headmen brought to the task of customary land allocations. These largely administrative shortcomings are being addressed by a number of training and infrastructure projects designed to improve land board capacities.

Land boards have not come to grips with problems of resource management, and least of all with problems of communal grazing management. There are several reasons for this. First, there has been little official impetus, at the district or national level, for a land board role in this area. Second, there has been little historical precedent, even under the traditional dispensation, for the body in which land is held in trust, whether chief or land board, to undertake a resource management function. The role of the land trustee was and is essentially an allocative one. Finally, land boards would surely encounter similar sorts of organizational and control problems that traditional authorities would encounter in attempting, for instance, to impose areal stock limitations against individual herding unlts .

But the fact remains that land boards, as the trustees of all tribal land and administrators of customary and common law land rights, have a potentially large role to play in resource management. They probably have greater potential in this regard than do traditional authorities, for the civil and political reasons already mentioned. They have demonstrated an increasing ability to zone general land uses on the basis of carefully considered land use plans. In time, land board administrative and planning capacity should improve.

4.6.2 Household Income Strategies and Economic Policy

Compared to most other rural economies in Sub-Saharan Africa, Botswana has achieved a high level of integration between previously independent, subsistent household producers and communities, and national labor and product markets. Few households are capable of achieving a main proportion of their household income from home production of subsistence foods.[183] Most households secure their cash requirements through variable combinations of labor migration and production for market. We have seen how

[183]Government of Botswana, Rural Income.

households are variously endowed to meet their income requirements on the basis of agricultural production alone and have reviewed the breakdown of rural producers into three groups depending upon the diversity of their income sources.

On the whole, Botswana's agricultural policy has been framed at the macrolevel, relative to conditions in the major commodity markets, and has considered farming system constraints only in a deductive sense. That is, policy has been targeted toward promoting those farming models that are seen as conducive to pursuing commodity production and output criteria, in this case, beef. Official agricultural policy has tended to ride the crest of favorable developments in commodity markets and has only of late come around to recognizing that economic policy must be more active in accounting for structural implications of growth and development, particularly as they affect income distribution and employment.

An appropriate point of departure for constructing a more complete agricultural strategy might be with the question: How can the agricultural sector contribute to higher levels of GNP through more efficient production of greater quantities of produce, while also absorbing a larger proportion of the rapidly growing labor force and assuring the fairly equitable distribution of income? This appears to be a difficult challenge, especially given the low labor-to-land and -product ratios characteristic of livestock production. But even granted that in the aggregate and over the long term an increasingly smaller proportion of the population can be directly reliant upon livestock, can agricultural policy make a continuing contribution to the development of a livestock sector that provides higher levels of income to more people than would otherwise be the case if the market, accommodated by largeholder interests, is allowed to unilaterally define the terms of trade and circumstances of production? The challenge to policy lies in taking deliberate steps to sustain and enhance the conditions of smallholder production. A basic precondition for pursuit of that goal is the development of land tenure rules which protect smallholder rights of access to the range while instilling a greater measure of control over management practice.

We have devoted a major portion of this report to demonstrating that the economic and demographic conditions for traditional institutional regulation of grazing practices no longer exist. Furthermore, the empirical data on range condition indicate a steadily deteriorating situation with respect to range condition in communal areas, where it is all too true that drought is the only effective means of stock limitation. TGLP's single most significant tenure innovation, the privatization of grazing land by means of conversion of communal customary rights to individual leaseholds, was not applied to crowded communal areas. Under the circumstances, the decision not to move toward a general privatization of land was politically and economically sound. But the fact remains that

Botswana is in a policy impasse over how to approach land tenure in communal grazing areas. Basic questions of institutional form and income and employment policy are very much dependent upon satisfactory resolution of the tenure problem.

Is it possible to reconcile, or at least define a defensible balance between, the socially desirable attributes of relatively open access inherent in the existing system with the need for a new structural dispensation that would lead, directly and indirectly, to improved standards of management practice? A first step in answering this question is to recall the socioeconomic and ecological origins of communal pasture systems. "Natural constraints," especially naturally occurring water supplies and rainfall, limited livestock production. Drought led to widely varying herd numbers and created a need for wide-ranging herd movement over extensive pastures. In such environmentally variable circumstances, the preoccupation of farmers was to build up herds after drought or in preparation for anticipated drought. The dominant condition with respect to production was uncertainty, specifically uncertainty as to expected future levels of cattle wealth given high natural variance in the availability of the most important factor of production, grazing land.

Communal land tenure provided flexibility, allowing for two important resource use and economic accommodations to environmental variability. First, communal tenure permitted herd movement in response to variable rainfall conditions. Second, opportunities for building up herds after large-scale loss were not limited by a set allocation of grazing land. Conversely, land "underutilized" due to a decrease in certain herds could be readily put to use by other herds.

Two important historical factors have contributed to contemporary pressures to change the basis of grazing tenure from communal to private. These are (1) the growth in entrepreneurship and market relations in cattle, and (2) new water technologies, which to a certain extent reduce the scope of flexible environmental adaptation necessary to sustain a stable herd, and which involve a measure of fixed private investment and an attachment to a particular place not possible under the former system. The growth in entrepreneurship has received less attention than technological change as a factor in tenure change. Typically, market orientation is a precondition to making the kinds of financial investments involved in expensive borehole development. But entrepreneurial behavior as a management style has significant implications to tenure itself, quite apart from technology. In entrepreneurial models, annual variations in herd size are less tolerable, as household income requirements, which remain fairly constant, are more directly dependent upon steady flows of cash income generated by planned levels of cattle offtake. Furthermore, the farmer may face a stream of financial obligations, often in the form of debt incurred through infrastructure development, that cannot be easily

postponed. These factors give rise to pressures for making rights in land more "rigid." The new ranching system described above no longer requires the flexibility inherent in the communal system; in fact, certain attributes of the communal system are seen as impediments to the full development of efficient ranching systems.

This idealized model of how changes in production orientations give rise to changes in tenure does not provide a complete picture of the process of change as experienced in Botswana. It was the rise of an entrepreneurial class, and not a general process of commercialization, that has spearheaded tenure change, and only in essentially de facto ranching areas. A general privatization of land, as indicated by the preceding model, would not be appropriate to the current circumstances of production in communal areas where the original environmental and organizational constraints still apply, only with important differences. Individual herd sizes have, in the vast majority of cases, not succeeded in reaching the numbers necessary to engage in an entrepreneurial, ranching style of production. Aggregate communal herd sizes have, however, steadily increased to higher levels, mainly as the result of development of large numbers of private and permanent water supplies. Some private water development in communal areas has been spearheaded by small groups of producers who band together to share the costs of operating a borehole. Possessing an entrepreneurial production orientation, these groups have nonetheless been unable to achieve exclusive rights to communal land because of the great number of coincident claims to the grazing area by other stockholders. Thus, the actual situation in relatively densely settled communal areas is characterized by dangerous increases in stock numbers accommodated by private and public investment in water development; but the kinds of entrepreneurial styles which had room to develop in relatively unsettled sandveld areas have been constrained by the necessity to provide land for mixed farming and smallholding enterprises.

Has traditional, communal land tenure been adaptive to changing economic circumstances and demands? Communal land tenure has not limited the development of ranching style enterprises in sandveld areas. In fact, the recognition in customary law of private rights to underground water supplies has accommodated a certain de facto exclusivity of tenure in these areas. On the other hand, communal tenure in hardveld grazing (and mixed agricultural) areas has checked the tendency for large-scale cattle operations to completely displace the multitude of smallscale producers unable, for a variety of reasons, to pursue the production styles characteristic of strictly commercial operations.

It would appear that the potential for adapting communal tenure to contemporary circumstances and needs should receive greater attention than it has, especially given the very real reliance of thousands of smallholders upon communal range. But it should be clear that making communal tenure work under high

population density and dynamic economic circumstances is not just a matter of adjusting the principles of tenure but of imposing effective controls on individual actions.

5. LAND TENURE POLICY IN AFRICAN LIVESTOCK DEVELOPMENT

5.1 An Overview

With very few exceptions, livestock development in SubSaharan Africa has had two broad policy objectives: increased animal output for market, and range conservation. Land tenure reform in some guise has often been seen as instrumental to the pursuit of these objectives. On the simplest (but most widely accepted) level, it is communal land tenure that has been pointed to as a major constraint. Thus, it is not surprising that many programs and projects have tried to introduce tenure reforms which involve, in one way or another, a reduction of multiple claims to and uses of specific grazing areas.

This tendency towards "individualization" is especially apparent in projects which emphasize range conservation. The rationale for establishment of individual rights to discrete grazing territories is often provided by (and attributed to) the "tragedy of the commons" paradigm popularized by Hardin, whose rather simplified parable of what are in fact highly complex processes has frequently been taken much too literally by project planners.[184] This criticism applies especially to an uncritical adoption of Hardin's policy solution. Only under individualized tenure, Hardin argues, would the individual herder be assured that self-restraint in balancing herd size with range carrying capacity will not be exploited by the actions of other range users.

The "tragedy of the commons" paradigm found its way into African land tenure policy in remarkably explicit ways. Seretse Khama, the late President of Botswana, used the following variant of the "tragedy of the commons" in introducing the Tribal Grazing Land Policy to Botswana's parliament in 1975:

> Under our communal grazing system it is no one individual's interest to limit the number of his animals. If one man takes his cattle off, someone else moves his own cattle in. Unless livestock numbers are somehow tied to specific grazing areas no one has an incentive to control grazing . . . .[185]

---

[184]Garrett Hardin, "The Tragedy of the Commons," Science 162 (1968): 1243-48. Hardin recognized the danger, and his subsequent work edited with Baden (1977) more fully elaborates the multitude of intervening variables. (Garrett Hardin and John Baden, eds., Managing the Commons [San Francisco: W.H. Freeman, 1977].)

[185]Government of Botswana, Tribal Grazing Land, p. 1.

Individual land rights have been held to promote conservation for other reasons.[186] Since a first principle of managing animal production on natural range is the establishment of appropriate herd size, some analysts see limiting the available grazing territory as an essential preliminary step to limiting animal numbers. Only then will the herder be able to comprehend the implications of running excessive numbers of livestock on what would presumably be that person's only possible range. Under open access, not only is the responsibility for range abuse shared, and thereby diluted among the community of herders, but the individual herder does not suffer in a proportionate or unique way from his or her contribution to range degradation. Also, under individual tenure, it is held, herders will become disabused of the notion that pastures are available elsewhere when the local range is depleted.[187]

Assignment of leasehold rights to individuals or small groups is the more common approach to tenure reform. A leasehold agreement is often seen as an appropriate instrument for specifying legally binding stock limitations, usually under the rubric of the "good husbandry" conditions typical to leases for stateowned agricultural land. Stock limitations specified in leases are almost never enforced nor are they, for that matter, practicably enforceable. Reluctance or inability to invoke penalties against violations of lease agreements is attributable to the same kind of political realities that militate against implementation of more general statutory prohibitions against resource abuse.

