THE PASTORAL PARADOX: LIVESTOCK DEVELOPMENT POLICY AND NOMADIC PASTORALISTS IN NIGERIA

A Dissertation

Presented to

the Faculty of the Graduate School

University of Missouri-Columbia

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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May, 1986

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ABSTRACT

Policies and programs designed by the Nigerian government to enhance livestock production of nomadic producers have been largely unsuccessful. The intention was to increase local production, but efforts have actually been directed more toward destroying nomadic pastoralism rather than improving it. Policies and programs have been based on the assumption that the present systems are inefficient and wasteful and therefore need to be changed. It was the philosophy that the changes introduced would result in increased and enhanced livestock productivity.

The research problem centers on understanding the paradox inherent in the government stance toward enhancing livestock production in Nigeria. We seek to understand why livestock policies are hostile to nomadic pastoralists--destroying and replacing their system--instead of improving them. This dissertation provides explanation for the contradictory stance of the Nigerian government to increase and enhance local production and antagonistic policies toward local producers.

Livestock development strategies which are often technological in nature have been sought for non-technical problems. There is need, we conclude, to de-emphasize technological solution. More efforts need be focused on solution based on enhancing the existing systems. Investigation into the problems facing livestock/pastoral production should be location-specific so as to reflect and better utilize local resources.

ACKNOWLEDGMENTS

The successful completion of this research and the attainment of my educational career would not have materialized without the support of a number of persons and institutions.

Professor Jere L. Gilles has contributed in various ways to my career as a graduate student at Missouri. Not only did he serve as Chairman of my dissertation committee, he has been a personal friend who identified with my personal problems. His sustained interest in the study and the constructive criticism of earlier drafts are gratefully acknowledged.

I thank Professors Daryl Hobbs, Rex Campbell, Harold Johnson, and John Hall for serving on my committee and for their contributions to this study.

Institutions directly associated with my educational career are acknowledged. Scholarship fund came from the Kwara State Government of Nigeria; Ahmadu Bello University granted me a study fellowship; the Rural Sociology Department of the University of Missouri-Columbia offered me a research assistantship. To all these institutions, my profound appreciation.

Several other individuals contributed directly and/or indirectly to the completion of my doctoral degree. My wife and my best friend, Taiye, provided an atmosphere of love, care, and emotional support during the course of this

study. She made it all possible. To her and my two dauhters, 'Kemi and 'Femi, who understood why I was never at home when they needed me, I am eternally indebted.

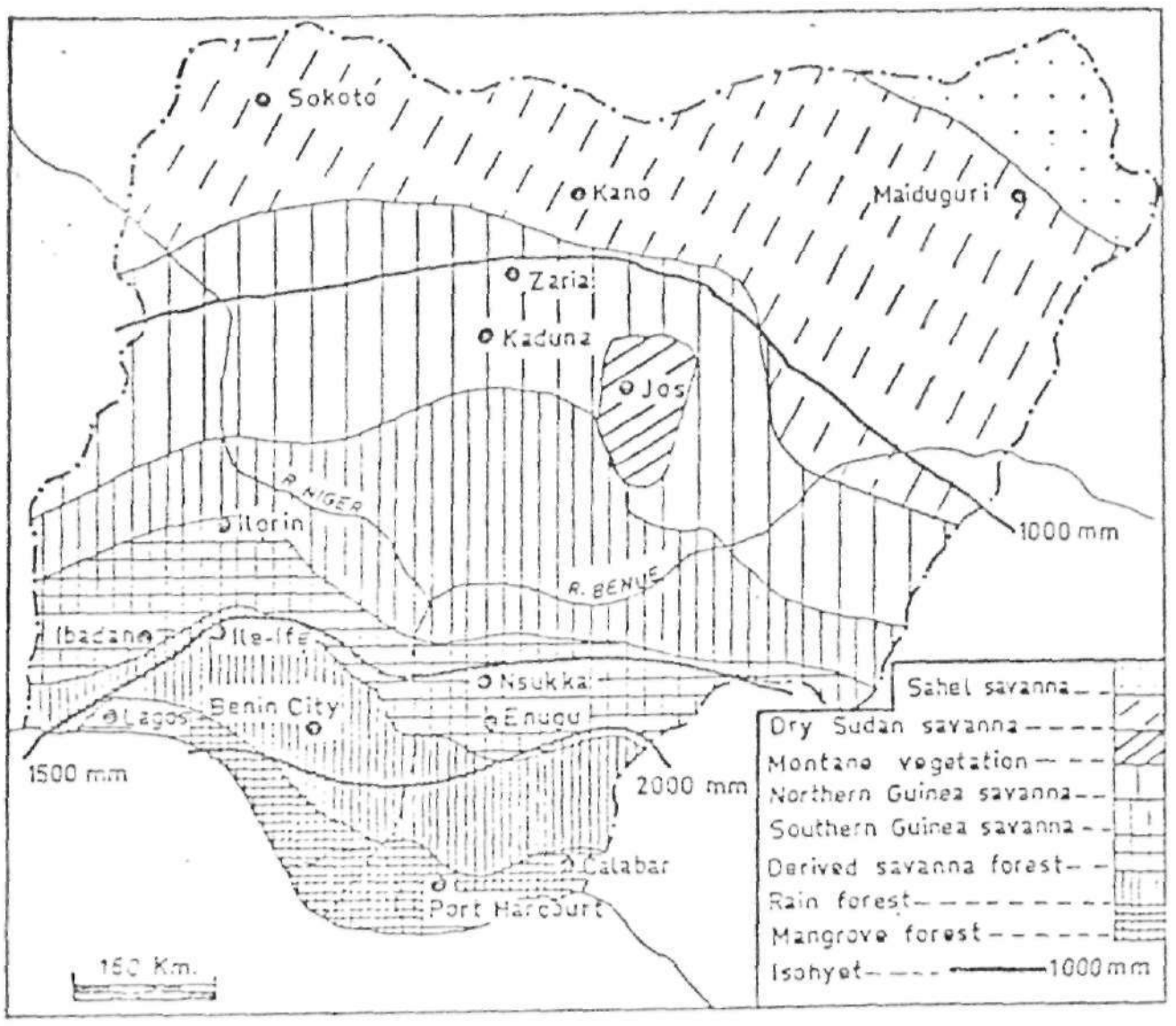
To all my friends and family in the United States and Nigeria: Richard Shafer, Adiel Mbabu, Tukur Baba, Max Mmuya, Dayo Phillip, Isaac Megbolugbe, Titi Yakubu, Matthew Ajibero, Peter Kinrin, Patrick Ajibade, "Cocoa," Folu Adu, Ben-Yusuf, the Gerke family, Mrs. Abigail Yakubu, Chief and Mrs. Michael Gefu, and many more, I am very grateful for your contributions.