Individualized tenure has also been advanced as a reform that will accommodate growth policies. Two arguments are typically offered. First, circumstances that favor conservation will also favor growth, as sustained development and growth in market offtake depend in part upon the steady introduction of improved production techniques and, perhaps most important, a stable production environment. Both of these conditions are facilitated, it is argued, by the increased control that individual producers will have over grazing land. Second, individual rights will provide greater assurance to investors that landholders are in sufficient control of ranching assets to warrant confident extension of greater loan financing. Even though repossession of leased state land is usually not an option available to private loan

---

[186]We use the terms "individual," "private," and "exclusive" rights more or less interchangeably.

[187]This issue has recently been applied to the Botswana case by Paul Devitt (Carl Bro, Evaluation,d Vol. 2). That there are in fact "greener" pastures elsewhere has been the basis of traditional range use strategy. Loss of land to competing users, demographic growth, and the like, has made such solutions to range degradation increasingly unviable.

institutions, a legally recognized exclusive land right by the ranching enterprise is a signal to banks and other lending agencies that the rancher has made certain entrepreneurial management commitments to commercial production.

While individualization of tenure rights has been seen as the solution for most effectively handling large herd owners in Botswana, for example, governments and projects have recognized that it is inapplicable to many livestock management situations elsewhere on the continent, and for mallholders in Botswana. There has been a growing tendency for tenure reform to specify the exclusive rights of a particular group to a definite grazing territory. The best known examples of this approach are the group ranches of Kenya and Tanzania, but the principle in one form or another is found in most Sahelian and East African project designs.[188]

Government and project planners have cast group rights in terms that provide a legal context for corporate range investment. The data, however, indicate that many herders welcome group ranches in countries like Kenya, not because they are anxious to limit stock numbers or curtail traditional strategies, but rather because the new legal machinery gives them a less ambiguous route to follow in protecting their range from invasion by cultivators.[189]

In point of fact, experience has shown that tenure reform has often not been an effective instrument in the pursuit of either growth or conservation policy objectives. It can be argued that the tenure reforms offered have not taken adequate account of the broad economic and ecological environment of pastoral systems or of the nature of the changes that are underway in the organization of livestock production. Some of the more salient structural aspects of pastoral production and their implications for policy are examined below, but for purposes of the present discussion of conventional tenure policy, the following observations are offered.

While tenure policies have tended to emphasize assignment of exclusive rights to discrete land areas, the circumstances of livestock production for the vast majority of cattle producers require maintenance of some form of communal tenure. In fact, in most pastoral economies, livestock production and use of grazing

---

[188]See, for example, James C. Riddell, Land Tenure Issues in West African Livestock and Range Development Projects, Research Paper No. 77 (Madison: Land Tenure Center, University of Wisconsin, 1982); John W. Bennett, The Political Ecology and Economic Development of Pastoralist Societies in East Africa, Research Paper, No. 80 (Madison: Land Tenure Center, University of Wisconsin, 1984).

[189]Galaty, "The Maasai Group-Ranch," pp. 157-172.

commons are still inseparable for two main reasons, the first of which is related to problems of herd size. The great majority of livestock holdings in Africa are small, fewer than 100 head of cattle.[190] No single production unit could capitalize a ranching operation, including water supply, with such small holdings, especially given the noncommercial orientation of many producers. Of course, the group ranch concept offers the economies of scale necessary to finance ranch development, but in most cases critical issues of asset management and herd disposition have not been successfully resolved.

Second are ecological reasons that militate against imposition of systems of individual land rights to replace communal tenure. Livestock production in semiarid savanna areas is a land-extensive enterprise, typically requiring quick response to highly variable rainfall patterns. Land tenure must take into account the variable environmental base. Hence, we should not be surprised that transience of resource use is a near universal condition, as specific landed resources can normally be expected to have use value only for limited amounts of time each season. The timing of this use will depend on type of animal, seasonal variation, and so forth, which in the Sahel, for example, results in different groups utilizing the same resource base at different times during the year.[191] Transiency will remain de facto an essential component of most tenure systems, if not de jure.

The transiency component means that intensity of use on any given landed resource will vary by time, space, and social group. Planning will have to come to grips with the time-thing-person relationships that make life possible in these arid rangelands. Individual tenure is not easily made compatible with regular, transhumant movements between seasonally available water supplies, especially where dry season pasture conditions are not predictable. Exclusive tenure requires, in most cases, a technical infrastructure that is not economically feasible given present and foreseeable market conditions.

The conclusion is that while the number of options for making production more efficient are severely limited, existing circumstances virtually dictate that some form of communal tenure will have to continue, at least for some time, regardless of the tenure reforms proposed. But, we hasten to add that the existing situation, characterized by a virtual absence of grazing controls, widespread land degradation, and growing impoverishment and

---

[190]Food and Agriculture Organization, "Conférence FAO/PNUE sur l'Aménagement Ecologique des Parcours Arides et Semiarides d'Afrique et du Proche-Orient, 3-8 février 1975" (Rome: FAO, 1975).

[191]For a project design that explicitly tries to deal with this factor, see Gallais and Boudet, Projet de code pastoral.

inequality among producers, does not provide the elements of a long-term communal tenure model of great inherent promise. Furthermore, the changes affecting African pastoralism are not well dealt with by the institutional resources of traditional society. In fact, the decline of traditional management rules is but another symptom of the changes that are overtaking the pastoral sector. Thus, new models of communal tenure must be designed to meet emergent circumstances of pastoral production and resource use. In the following section, several relevant aspects of the changing pastoral environment in relation to tenure policy are examined.

5.2 Transitional Economies and Tenure Policy

The economic organization of livestock production and resource management practices are changing in response to a general reorientation of household economic interests away from subsistence production and local exchange toward increasing market-oriented production and engagement with more cosmopolitan economic institutions. This process has two important implications for pastoral production.

First, resource management tends to become abusive. Especially today, herders have even less incentive to maintain or initiate agreements pertaining to resource allocation and control. The local-level institutions that traditionally have performed that function have yielded to supralocal market institutions as an important new factor in gauging production decisions. This dissolution of local-level controls is further accommodated by other phenomena that accompany rapid economic change, such as population growth, income diversification, technological changes, and, of course, development projects. The latter, including those that aim solely to reestablish ecologically sound management practices, are cast with reference to the emergent, market-oriented economic institutions.

The second key aspect of economic change is the emergence of entrepreneurship, a term used in the broadest possible sense. Simply stated, as herd ownership becomes less constrained by collective economic and managerial controls, private rather than collective benefits are maximized. Or, put another way, the economic interests of the household or herd ownership unit are pursued with increasing reference to external market institutions and commensurately less so to local social obligations. This process of increasingly autonomous decision-making reinforces the breakdown of local-level management controls.

There are three major attributes of the economic change process that are relevant to the development of tenure policy. First, the process of adjustment to the new economic reality has been a tremendously uneven one, not only among pastoral groups, but within groups as well. In fact, the highly differential character of

producer adaptation and response to economic change is perhaps the single most important attribute of the change process from the tenure reform viewpoint. ~reater decision-making autonomy, coupled with a wider choice of technologies and product outlets, has given rise to what we choose to call differential production orientations and management style.[192] On the most general level, "production orientation" divides along the lines of market and nonmarket production, but the actual situation is one of a broad continuum between these two extremes. "Management style" refers to the kinds of herd management and enterprise investment practices typically characteristic of each production orientation. For example, a "commercial" production orientation would normally indicate a management style characterized by relatively high capital investment in water supply and ranch infrastructure, hired labor, and fairly large herd size. A small subsistence producer, on the other hand, would probably act to minimize expenditure on the herd, given that household cash requirements might be more efficiently secured by applying limited assets and labor to other activities, perhaps involving labor migration. These distinctions are important for tenure policy because production orientation and management style indicate general tenure models appropriate to the prevalent production systems.

A second major attribute of the process of economic and structural change is its implications for local-level resource control practices, including formal and informal regulatory institutions. Recent research has led to an approach that has many appealing implications for institutional development for range conservation, buttressing traditional institutional controls over the range use practices of local herders.[193] Traditional institutions hold promise as broad organizational frameworks for extension and planning programs, but it is doubtful that they alone retain the essential attributes and authority necessary for achieving conservation objectives for several reasons. First, the authority of traditional institutions (as vested in chiefs, ward heads, and lineage heads) is mainly derived from the exercise of political and economic functions that have atrophied as institutions external to the traditional order have gained ascendance. As stated above, household production and labor allocation decisions are increasingly less confined by local conventions. Market conditions, external employment opportunities, and new technologies have all resulted in a fundamental reorientation of economic interest and herd management almost everywhere on the continent.

---

[192]John W. Bennett, Of Time and the Enterprise (Minneapolis: University of Minnesota Press, 1982).

[193]Horowitz, "The Sociology of Pastoralism; Gulbrandsen, Agro-Pastoral Production.

In some parts of Sub-Saharan Africa, such as Botswana, the process of change from traditional subsistence-oriented production toward more commercialization is well advanced, while in others, such as among the Dinka and the Nuer in the southern Sudan, it has barely begun. The Masai and the Fulani are probably at an intermediate stage in the process. The decline of traditional authority has often been promoted by modern political elites as part of the program for nation-building, and often as a means of consolidating their own positions. Reinvesting traditional authorities with control over important land matters would be considered a step backward by most modern political leaders as well as by many herders. Finally, there has even been a tendency by some analysts to exaggerate the extent of controls formerly exercised by traditional authorities over community resource use. Those controls that were in place were tailored to the requirements and circumstances of relative resource abundance and were largely concerned with assuring equitable access to resources by group members.

Range use has truly become a chaotic situation in many areas, and the prospects for local institutions alone maintaining control of the situation are not very good. This is happening because the processes of structural change described above imply that the relevant economic institutions affecting the production and resource use decisions of pastoralists are increasingly situated beyond the level of local exchange and redistribution networks. To be effective, resource control institutions must somehow be scaled to these new influence "jurisdictions." Typically, some measure of state-level control is necessary for the effective regulation of economic activity integrated by national markets. This is not to deny, in the least, a role for local-level institutions in the management of resources, but it does suggest that the power and authority of such bodies will probably have to be supported by, and integrated into, higher levels of state authority.

Institutions, only part of the equation, must be seen as arbiters of what is absent in most communal tenure situations today: a body of consistent and accepted common property law that defines the terms, conditions, and rights of access to common resources.

Arriving at effective common property law is a matter of interpreting customs and practice, combined with considerations of desirable public policy toward economic development and land use. In effect, taking into consideration both national and individual goals, common property law must be restated at the level of the nation, taking cognizance of local variations in custom and practice. The evolution and formal restatement of common property law will in most cases be a long-term process.

A third major attribute of the changes affecting pastoral production is the transitional character of the new economic and

ecological relationships facing the producer at any given time, which makes for an inherently unstable policymaking environment. Producers assume fundamentally new economic and social attitudes while simultaneously attempting to retain old ones. Official institutional resources are weak and poorly defined. Rules of behavior and definitions of rights tend to be vague and uncertain. Projects themselves push objectives, both production and conservation, that appear contradictory to the producer. Signals are mixed, detracting from the already weak credibility producers grant modern sector authorities.

Such problems are endemic to situations of rapid economic and social change. But the implications of inherent institutional weakness and widespread public uncertainty over resource rights regarding the efficacy of proposed tenure reforms are rarely considered. Economic change is a dynamic process, putting severe limits on the ability of usually static legal rules to maintain relevancy. This is a problem not easily dealt with under any circumstances, especially by policy planners who are faced with a multitude of tradeoffs.

5.3 A Model of Tenure Policy for Pastoral Systems

The changes presently underway are characterized by divergent responses of animal producers to a changing economic environment, especially in the area of commercialization of the herd and by increasing individualization of decisions about resource use, accommodated in part by a decline in the efficacy of local-level range use controls. For reasons discussed above, grazing land is still primarily communal, as necessitated by the intrinsic requirements of smallholder animal management on low productivity range of seasonally variable carrying capacity. These characteristics of production with respect to land use require that communal tenure be retained, in one form or another, as an essential feature of most pastoral production systems. Once the necessity of communal tenure is accepted, the key policy issues center upon the design of communal tenure rules and institutions appropriate to the needs and potentialities of producers of varying production orientations and management capabilities.

A policy model which holds promise for Sub-Saharan Africa is summarized in Table 7. It should be emphasized that as a general model it is meant to be illustrative of the principles that underlie the policy relationships that are discussed below. That is, we attempt a theoretical framework for approaching the specific details of any number of tenure policy problems. The model appears to assume a large measure of spatial separation between large commercial holdings and smaller noncommercial enterprises. This, of course, is typically not the case, and a key question in most tenure reform programs will be how to tailor specific reforms for specific groups utilizing shared range. This will be difficult under the best of circumstances, and the evolution of greater

spatial separation may be necessary in the long run. Also, the model applies to semiarid and arid production environments.

Tenure is treated in the model essentially as a dependent policy variable. Tenure rules and institutions normally should be scaled to the circumstances of livestock production, as indicated by the role of livestock in the household economy, and the production orientations and management styles of the producing units. The first measure is the role of livestock in contributing to the overall income requirements of the producing unit. This provides an indirect measure of the relative economic interest of the household in livestock, and the willingness (and ability) of the household to make available labor and other productive assets necessary for the adoption of certain types of tenure-dependent management practices.

"Production orientation" refers to attitude of the livestock enterprise to the market. Most herders produce both for subsistence consumption and for the market, so it is the proportional mix that is really important. A potentially useful measure for classifying mixed production units as either predominantly subsistence oriented or predominantly commercial oriented is whether sales are undertaken on a regular and planned basis. This would not, of course, be fail-safe, but it exemplifies the qualitative considerations that are involved in assessing changes in production orientation.

"Production orientation" is important to tenure policy for two reasons. First, the degree of production for sales indicates the general potential for undertaking private investments in water development and other range improvements. Second, production orientation provides an indirect measure of producer integration in national economic (and public) institutions, including marketing networks. These institutions provide a structure, or medium, for the conveyance of production and resource management incentives. In the absence of a reasonably high measure of producer integration, in terms of overall political and economic interdependency, it is unlikely that the supralocal land authorities necessary for the negotiation and administration of tenure rules will be effective. "Management style" is derivative of "production orientation," and is used here as a measure of the willingness and ability of producers to undertake expenditures on herding operations. It is a supplementary measure of producer reliance upon livestock and susceptibility to public incentives.

5.4 Implications for Land Tenure Policy

The large-scale commercial operations described in the first row of the model may often warrant granting of exclusive leasehold rights to qualified producers, although implementation of such a radical tenure reform should be approached with great caution as competing rights must be thoroughly adjudicated. Rights of stock

movement should normally be preserved. Planning for the Tribal Grazing Land Program in Botswana incorporated an overestimation of the commercial orientation and management capabilities of many largeholders originally believed qualified for the special rights and privileges involved in leasehold agreements. Instead of ensuring a production environment conducive to the investment and improved management practices characteristic of commercial ranches, the program provided an opportunity for wealthy and influential large holders to claim exclusive rights to land without being obliged to make the improvements appropriate to commercial enterprise. Granting of exclusive rights to individual stockholders should be undertaken only when there is reasonable expectation that the benefits that will accrue to society, in terms of increased output, income, and improved resource guardianship, outweigh the loss of societal welfare involved in the displacement of other producers utilizing the land.

Most livestock producers fall within the category of smallto medium-size herders. Communal tenure is an essential aspect of this sector’s production environment. Policy development must accept communal tenure as a given and undertake to develop rules and promote institutions capable of making livestock production on common range work in the interests of producer welfare and environmental conservation. Policy emphases to date have not given sufficient direct attention to the problems of communal tenure.

Two elements have been suggested in the preceding section as essential elements of a workable communal tenure. First is a specific body of law governing rights and limits of access to communal resources; second is an institutional framework for allotting land rights and policing land use. What is needed is the creation of institutions at both local and supralocal levels, the first under the control of influence of stockholders, the latter responsible for implementing range use standards and assuring equitable participation. Communal range policies would evolve out of a process of negotiation, compromise, and regulation, which in the long term may lead to the reasonable satisfaction of most interests. The group ranch model is illustrative of a local-level organization broadly representative of herder interests. Though it has typically, and appropriately, been promoted by planners for its advantages as a production unit, greater attention should be given to its potential as an organization for engaging regulatory institutions in negotiations over range use standards. Supralocal bodies must be backed up by suitable administrative resources, regulatory authority, and, of course, political commitment. To be effective, any supralocal institution must enjoy a wider political legitimacy, achievable only from a general public appreciation of the need for a formal institutional role in regulating resource use. This latter requirement has probably not been adequately met anywhere in SubSaharan Africa. Establishing institutional legitimacy on matters involving the regulation of resources is perhaps the single most difficult resource development constraint.

The third group in the model presents very different policy problems. These small to very small holders typically secure only a small portion of total household income from cattle in the form of milk, blood, and only very occasional cash sale. For them, the small family herd may be an important input to other aspects of the farming enterprise and may also serve as the household's only significant form of savings.

It is just because the smallholder is so often unable to provide either the labor or the capital to effectively manage the few animals owned that special difficulties are presented. Often the very animals that cause the greatest damage and are unattended or only casually cared for belong to this category of owner. Yet at the same time, the owner is frequently incapable of providing more animal supervision. In addition, these small holdings are the only secure form of "wealth" possessed by this lower stratum of the pastoral community. In the aggregate, the number of animals on the African range belonging to this category is substantial, and unless we address the property rights involved, there is little hope of effective management. The land rights of smallholders are probably best provided in the framework of relatively sedentary mixed farming areas. These areas need to be identified and secured for smallholders as a first step in any tenure reform program.

5.5 Conclusions

In most pastoral production areas of Sub-Saharan Africa, communal tenure makes economic and ecological sense. Although communal tenure systems throughout the continent are undergoing severe stress in the face of rapid economic and institutional change, individualization of rangeland will only in the rarest cases solve the problems characteristic of communal tenure systems today. At the same time, establishment of communal tenure systems that accommodate growth, conservation, and equity objectives presents formidable challenges. In any given situation, analysts must be prepared to rigorously assess the environment of livestock production and producer decision-making in terms of what it implies for land tenure, producer cooperation, and forms of administrative regulation. Although traditional institutions may in some circumstances retain sufficient legitimacy to play a role in range management, the economic and political bases for traditional authority are becoming increasingly tenuous across Africa. The contemporary production environment presents several unique problems unfamiliar to traditional institutional experience.

The continuing importance of communal land use to pastoral production indicates that, over the long run, increasing attention should be given to the development of policies in the areas of common property law (including the relationship between individual and corporate rights and responsibilities, as well as arrangements such as group ranching) and regulatory and community management institutions for communal land usage. These two institutional

realms will provide the working rules for communal tenure. The latter area, regulatory and community management institutions, has some implications for technical assistance, for it suggests greater emphasis on approaches to resource management similar to the tradition of public lands management as known and practiced in North America.[194] This tradition, with its predominant emphasis upon the negotiation, assignment, and regulation of grazing rights to common pastures, has been remarkably absent in providing even the most general background to pasture management in Africa.

Achieving efficient administration of public, communal range will be a long and difficult undertaking. Land management agencies will become factors to be reckoned with at a rate roughly commensurate with two important developments in Africa's political economy: the economic integration of pastoralists and their livestock production into the national economies, and the public recognition of the state's legitimate interest in matters affecting the use of natural resources. The former is proceeding rapidly; the latter will be granted only grudgingly.

BIBLIOGRAPHY

Adams, Adrien. Le long voyage des gens du fleuve. Paris: F. Maspero, 1977.

Aldige, E. Situation d'elevage et disponibilite en viande de l'Afrique Oriental Francaise. Paris: Libraire Emile Larose, 1919.

Allan, W. The African Husbandman. New York: Barnes and Noble, 1965.

Amin, Samir. Imperialism and Unequal Development. New York: Monthly Review Press, 1977.

Amin, Samir, ed. Modern Migrations in West Africa. London: Oxford University Press, for International African Institute, 1972.

Anderson, A.H. "Space as a Social Cost." Journal of Farm Economics 32 (1950): 411-429.

Aronson, Dan R. "Development for Nomadic Pastoralists: Who Benefits?" In The Future of Pastoral Peoples, edited by J.G. Galaty, D. Aronson, and P.C. Salzman. Proceedings of a Conference Held in Nairobi, Kenya, 1980. Ottawa: International Development Research Center, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

---

[194]Wesley Calef, Private Grazing and Public Lands (Chicago: University of Chicago Press, 1960.)

__. "Must Nomads Settle: Some Notes Toward Policy on the Future of Pastoralism." In When Nomads Settle: Processes of Sedentarization as AdaPtation and Response, edited by P.C. Salzman. New York: J.F. Bergin and Praeger, 19 8 0 .

__. "Pastoralists: Losing Ground in Somalia." Anthropology Resource Center, Newsletter, March 1982, p. 3.

Association Fransaise des Instituts de Recherches sur le Développement (AFRID). "Un document d'introduction aux debat." Prepared for Journees d'etudes sur les problemes fonciers en Afrique noire, held in Paris, Septembre 22-25, 19 8 0 .

Ayuko, Lukas J. Organization, Structures, and Ranches in Kenya. Pastoral Network Paper llb. London: Overseas Development Institute, Agricultural Administration University, 1981.

Azarya, Victor. Domination and Change in North Cameroon: The Fulbe Aristocracy. Series No. 90-030. Beverly Hills, CA: Sage Publications, 1976.

Bachelet, M. Systemes fonciers et reformes agraires en Afrique noire. Paris: Pichon et Durand-Auzia, 1968.

Baier, Stephen. "African Merchants in the Colonial Period: A History of Commerce in Damagaram (Central Niger), 18801960." Ph.D. thesis, University of Wisconsin-Madison, 1974.

Baier, Stephen, and David J. King. "Drought and the Development of Sahelian Economies: A Case Study of Hausa-Tuareg Interdependence." Land Tenure Center Newsletter, no. 45 (1974), pp. 11-21.

Baier, Stephen, and Paul Lovejoy. "The Desert Side Economy in the Natural Sudan." In Politics of a Natural Disaster, edited by M.H. Glantz. New York: Praeger, 1976.

Baker, Randall. "Innovation, Technology Transfer and Nomadic Pastoral Societies." In The Politics of Natural Disaster, edited by M. Glanz. New York: Praeger, 1976.

__. Perceptions of Pastoralism. Edinburgh: Centre for Tropical Veterinary Medicine, 1974.

Balandier, Georges. Anthropologie politique. Paris: Presses Universitaires de France, 1967. (English translation, London: Penguin, 1970.)

__. "Remarques sur les regroupements politique africains." Revue FranSaise de Science Politique 10 (1960): 841-844.

Baxter, P.T.W. "Some Consequences of Sedentarization for Social Relationships." In Pastoralism in Tropical Africa, edited by

Theodore Monod. London: Oxford University Press, for International African Institute, 1975.

Beaudet, G.; P. Michel, D. Nahon, P. Oliva, J. Riser, and A. Ruellan. "Formes, formations superficielles et variations climatique recentes du Sahara occidental." Revue de Geographie Physique et de Geologie Dynamique 18 (1976):

Bennett, John W. Of Time and the Enterprise. Minneapolis: University of Minnesota Press, 1982.

__. The Political Ecology and Development Projects Affecting Pastoralist Peoples in East Africa. Research Paper No. 80. Madison: Land Tenure Center, University of Wisconsin, 1984.

__. "A Rational-Choice Model of Agricultural Resource Utilization and Conservation." In Social and Technological Management in Dry Lands, edited by Nancie L. Gonzales, pp. 151-185. AAAS Selected Symposium No. 10. N.p.: American Association for the Advancement of Science, 1978.

Bernus, Edmund. "Le controle du milieu naturel et du troupeau par les eleveurs Touareg Saheliens." In Pastoral Production and Society, edited by Claude Lefebure. Cambridge: Cambridge University Press, for l'Equipe Ecologie et Anthropologie des Societes Pastorales, 1979.

__. Les Illabakan (Niger): une tribu Touaregue et son aire de nomadisation. Paris: Office de la Recherche Scientifique et Technique Outre-Mer, 1974.

Birindelli, Marie-Helene. "Fonds Europeen de developpement, 1960-1975: 15 ans de cooperation au developpement. Precis." In Courier 37 (1976): 55-56.

Bonte, Pierre. L'elevage et le commerce du betail dans l'Ader Doutchi-Majya. Etudes Nigeriennes No. 23. Niger and Paris: IFAN and CNRS, 1967.

__. Etude du changement social: evolution des modes d'accumulation et transformations sociales en Mauritanie. Nouakchott: USAID/Rural Assessment and Manpower Surveys (RAMS). Available in French and English, 1980.

__. "Organisation economique et sociale des pasteurs d'Afrique orientale." Etude sur les societes de pasteurs nomades No. 2. Cahiers du Centre d'Etudes et de Recherches Marxiste 110 (1974): 1-95.

__. "Pastoral Production, Territorial Organization, and Kinship in Segmentary Lineage Societies." In Social and Ecological Systems, edited by P.C. Burnham and R.F. Ellen. London:

Academic Press, 1979.

Boserup, Ester. The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure. Chicago: Aldine, 1965.

Boudet, George G. "Quelques observations sur les fluctuations du couvert vegetal Sahelien au Gourma malien et leurs consequences pour une strategie de gestion sylvo-pastoral." Bois et Forets des Tropiques 184 (1979): 31-44.

Bourgeot, Andre. "Analyse des rapports de production chez les pasteurs et les agriculteurs de l'Ahaggar." In Pastoralism in Tropical Africa, edited by Theodore Monod. London: Oxford University Press, for International African Institute, 1975.

__. "Structure de classe, pouvoir politique et organisation de l'espace en pays Touareg." In Pastoral Production and Society, edited by Claude Lefebure. Cambridge: Cambridge University Press, for l'Equipe Ecologie et Anthropologie des Societes Pastorales, 1979.

Bousquet, G.-H. Precis de droit musulman. 3rd ed., 2 vols. Algiers: Maison des Livres, 1950.

Box, Thadis W. "Nomadism and Land Use in Somalia." Economic Development and Cultural Change 19 (1971): 222-228.

Box, Thadis W. and Dean G. Peterson. "Carrying Capacity of Renewable Resources Related to Desertification." In Desertification Papers, edited by P. Reining. Washington, DC: American Association for the Advancement of Science, 1978.

Brokensha, David W., Michael M. Horowitz, and Thayer Scudder. The Anthropology of Rural Development in the Sahel. Binghampton, NY: Institute for Development Anthropology and U.S. Agency for International Development, 1977.

Calef, Wesley. Private Grazing and Public Lands. Chicago: University of Chicago Press, 1960.

Campbell, David J., and George H. Axinn. Pastoralism in Kenya. Africa: Report No. 30. Hanover, NH: American Universities Field Staff, 1980.

Campbell, David, and James Riddell. "Ecological Consequences of Population Growth and Land Use Change in the Mandara Mountains of North Cameroon." East Lakes Geographer 17 (1982): 5-16.

Capot-Rey, R. "The Present State of Nomadism in the Sahara." In The Problems of the Arid Zone. Paris: UNESCO, 1962.

Carl Bro International. An Evaluation of Livestock Management and Production in Botswana: Main Report. 2 vols. Gaborone and Brussels: Ministry of Agriculture, and European Development Fund, 1982.

Carr, Claudia J. Pastoralism in Crisis: The Dasanetch and Their Ethiopian Lands. Research Paper No. 180. Chicago: Department of Geography, University of Chicago, 1977.

Carvalho, Cruz de E. "'Traditional' and 'Modern' Patterns of Cattle-Raising in Southwest Angola." Journal of Developing Areas 8 (1974): 199-225.

Chambers, R., and D. Feldman. Report on Rural Development. Gaborone: Government Printer, 1975.

Chehata, Ch. Etudes de droit musulman. 2 vols. Paris: Presses Universitaires de France, 1973.

Ciriacy-Wantrup, S.V., and Richard C. Bishop. "Common Property as a Concept in Natural Resource Policy." Natural Resources Journal 15 (1975): 713-727.

Clark, Andrew. "The Impact of Exotic Invasion on the Remaining New World Mid-Latitude Grasslands." In Man's Role in Changing the Face of the Earth. Chicago: University of Chicago Press, 1956.

Cliffe, Lionel, and R. Moorsan. "Rural Class Formation and Ecological Collapse in Botswana." Review of African Political Economy no. 15/16 (1979): 35-52.

Colclough, C., and S. McCarthy. The Political Economy of Botswana. London: Oxford University Press, 1980.

Commons, John R. Legal Foundations of Capitalism. New York: Macmillan, 1924.

Cooley, Charles H. Social Organization. New York: Charles Scribner's Sons, 1929.

Council on Environmental Quality and U.S. Department of State. The Global 2000 RePort to the President. Vol. 2, Technical Report. Washington: Government Printing Office, 1980.

Curasson, Georges. "L'animale au Soudan francais." In VIe Congres International d'Argiculture Tropicale et Sub- tropicale. 3 Vols. Paris: Secretariat General de l'Association Scientifique Internationale d'Agriculture des Pays Chauds et de son Comite, 1932.

Curtin, Philip; Steven Feierman, Leonard Thompson, and Jan Vansina. African History. Boston: Little, Brown, 1978.

Daget, J., and Amadou Hampate Ba. L'empire Peul du Macina. Bamako: IFAN, 1955. Reprint, Paris: Mouton, 1962.

Dahl, Gudrun. "Ecology and Society: The Boran Case." In Pastoral Production and Society, edited by C. Lefebure. Cambridge: Cambridge University Press, for l'Equipe Ecologie et Anthropologie des Societes Pastorales, 1979.

Dahl, Gudrun, and A. Hjort. Having Herds: Pastoral Herd Growth and Household Economy. Studies in Social Anthropology No. 2. Stockholm: Department of Social Anthropology, University of Stockholm, 1976.

Dalton, George. "Symposium: Economic Anthropology and the Work of Karl Polanyi." In Research in Economic Anthropology, vol. 4, edited by G. Dalton. Greenwich, CT: JAI Press, 1981.

Dalton, George. "Traditional Production in Primitive African Economies." In Tribal and Peasant Economies, edited by G. Dalton. Austin: University of Texas Press, 1967.

Dandekar, V.M. Economic and Social Problems of Tribal Populations in the Period of Individualization of Tenure. Fort Portal, Kenya: Development Center on Land Policy for East and Central Africa, 1960.

Darling, F. Fraser, and Mary A. Farvar. "Ecological Consequences of Sedentarization of Nomads." In The Careless Technology, edited by M.T. Farvar and J.P. Milton. Garden City, NY: Natural History Press, 1972.

Davis, Kingsley. Human Society. New York: Macmillan, 1949.

De Crozals, J. Les Peuls: etude d'ethnologie africaine. Paris: Mai tonneure, 18 8 3 .

Delgado, Christopher L. The Southern Fulani Farming System in Upper Volta: A Model for the Integration of Crop and Livestock Production in the West African Savannah. African Rural Economy Paper No. 20. East Lansing: Department of Agricultural Economics, Michigan State University, 1979.

Demsetz, Harold. "Toward a Theory of Property Rights." American Economic Review (Papers and Proceedings) 57 (1967): 347-359.

Derrick, Jonathan. "The Great West African Drought, 1972-74." African Affairs 76 (1977): 537-586.

De Vos, Antoon. Africa, the Devastated Continent? Hague: Dr. W. Junk b.v. Publishers, 1975.

Dorner, Peter, and Don Kanel. "Introduction: Some Economic and

Administrative Issues in Group Farming." In Cooperative and Commune: Grou~ Farming in the Economic Develo~ment of Agriculture, edited by P. Dorner. Madison: University of Wisconsin Press, 1977.

Dregne, Harold E. Arid Lands in Transition. AAAS Publication No. 90. Washington: American Association for the Advancement of Science, 1970.

Dresch, Jean. "Reflection on the Future of the Semi-Arid Regions." In African Environments, edited by Paul Richards. London: International African Institute, 1975.

Dubie, P. "La vie materielle des Maures." IFAN Memoires [Dakar] 23 (1953): 111-252.

DuBois, Victor D. "Food Supply in Mali." American Universities Field Staff Reports, West Africa series, vol. 16, no. 1. Hanover, NH: AUFS, 1975.

Dumont, Rene. False Start in Africa. New York: Praeger, 1969.

Dupire, Marguerite. Organisation sociales des Peul: Etude d'ethnographie comparee. Paris: Plon, 1970.

__. Peuls nomades: Etude descriptive des Wo'daa'be du Sahel nigerien. Travaux et memoires No. 64. Paris: Institut d'Ethnologie, 1962.

__. "Trade and Markets in the Economy of the Nomadic Fulani of Niger (Bororo)." In Markets in Africa, edited by P. Bohannan and G. Dalton. Evanston, IL: Northwestern University Press, 1962.

Dyson-Hudson, Neville. "The Study of Nomads." In Perspectives on Nomadism, edited by W. Irons and N. Dyson-Hudson. Leiden, Netherlands: Brill, 1972.

Elias, T.O. The Nature of African Customary Law. Manchester: Manchester University Press, 1956.

____. Nigerian Land Law, 4th ed. London: Sweet and Maxwell, 1971.

__. Nigerian Land Law and Custom. N.p.: Routledge and Kegan Paul, 1951.

El Sammani, M.O. "Involvement of Rural Communities in Water Resource Planning and Management, in the Sudan." M.A. thesis, Reading University, 1972.

Equipe SEPH [Secretariat d'Etat a la Promotion Humaine]. "Etudes socio-economique de les zones Toulekedi et Sarre." Promotion

Humaine. Mimeographed. Dakar: Secretariat d'Etat, 1980.

Evans-Pritchard, E.E. The Nuer. Oxford: Oxford University Press, 1940.

Evenari, M., et al. "Ancient Agriculture in the Negev." Science 133 (1961): 796-797.

Faure, Hugues, and Jean-Yves Gac. "Will the Sahelian Drought End in 1985?" Nature 291 (1981): 475-478.

Fell, A.M. Administrative Reform in Senegal: The Rural Community. Paris: Club du Sahel, 1978.

Ferguson, Donald T. A Conceptual Framework for the Evaluation of Livestock Production Development Projects and Programs in Sub-Saharan West Africa. Ann Arbor: Center for Research on Economic Development, University of Michigan, 1980.

Fikri, Mona. "Social Change: Social Organization of Agricultural Production." Mimeographed. Nouakchott, Mauritania: USAID/RAMS, 1980.

Food and Agricultural Organization. "Animal Husbandry, Production and Range Management in the Near East." 1972.

__. "Conference FAO/PNUE sur l'amenagement ecologique des parcours arides et semiarides d'Afrique et du Proche-Orient, Rome, 3-8 fevrier 1975." Rome: FAO, 1975.

____. FAO Production Yearbook. Rome: FAO, 1980.

____. "Food Composition Tables for Use in Africa." Rome: FAO, 1976.

____. "Provisional Food Balance Sheets." Rome: FAO, 1977.

__. "Settlement in Agriculture of Nomadic, Semi-Nomadic, and Other Pastoral People." FAO-TA 2810. Group Fellowship Study Tour Reports. Near East Regional Study. n.p.: n.d.

__. "The Settlement of Nomads in Africa and the Near East." FAO-RP20. Expert Consultation. Rome: FAO, 1972.

Ford, J. "The Influence of Tsetse Flies on the Distribution of African Cattle." In Proceedings of the First Federal Science Congress. Salisbury, Rhodesia, 1960.

__. The Role of the Trypanosomiases in African Ecology. Oxford: Clarendon Press, 1971.

Forde, C. Daryll. Habitat, Economy and Society. New York: Harcourt Brace, 1934.

Fumagalli, Carl T. "An Evaluation of Development Projects Among East African Pastoralists." Special Issue, "The Social Sciences and African Development Planning." African Studies Review 21 (1978): 49-63.

Fransois, George. L'Afrique occidentale Francaise. Paris: Payot, 1920.

__. "Les productions de l'Afrique Orientale Fransaise." Meluni Imprimerie Administrative, 1918.

Franke, Richard W., and Barbara H. Chasin. "Peanuts, Peasants, Profits, and Pastoralists." Peasant Studies 8(3) (1979): 1-30.

____. Seeds of Famine. Montclair, NJ: Allanheld, Osmun, 1980.

Galaty, John G. "Introduction: Nomadic Pastoralists and Social Change." In Change and Development in Nomadic and Pastoral Societies, edited by J.G. Galaty and P.C. Salzman. Leiden, Netherlands: J. Brill, 1981.

Galaty, John G. "The Maasai Group-Ranch: Politics and Development in an ~frican Pastoral Society." In When Nomads Settle: Processes of Sedentarization as Adaptation and Response, edited by P.C. Salzman, Chapter 11. New York: J.F. Bergin and Praeger, 1980.

Galaty, John G., Dan R. Aronson, and Philip C. Salzman. The Future of Pastoral Peoples: Proceedings of a Conference held in Nairobi, Kenya, 1980. Ottawa: International Development Research Center, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Galaty, John G., et al. "Organizations for Pastoral Development: Contexts of Causality, Change, and Assessment." In The Future of Pastoral Peoples, edited by J. Galaty, D. Aronson, and P.C. Salzman. Ottawa and Montreal: Published with the assistance of the International Development Research Center and McGill University, 1981.

Gallais, Jean. Le delta interieur du Niger. Dakar: IFAN, 1967.

Gallais, Jean, and G. Boudet. Projet de code pastoral concernant plus specialement la region du delta central du Niger au Mali. Maison-Alfort, France: IEMVT, 1980.

Ganon, M.F. "The Nomads of Niger." In Population Growth and Socioeconomic Change in West Africa, edited by J.C. Caldwell. New York: Columbia University Press, 1975.

Gattimara, Giancarlo Castelli, El Joud Ould Saleck, and ~hmed

Aidara. La culture et la societe Pastoral Maure dans une dynamique de developpement. Nouakchott, Mauritania: Food and Agriculture Organization and Government of Mauritania, 1979.

Giraud, Henry. "L'elevage au Soudan: son avenir." Thesis, Ecole Veterinaire, Maison-Alfort, France, 1946.

Glantz, Michael H. "Man, State and the Environment: An Inquiry Into Whether Solutions to Desertification in the West African Sahel Are Known But Not Applied." Canadian Journal of Development Studies 1 (1980): 75-97.

Glantz, Michael H., ed. Desertification: Degradation in and Around Arid Lands. Boulder, CO: Westview Press, 1977.

Glauber, Joseph W. "National Development and the Malian Pastoralist: An Analysis of Fulbe Land Use." Paper presented at Land Tenure Center, University of WisconsinMadison, 1980.

Government of Botswana. National Policy for Rural Development: The Government's Decisions on the RePort on Rural Development by R. Chambers and D. Feldman. Gaborone: Government Printer, 1973.

__. National Policy on Tribal Grazing Land. Government White Paper No. 2. Gaborone: Government Printer, 1975.

Government of Botswana. Ministry of Finance and Development Planning. "Rural Development in Botswana." Government White Paper No. 1 of 1972. Mimeographed. Gaborone: Ministry of Finance and Development Planning, 1972.

Government of Botswana. Ministry of Finance and Development Planning. Central Statistics Office. The Rural Income Distribution surveY in 1974/75. Gaborone, 1976.

Government of Botswana. Range Management Centre. Evaluation Unit (EU). The Management of Communal Grazing in Botswana. Gaborone: Ministry of Agriculture, 1981.

Government of France. Ministere de la Cooperation. Role possible de la Vallee du Senegal dans les economies de la Mauritanie et du Senegal. Paris: Le Service, 1976.

Government of France. Ministere de la Cooperation/Societe Centrale pour l'Equipement du Territoire (SCET). Projet de developpement de l'elevage dans le Mugamba (Province de Mwaramoya). Paris: Ministere de la Cooperation/SCET, 1975.

Government of Kenya. Development Plan: 1974-1978. Nairobi: Government Printer, 1974.

Government of Mauritania. Third Plan of Development. Nouakchott, 1981.

Government of Mauritania. Commission Chargee de l'Etude des Problemes Fonciers. Rapport de terrain de la mission d'enquete. Nouakchott: Ministere Charge de la Permanence, Gouvernement de Mauritania, 1980.

Government of Senegal. Code de l'administration communale. Rufisque: Imprimerie Nationale, 1974.

Green, R.H. "Gale Warnings: Fragments of Charts and Guides for Navigators." Development Dialogue no. 1 (1980): 35-59.

Griffin, Keith. "Increasing Poverty and Changing Ideas About Development." Development and Change 8 (1977): 491-508.

Groupement d'Etudes et de Recherches pour le Developpement de l'Agronomie Tropicale. "Localisation des intervention hors de France metropolitaine." Mimeographed. Paris: GERDAT, 19 7 9 .

Gulbrandsen, Ornulf. Agro-Pastoral Production and Communal Land Use: A Socio-Economic StudY of the Bangwaketse. Gaborone, Botswana: Ministry of Agriculture, 1980.

Gulliver, P.H. The Family Herds: A Study of Two Pastoral Tribes in East Africa: Jie and Turkana. London: Routledge and Kegan Paul, 1955.

Haaland, Gunnar. "Nomadism as an Economic Career Among the Sedentaries of the Sudan Savannah Belt." In Essays in Sudan Ethnography, edited by I. Cunnison. London: C. Hurst, 1972.

__. "Pastoral Systems of Production: The Socio-Cultural Context and Some Economic and Ecological Implications." In Land Use and Develo~ment, edited by Phil O'Keefe and Ben Wisner. African Environment Special Report No. 5. London: International African Institute, 1977.

Hall, D.O. "Biomass for Energy--A Worldwide View." In Renewable Resources, edited by E. Campos-Lopez. New York: Academic Press, 1980.

Hardin, Garrett. "The Tragedy of the Commons." Science 162 (~968): 1243- 1248.

Hardin, Garrett, and John Baden. Managing the Commons. San Francisco: W.H. Freeman, 1977.

Hatfield, C.D. "Masai Range Development Pro]ect, August 1973August 1975: End of Tour Report." Arusha, Tanzania, 1975.

Hedlund, G.B. The Impact of Group Ranches on a Pastoral Society. Institute for Development Studies Paper No. 100. Nairobi: Institute for Development Studies, University of Nairobi, 1971.

Helland, J. An Anthropologist's View of Group Ranch Development. Livestock Development Course Note No. 24. Nairobi: International Livestock Centre for Africa, 1978.

__. An Outline of Group Ranching in Pastoral Maasai Areas of _ enya. Working Document No. 24. Nairobi: International Livestock Centre for Africa, 1980.

__. Some Aspects and Implications of the Development of Grazing Blocks in Northeastern Province, Kenya. Working Document. Nairobi: International Livestock Centre for Africa, 1980.

Henri, Bruno. Regime des eaux en droit musulman. Paris: Librairie Nouvelle de Droit et de Jurisprudence, 1913.

Herskovits, Melville J. "The Cattle Complex in East Africa." American Anthropologist 28 (1926): 230-272, 361-388, 494-528, and 633-644.

Hess, Oleen. The Establishment of Cattle Ranching Associations Among the Masai in Tanzania. Occasional Paper No. 7. Washington, DC: U.S. Agency for International Development, 19 7 6 .

Hickey, Joseph. "Fulani Nomadism and Herd Maximization: A Model for Government Mixed Farming and Ranching Schemes. "In Proceedings of the First International Rangeland Congress, edited by Donald N. Hyder. Denver, CO: Society for Range Management, 19 78.

Hill, Polly. Studies in Rural Capitalism in West Africa. Cambridge: Cambridge University Press, 1970.

Hirschman, Albert O. Development Projects Observed. Washington, DC: Brookings Institution, 1967.

Hitchcock, Robert K. "Tradition, Social Justice and Land Reform." In Land Reform in the Making: Tradition, Public Policy and Theology in Botswana, edited by Richard P. Werbner . London : Rex Collings, 1982 .

Hjort, Anders. "Herds, Trade and Grain: Pastoralism in a Regional Perspective." In The Future of Pastoral Peoples,

edited by J.G. Galaty, D. Aronson, and P.C. Salzman. Proceedings of a Conference Held in Nairobi, Kenya, 1980. Ottawa: International Development Research Center, for the

Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Hoben, Allan. Lessons From a Critical Examination of Livestock Projects in Africa. AID Program Evaluation Working Paper No. 26. Washington, DC: U.S. Agency for International Development, 1979.

Hodder, B.W. "A Note on Not Perpetuating the Status Quo." African Affairs 73 (1974): 159-161 .

Hopcraft, Peter N. "Economic Institutions and Pastoral Resources Management: Considerations for a Development Strategy." In The Future of Pastoral Peoples, edited by J.G. Galaty, D. Aronson, and P.C. Salzman. Proceedings of a Conference Held in Nairobi, Kenya, 1980 . Ottawa : International Development Research Center, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Hopen, C. Edward. The Pastoral Fulbe Family in Gwandu. London: Oxford University Press, 1958.

Horowitz, Michael M. "Ethnic Boundary Maintenance Among Pastoralists and Farmers in the Western Sudan (Niger)." Journal of Asian and African Studies 7 (1972): 105-114 .

__. "Herdsmen and Husbandmen in Niger: Values and Strategies." In Pastoralism in Tropical Africa, edited by Theodore Monod. London: Oxford University Press, for International African Institute, 1975.

__. "The Sociology of Pastoralism and African Livestock Projects." Background paper for USAID Workshop on Pastoralism and African Livestock Projects, Harper's Ferry, West Virginia, September 24-26, 1979. Binghamton, NY: Institute for Development Anthropology, 1979.

Hyden, Goran. Beyond Ujamaa in Tanzania. Berkeley: University of California Press, 1980.

Hyder, Donald N., ed. Proceedings of the First International Rangeland Congress. Denver, CO: Society for Range Management, 19 7 8 .

Ichefegh, Attoujani. Problemes economiques, sociaux et politiques du developpement chez les Touaregs Iwellemmedan de la Republique du Niger. Ottawa: Institut de Cooperation Internationale, University of Ottawa, 1976.

Ingham, Kenneth. A History of East Africa. London: Longmans, 1962.

Ingram, Helen; R. Nichols; A. Gault; and P. Rosenfield. Management

of Arid Lands: An Aqenda for Research. Discussion Paper No. D-42. Report prepared under a grant from the National Science Foundation, Applied Research and Science Applications Directorate. Tucson: University of Arizona, 19 8 1 .

International Bank for Reconstruction and DevelopmentInternational Development Association. Appraisal of Livestock Development Project: Kenya. Report No. 193a-KE. N.p.: IBRD-IDA Agricultural Credit and Livestock Division, Eastern Africa Regional Office, 1974.

__. Appraisal of Second Livestock Development Project: Ethiopia. Report No. PA-136a. N.p.: IBRD-IDA Projects Department, Agriculture Division, Eastern Africa, 1972.

__. Appraisal of Second Livestock Project: Tanzania. Report No. 51a-TA. N.p.: IBRD-IDA Agriculture Projects Department, Eastern Africa Regional Office, 1973.

__. Appraisal of the Trans-Juba Livestock Project: Somalia. Report No. 261-SO. N.p.: IBRD-IDA Agricultural Credit and Livestock Division, Eastern Africa Project Department, 1974.

__. Tanzania: Appraisal of Dairy Development Project. Report No. 765-TA. N.p.: IBRD-IDA Agricultural Credit and Livestock Division, Eastern Africa Region, 1975.

__. Tanzania: Second Livestock Development Project: Report of the Review Mission (Nov. 6-Dec. 2, 1976; Mar. 8-Mar. 12, 1977). Report No. 382-TA. N.p.: IBRD-IDA Agricultural Credit and Livestock Division, Eastern Africa Region, 1977.

International Livestock Centre for Africa. Range Livestock Production Systems. Botswana Working Document No. 6. Nairobi, 1982.

Irons, William, and Nevelle Dyson-Hudson, eds. Perspectives on Nomadism. Leiden, Netherlands: E.J. Brill, 1972.

Jacobs, Alan H. "Maasai Pastoralism in Historical Perspective." In Pastoralism in Tropical Africa, edited by Theodore Monod. London: Oxford University Press for International African Institute, 1975.

Jacoby, Erich H. Man and Land: The Fundamental Issue in Development. London: Andre Deutsch, 1971.

Jahnke, H.E. A Historical View of Range Development in Kenya. Livestock Development Course Note No. 23.1. Nairobi: International Livestock Centre for Africa, 1978.

Jarvis, L.S. "Cattle as Capital Goods and Ranchers as Portfolio

Managers: An Application to the Argentine Cattle Sector." Journal of Political Economy 82 (1974): 489-520 .

Johnson, Douglas L. The Response of Pastoral Nomads to Drought in the Absence of Outside Intervention. New York: United Nations Special Sahelian Office, 1973.

Johnston, Sir Harry Hamilton. A History of the Colonization of Africa by Alien Races. Cambridge: Cambridge University Press, 1899.

Kane, C. "Rapport." Mimeographed. Bakel, Senegal: USAID, 1980 .

Kanel, Don. "Land Tenure as a Policy Issue in the Modernization of Traditional Societies." In Land Reform in Latin America: Issues and Cases, edited by Peter Dorner, pp. 23-35. Land Economics Monograph No. 3. Madison: Land Economics for the Land Tenure Center at the University of Wisconsin, 1971.

Kassapu, Samuel. _s depenses de recherche agricole dans 34 pays d'Afrique tropicale. Paris: Centre de Developpement de l'OCDE [Organisation de Cooperation et de Developpement Economique], 1976.

Keay, R.W.J., ed. Vegetation Map of Africa South of the Tropic of Cancer. Oxford: Oxford University Press, 1959.

Khama, Seretse. National Policy on Tribal Grazing Land. Government White Paper No. 2 of 1975. Gaborone, Botswana: Government Printer, 1975.

Kjekshus, Helge. Ecology Control and Economic Development in East African History. London and Nairobi: Heinemann,

Konczacki, Z.A. The Economics of Pastoralism: A Case Study of Sub-Saharan Africa. London: Frank Cass, 1978.

Korten, David C. "Social Development: Putting People First." In Bureaucracy and the Poor: Closing the Gap, edited by D. Korten and Felipe B. Alfonso. Singapore: McGraw-Hill, 1980.

Kouassigan, Guy-Adjete. "Agrarian Reform and Institutional Innovation in the Reconstruction and Development of Agri-

culture in French Speaking Africa." Paper presented at the International Seminar on Agrarian Reform, Institutional Innovation, and Rural Development: Major Issues in Perspective, held in Madison, Wisconsin, 14-22 July 1977. Madison: Land Tenure Center, University of Wisconsin 1977.

__. L'homme et la terre. Paris: Office de la Recherche Scientifique et Technique Outre-Mer, 1966.

Lamphear, John. "Aspects of Turkana Leadership During the Era of Primary Resistance." Journal of African History 17 (1976): 225-243.

Lateef, Noel V. Crisis in the Sahel: A Case Study in Development Cooperation. Boulder, CO: Westview Press, 1980.

Lawrance, J.C.D. Report of the Mission on Land Consolidation and Registration 1965-1966. Nairobi: Republic of Kenya, 1966.

Lawry, Steven W. Land Tenure, Land Policy, and Smallholder Livestock Development in Botswana. Research Paper No. 78. Madison: Land Tenure Center, University of Wisconsin, 1983.

Le Houerou, H.N. Le developpement agricole et pastoral de l'Irhazer d'Agades. Rome: Food and Agriculture organization, 1972.

Lefebure, Claude, ed. Pastoral Production and Society. Proceedings of the International Meeting on Nomadic Pastoralism, held in Paris, 1976. New York: Cambridge University Press, for l'Equipe Ecologie et Anthropologie des Societes Pastorales, 1979.

Lele, Uma. The Design of Rural Development. Baltimore: Johns Hopkins University Press, 1975.

__. "Rural Africa, Modernization, Equity and Long-Term Development." Science, 211 (1981): 547-553.

Levi, John. "Traditional Agricultural Capital Formation." World Development 7 (1979): 1053-1062.

Lewis, B.A. The Murle. Oxford: Clarendon Press, 1972.

Lewis, John van D. "Range Use and Fulbe Social Organization: The View from Macina." Mimeographed. Los Angeles: American Anthropological Association, 1978.

Litschauer, John G., and William F. Kelly. The Structure of Traditional Agriculture in Botswana. Gaborone: Ministry of Agriculture, February 1981.

Little, Peter D. Pastoralism and Strategies: Socio-Economic Change in the Pastoral Sector of Baringo District, Kenya. Working Paper No. 368. Nairobi: Institute of Development Studies, University of Nairobi, 1980.

Livingstone, Ian. "Economic Irrationality Among Pastoral Peoples: Myth or Reality?" Development and Change 8 (1977): 209-230.

__. "The Socio-Economics of Ranching in Kenya." In Research in Economic Anthropology, vol. 2, edited by George Dalton.

Greenwich, CT: JAI Press, 1979.

Long, Norman. An Introduction to the Sociology of Rural Development. London: Tavistock Publications, 1977.

Lonsdale, John, and Bruce Berman. "Coping with Contradiction: The Development of the Colonial State in Kenya." Journal of African History 20 (1979): 487-505.

Low, Allan. The Estimation and Interpretation of Pastoralists' Price Responsiveness. Pastoral Network Paper No. 10c. London: Agricultural Administration Unit, Overseas Development Institute, 1980.

Lundgren, Bjorn. Land Use in Kenya and Tanzania. Stockholm: International Rural Development Division, Royal College of Forestry, 1975.

M'Baba Diallo et al. Tradition historique Peul. N.p.: Organisation de l'Unite Africaine, Centre d'Etudes Linguistique et Historique pour une Tradition Orale, 1974.

Mainet, G. "L'elevage dans la region de Maradi." Cahiers d'Outre Mer 18 (1965): 32-72.

Malinowski, Bronislaw. A Scientific Theory of Culture, and Other Essays. New York: Oxford University Press, 1944.

Marsh, Zoe, and G.W. Kingsnorth. An Introduction to the History of East Africa. Cambridge: Cambridge University Press, 1966.

Martin, L.J., and R. Haack. "Beef Supply Response in North America." Canadian Journal of Agricultural Economics 25 (1977): 29-47.

Mason, Philip. A New Deal in East Africa. London: Royal Institute of International Affairs, 1955.

Maurel, A. Etude socio-economique du Lac R'Kiz. Nouakchott: Ministere de Developpement Rurale, Gouvernement de Mauritania, 1972.

McCauley, E.H. "Aide aux petits eleveurs: experiences menees avec succes. " Rev. Mond. Zootech. 17 (1976): 28-32.

McDowell, R.E. "Are We Prepared To Help Small Farmers in Developing Countries?" Journal of Administrative Science 47 (5) (1978): 1184-1194.

McPherson, M. Peter. "Remarks Before Meeting of National Association of State Universities and Land Grant Colleges, Held 10 November." Mimeographed. Washington, DC: USAID, 1981.

Meadows, S.J., and J.M. White. Structure of the Herd and Determinants of Offtake Rates in Kajiado District in Kenya: 1962-1977. Pastoral Network Paper No. 7d. London: Design and Management of Pastoral Development, Agricultural Administration Unit, Overseas Development Institute, 1979.

Meyn, K. A Proposed Livestock Development Strategy for West Africa. Washington, DC: Projects Department, World Bank, 1977.

Mighot, Adholla S.E., and Peter D. Little. "Evolution of Policy Toward the Development of Pastoral Areas in Kenya." In The Future of Pastoral Peoples, edited by J.G. Galaty, D. Aronson, and P.C. Salzman. Proceedings of a Conference Held in Nairobi, Kenya, 1980. Ottawa: International Development Research Center, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Mohammadou, Eldridge, ed. L'histoire des Peuls Ferobe du Diamare, Maroua et Pette. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa, 1976.

Monod, Theodore, ed. Pastoralism in Tropical Africa. London: Oxford University Press, 1975.

Morawetz, David. "Twenty-Five Years of Economic Development." Finance and Development 14 (1977): 10-13.

Moyon, P. "Un exemple de structure precooperative: le centre de modernisation des production animales (de) Fort Lamy." Mimeographed. N.p., 1972.

Ngutter, L.G.K. "Kenya Government Policy in Semi-Arid Areas: Its Evolution." Paper presented at Workshop on the Development of Kenya's Semi-Arid Areas, 1979. Typescript. Nairobi: Institute of Development Studies, University of Nairobi, 19 7 9 .

Nicholson, Sharon. "Climatic Chronology of West Africa: Synthesis of Geological, Historical, and Meteorological Information and Data." Ph.D. thesis, University of Wisconsin-Madison, 1976.

__. "Saharan Climate in Historic Times." In The Sahara and the Nile, edited by Martin ~.J. Williams and Hugues Faure. Rotterdam: Balkema, 1980.

Nkinyangi, John A. "Education for Nomadic Pastoralists." In The Future of Pastoral Peoples, edited by J.G. Galaty, D. Aronson, and P.C. Salzman. Proceedings of a Conference Held in Nairobi, Kenya, 1980. Ottawa: International Development Research Center, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Nye, P.H., and D.J. Greenand. The Soil Under Shifting Cultivation.

Commonwealth Bureau of Soils Technical Communication No. 51. London: Farnham Royal, Bucks, 1960.

Odell, Marcia L. Botswana's First Livestock Development Project: An Experiment in Agricultural Transformation. Gaborone: Government Printer, 1980.

Okediji, Florence A.B. The Cattle Industry in Northern Nigeria. Bloomington: Indiana University Press, 1973.

Olang, Moses. Organizations and Procedures in Group Ranch Development in Kenya. Pastoral Network Paper No. 13c. London: Agricultural Administration Unit, Overseas Development Institute, 1982.

Ole Saibull, S.A. "Social Change Among the Pastoral Masai of Tanzania in Response to the Ujamaa Vijijini Policy." Duplicated Report. Dar es Salaam: Faculty of Arts and Social Sciences, University of Dar es Salaam, 1974.

Oxby, Clare. Group Ranches in Africa. W/P3098. Rome: Food and Agriculture Organization, 1981.

__. Pastoral Nomads and Development. London: International African Institute, 1975.

Paccou, Yves. Le recensement des nomades Mauritaniens. Paris: Groupe de Demographie Africaine, 1974.

Palebroux, R. Developpement de la production animale et des resources en eau dans l'est du Niger. Rome: Food and Agriculture Organization, 1972.

Papadakis, Juan. Agricultural Geography of the World. Buenos Aires: Papadakis, 1952.

__. Climates of the World and Their Potentialities. Buenos Aires: Papadakis, 1975.

Parkipuny, Ole M.L. Maasai Predicament Beyond Pastoralism: A Case Studv in the Socio-Economic Transformation of Pastoralism. Dar es Salaam: Institute of Development Studies, University of Dar es Salaam, 1975.

Parsons, Kenneth H. Customary Land Tenure and the Development of African Agriculture. FAO Report No. RP 14. Rome: Food ~Ad ~griculture organization, 1971.

__. "Economic Citizenship on the Land." Land Economics 30 (1954): 21-31.

__. The Political Economy of Agricultural Development. LTC Paper

No. 116. Madison: Land Tenure Center, University of Wisconsin-Madison, 1978.

Parsons, N. "The Economic History of Khama's Country in Botswana, 1844-1930." In The Roots of Rural Poverty in Central and Southern Africa, edited by N. Parsons and R. Palmer. Berkeley: University of California Press, 1977.

Pere, M. Animation feminine dans une societe villageoise traditionelle, le centre de Gaoua en pays Lobi, Haute Volta. Paris: Centre de Recherches Cooperatives, Ecole Pratique des Hautes Etudes, 1973.

Picard, Louis A. "Bureaucrats, Cattle and Public Policy--Land Tenure Changes in Botswana." Comparative Political Studies (1980): 313-356.

__. "Rural Development in Botswana: Administrative Structures and Public Policy." Journal of Developing Areas 13 (1979): 283-300.

Picardi, A.C. A Systems Analysis of Pastoralism in the West African Sahel: Evaluating Long-Term Strategies for the Development of the Sahel-Sudan Region. Annex 5. Cambridge, MA: Center for Policy Alternatives, Massachusetts Institute of Technology, 1974.

Pierre, C. Les produits de l'elevage en A.O.F. Paris: A. Challamel, 1906.

Piettre, M. Les bases d'un grand elevage colonial. Paris: IEMVT (files), 1929. Later published in Recueil de Medecine Veterinaire Exotique, no. 3 (July-September 1930): 125-137.

Pitte, Jean-Robert. Nouakchott, capitale de la Mauritanie. Paris: Department de Geographie, Universite de Paris-Sorbonne, 1977.

Planhol, Xavier de. "Saturation et securite: sur l'organisation des societes des pasteurs nomades." In Pastoral Production and Society, edited by Claude Lefebure. Cambridge: Cambridge University Press, for l'Equipe Ecologie et Anthropologie des Societes Pastorales, 1979.

Podlewski, M. "Etude demographique de trois ethnie paiennes: Matakam, Kapsiki, Goude." Recherches et Etudes Camerounaises 1 (1961): 1-70.

Pollock, Sir F., and F.W. Maitland. History of English Law Before the Time of Edward I. 2nd ed. Cambridge: Cambridge University Press, 1898.

Reboul, C. "Danger d'oasis? Aleas d'une politique de seden-

tarisation: le forage de Labqar au Senegal." Civilisation 28 (1978): 120-139.

Renard, P. Project for the Protection of the Lake Chad Kuri Cattle and the Extension of Its Breeding Throughout the Lake Chad Perimeter. Fort Lamy: Lake Chad Basin Commission, 1973.

Reutlinger, S. "Short-Run Beef Supply Response." American Journal of Agricultural Economics 60 (1966): 909-919.

Riddall, John. Introduction to Land Law. London: Butterworth, 1974.

Riddell, James C. Land Tenure and Access to Land in the Maqui-Wandala Project Area. MSU/USAID Mandara Mountains Research Report No. 3. East Lansing: Michigan State University, 1980.

__. Land Tenure Issues in West African Livestock and Range Development Projects. Research Paper No. 77. Madison: Land Tenure Center, University of Wisconsin, 1982.

Riesman, Paul. Freedom in Fulani Social Life: An Introspective Ethnography. Chicago: University of Chicago Press, 1977.

Rigby, Peter. "Pastoralism and Prejudice: Ideology and Rural Development in East Africa." In Society and Social Change in Eastern Africa, edited by P. Rigby. Nkanga Editions No. 4. Kampala: Makerere Institute of Social Research, 1966.

__. "Pastoralist Production and Socialist Transformation in Tanzania." In Jipemoyo (2/1980), edited by A.O. Anacleti.

Helsinki and Dar es Salaam: University of Helsinki, for Ministry of National Culture and Youth, Dar es Salaam, and Finnish Academy, 1980.

Robinson, Joan. Aspects of Development and Underdevelopment Cambridge: Cambridge University Press, 1979.

Roe, E. Development of Livestock, Agriculture and Water Supplies in Botswana Before Independence A Short History and Policy Analysis. Cornell University Occasional Papers. Ithaca, NY: Cornell University, 1980.

Rognon, P. "Essai d'interpretation des variations climatiques au Sahara depuis 40,000 ans." Revue de Geographie et de Geologie Dynamique 18 (1976): 251-282.

Rouchy, J.Y., and J. Tyc. Projet de modernisation de l'elevage en zone pastorale: creation d'une section statistique au service de l'elevage. Paris: Societe d'Etudes pour Developpement Economique et Social, 1973.

Rubel, P.G. "Herd Composition and Social Structure: On Building Models of Nomadic Pastoral Societies. " Man 4 (1969): 268 -27 3 .

Sachs, I. Pour une economie politique du developpement. Paris: Flamarion, 1977.

__. "Styles de vie et planification." Canadian Journal of Development Studies 1 (1980): 306-326.

Sall, Alioune. Elements pour un programme d'intervention dans le milieu pastoral: Nord Ferlo. Dakar: Secretariat d' Etat, Promotion Humaine, 1977 .

__. "Quel amenagement pastoral pour le Sahel." Tiers Monde 19 (1978): 161-169 .

Salzman, Philip C. "Movements and Resource Exploitation Among Pastoral Nomads. " Anthropological Quarterly 44 (1971): 18 5 -19 7 .

__. "Multi-Resource Nomadism in Iranian Baluchistan." In Perspectives on Nomadism, edited by W. Irons and N. Dyson-Hudson . Leiden, Netherlands : Brill, 1972 .

Salzman, Philip C., ed. When Nomads Settle: Processes of Sedentarization as Ad ~ . New York: J.F. Bergin and Praeger, 1980.

Sandford, Stephen. Keeping an Eye on TGLP. Gaborone, Botswana: National Institute of Research, 1980.

__. Management of Pastoral Development in the Third World. New York : John Wiley and Sons, 1983 .

__. "Welfare and Wanderers: The Organization of Social Services for Pastoralists." ODI Review [Overseas Development Institute, London], no . 1 (1978), pp. 70-87 .

Santoir, C.J. Les societes pastorales du Senegal face a la secheresse (1972-73). Dakar, Senegal: Office de la Recherche Scientifique et Technique Outre-Mer, 1976.

Sarraut, Albert. La mise en valeur des colonies francaises. Paris: Payot, 1923.

Schapera, Isaac. "Economic Changes in South African Native Life." Africa 1 (1928): 170-188.

__. A Handbook of Tswana Law and Custom. 2d ed. London: Frank Cass, 1970.

_.Native Land Tenure in the Bechuanaland Protectorate. Johannesburg: Lovedale Press, 1943.

Schneider, Harold K. Economic Man: The Anthropology of Economics. New York: Free Press, 1974.

__. "Livestock as Food and Money." In The Future of Pastoral Peoples, edited by J. Galaty, D. Aronson, and P. Salzman. Proceedings of a Conference held in Nairobi, Kenya, 1980. Ottawa: International Development Research Centre, for the Commission on Nomadic Peoples, International Union of Anthropological and Ethnological Sciences, 1981.

Servant, Michel, and Simone Serait-Vildary Servant. "L'environment quaternaine du Basin du Tchad." In The Sahara and the Nile, edited by M.A.J. Williams and Hugues Faure. Rotterdam: Balkema, 1980.

Shaw, Thurstan. "Hunters, Gatherers, and First Farmers in West Africa." In Hunters, Gatherers, and the First Farmers Beyond Europe, edited by J.V.S. Megaw. Leicester, England: Leicester University Press, 1977.

Shorter, Aylward. "Conservative Pastoral Societies." In East African Societies, edited by A. Shorter. London: Routledge and Kegan Paul, 1974.

Sisler, D.G. Some Economic Aspects of Managing Land, Cattle, Waterpoints and Arable Agriculture in Botswana: A Report to Cornell Waterpoints Survey Team. N.p., 1980.

Smale, Melinda. "Women in Mauritania: The Effects of Drought and Migration on Their Economic Status and Implications for Development." Mimeographed. Nouakchott, Mauritania: USAID, 1980.

Smith, A.B. "The Neolithic Tradition in the Sahara." In The Sahara and the Nile, edited by M.A.J. Williams and Hugues Faure, pp. 451-466. Rotterdam: Balkema, 1980.

__. "A Note on the Flora and Fauna from Karkarichinkat Nord et Sud." West African Journal of Archaeology 5 (1975): 201-204.

Smith, Susan E. "The Environmental Adaptation of Nomads in the West African Sahel: A Key To Understanding Prehistoric Pastoralists." In The Sahara and the Nile, edited by M.A.J. Williams and Hugues Faure. Rotterdam: Balkema, 1980.

Societe d'Etudes pour le Developpement Economique et Social (SEDES). Projet de developpement de l'elevage dans la zone d'elevage sedentaire du Mali. Paris: SEDES, 1977.

__. Projet de developpement de l'elevage dans la region de Mopti. Paris: SEDES, 1972.

__. Projet d'execution pour la creation du centre d'embouche de NIONO SEDES. Paris: SEDES, 1972.

Soleille, M. Projet de developpement dans la region de Dogoun Doutchi. Paris: Ministere de Cooperation/SCET, 1969.

Sorenson, M.P.K. Origins of European Settlement in Kenya. Nairobi: Oxford University Press, 1968.

Spencer, Paul. _omads in Alliance: Symbiosis and Growth Among the Rendille and Samburu of Kenya. London: Oxford University Press, 1973.

Spooner, Brian. "Towards a Generative Model of Nomadism." Anthropological Quarterly 44 (1971): 198-210.

Spray, P.R. Botswana As a Beef Exporter. Gaborone, Botswana: National Institute for Research, 1981.

Staatz, J. The Economics of Cattle and Meat Marketing in the Ivory Coast. London: International African Institute, 1959.

Stenning, Derrick J. "Africa: The Social Background." In Man and Cattle, edited by F.E. Zeuner and A.E. Mourant. London: Royal Anthropological Institute, 1963.

Stewart, C.C., with E.K. Stewart. Islam and Social Order in Mauritania. Oxford: Clarendon Press, 1973.

Stryker, J. Dirck. "The Malian Cattle Industry and Dilemma." Journal of Modern African Studies 12 (1974): 441-457.

Sutter, John W. "Commercial Strategies, Drought, and Monetary Pressure: Wo'Daa'Be Nomades of Tanout Arrondissement, Niger. " Prepublication draft, 1980.

__"Pastoral Herding in the Arrondissement of Tanout." ~imeographed. Zinder, Niger: USAID and Ministry of Rural Development, 1978.

Swidler, Nina. "Sedentarization and Modes of Economic Integration in the Middle East." In When Nomads Settle, Processes of Sedentarization as AdaPtation and Response, edited by P.C. Salzman. New York: J.F. Bergin and Praeger, 1980.

Swift, Jeremy. "Pastoral Nomadism as a Form of Land Use: The Twareg and Adrar or Iforas." In Pastoralism in Tropical Africa, edited by Theodore Monod. London: Oxford University Press, for International African Institute, 1975.

__. "Sahelian Pastoralists: Underdevelopment, Desertification, and Famine." Annual Review of Anthropology 6 (1977): 471-472.

Talbot, L. "Ecological Consequences of Rangeland Development in Masailand, East Africa." In The Careless Technology: Ecology and International Development, edited by M.T. Farvar and J.P. Milton. Garden City, NY: Natural History Press, 1972.

Tendler, Judith. Inside Foreign Aid. Baltimore: Johns Hopkins University Press, 1975.

Thema, B.C. "The Changing Pattern of Tenure of Tswana Social and Family Relations." Botswana Notes and Records 4 (1972): 39-43.

Toupet, Charles. "La sedentarisation des nomades en Mauritanie Centrale sahelienne." Thesis, Universite de Paris VII. Paris: Librairie Honore Champion, 1977.

Turton, D. "Response to Drought: The Mursi of Southwestern Ethiopia." In Human Ecology in the Tropics, edited by J.P. Garlick and R.W ~ tudy of Human Biology, vol. 16. New York and Toronto: Halsted Press, 1976.

United Nations. Demographic Yearbook. Rome: United Nations, 1980.

__.Patterns of Urban and Rural Population Growth. Population Studies No. 68. New York: United Nations, 19 8 0 .

___. Statistical Yearbook. Rome, 1980.

United Nations Economic and Social Council/UNDP/FAO. Tropical Grazingland Ecosystems. Natural Resources Research. Paris: UNESCO. 1980.

U.S. Agency for International Development. Eastern Senegal Livestock Project. AID Project No. 685-11-120-202. Washington, DC: USAID, 1974.

_. Mauritania: and Recommendations. Sahel Recovery and Rehabilitation Program. Washington, DC: USAID, 1974.

__. "North Cameroun Livestock and Agriculture Development." Project No. 631-0004. Mimeographed. Washington, DC: USAID, 1978.

_. Somalia: Central Rangeland Development. AID Project No. 649-0108. Washington, DC: AID, 1979.

__. [USAID/Dellum.] Tanzania Livestock Marketing and Development Project: An Evaluation. Washington, DC: A.L. Dellum and Associates, 1979.

__. [USAID/Devres.] Evaluation of the Kenya National Range and

Ranch Development Project. AID Project No. 615-0157. (Devres Contract No. AID/AFR-C-1558.) Washington, DC: G.H. Axinn et al., 1979.

__. [USAID/Devres.] Terminal Evaluation of the Masai Livestock and Range Management Project. AID Project No. 621-11-130-093. (Contract No. AID-soD-pDc-c-ol87.) Washington, DC: Devres, 1979.

U.S. Agency for International Development/Bakel. "Niger Range and Livestock Management Project Paper." Mimeographed. Niamey and Washington: USAID, 1978.

U.S. Agency for International Development/Bakel. The Workshop on Pastoralism and African Livestock Development. AID Program Evaluation Report No. 4. Washington, DC: USAID, 1980.

U.S. Agency for International Development/Senegal. Joint Assessment of U.S. Assistance Programs in Senegal. Final Report and Annexes. Dakar: USAID, 1980.

Vaillant, J.R. La gestion d'un service des eaux. Ouagadougou, Upper Volta: CIEH, 1969.

Vennetier, Pierre. Les villes d'Afrique tropicale. Paris: Masson, 1976.

Viguer, Pierre. L'Afrique de l'ouest. Paris: Maison Rustique, 1961.

Wadoud, O. Changements sociaux: le devenir du pastoralisme. Nouakchott, Mauritania: USAID/RAMS, 1980.

Waller, Richard. "The Masai and the British 1895-1905: The Origin of an Alliance." Journal of African History 17 (1976): 529-553.

Walls, James. Land, Man and Sand: Desertification and Its Solution. New York: Macmillan, 1982.

Wane, Yaya. Les Toucouleur de Fouta Tooro (Senegal). Dakar: IFAN, 1969.

Ward, Lester F. Pure Sociology. New York: Macmillan, 1970.

Widstrand, Carl G. "Pastoral Peoples and Rural Development: A Case Study." Vetenskapssamhallet I (Uppsala) Annales 17 (1973): 35-54.

Willet, A.B.J. "Agricultural Group Development in Botswana." Gaborone, Botswana: Ministry of Agriculture, 1981.

Williams, Martin A.J., and Hugues Faure, eds. The Sahara and the

Nile. Rotterdam: Balkema, 1980.

Wisner, Ben. "An Example of Drought-Induced Settlement in Northern Kenya." In Abbar: The Somali Drought, edited by I.M. Lewis. London: International African Institute, 1975.

World Bank. World Tables. 2d ed. Baltimore: Johns Hopkins University Press, 1980.

Zeuner, F.E. A History of Domesticated Animals. New York: Harper and Row, 1965.

Zeuner, F.E., and A.E. Mourant, eds. Man and Cattle. London: Royal Anthropological Institute, 1963.