Needless to say that the contents of this research do not in any way represent the opinion of the aforementioned institutions and individuals.

To

Onihunwa, Emife, Oferege and the evergreen memory of Yakubu

Figure 1
Major ecological zones of Nigeria



Adapted from Udoeyop (1975)

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CHAPTER ONE

GENERAL INTRODUCTION AND STATEMENT OF RESEARCH PROBLEM

Introduction

Policies and programs designed by the Nigerian government to enhance livestock production of nomadic producers have been largely unsuccessful. The intention was to increase local production, but efforts have actually been directed more toward destroying nomadic pastoralism rather than improving it. Policies and programs have been based on the assumption that the present systems are inefficient and wasteful and therefore need to be changed. It was believed that the changes introduced would result in increased and enhanced livestock productivity. Yet evidence abounds that these alternative approaches (ranching, grazing reserves, sedentarization schemes, etc.) are no better strategies. Indeed, the alternatives being pursued by the Nigerian government do not result in improved local livestock production rather they produce conditions that run contrary to the goal of enhancing productivity (Breman and de Wit, 1983; Haaland, 1977; Hickey, 1978; Ayuka, 1978; Helland, 1978; Newsome, 1971).

Government action that so often resulted in undermining the local production systems has frequently underestimated the productivity of the nomadic form of production. The benefits to be derived from the alternative strategies by better management and by modernization have

too frequently been overestimated.

The belief that nomadic pastoralism is inefficient is "resulting in mixed farming and settlement schemes that demand unnecessary and disruptive transformations in the characteristic pastoral way of life" (Hickey, 1978:95). Yet nomadic producers have been known to maximize their human and herd populations in multi-ethnic settings without causing environmental destruction or social conflict.

Modern forms of production have been created to replace local methods of raising livestock. Policies that favor and encourage a "western-styled" system of livestock production often top the priority list of government's livestock program. These policies (see below) are clearly stated in the different National Development Plans (Federal Government of Nigeria, 1961; 1970; 1975; and 1981). The programs and projects that result from these policies have continued to receive increased government support. Yet little evidence exists to show that modern production systems are better than the existing strategies (Haaland, 1977). The underlying reasoning for government livestock policies and programs needs to be understood. Insight into the activities of government can be gained by examining the basis for livestock policies. Among policy makers and researchers there is a general recognition of the need to enhance livestock production in order to provide much needed animal protein. Changes are usually suggested by the Nigerian government and some livestock researchers in bringing about improved livestock production.

One way in which changes in the livestock situation has been brought about is through the policies of the Nigerian State. Another approach centers on research activities into the problems and constraints facing the livestock industry.

This study hopes to contribute to our understanding of planned social change by looking specifically at what goes on in the livestock sub-sector of Nigeria's economy especially of the (predominant) pastoral nomadic form of production. The relevance of the study becomes clear when close attention is given the worsening food (protein) situation. It is to the problem of protein shortage that the Nigerian government has turned with the intent of improving local production to meet food needs of the people.

THE RESEARCH PROBLEM

The research problem centers on understanding the paradox inherent in the government stance toward enhancing livestock production in Nigeria. An attempt is made to understand why livestock policies are hostile to nomadic pastoralists--destroying and replacing their systems--instead of improving them.

Pastoral production is an important part of the agricultural sector of the Nigerian economy. Yet nomadic pastoralism is one of the least understood of all the productive sectors of the Nigerian economy. The literature on pastoral production is scanty and often non-analytic.

Over the years, much concern has been expressed about the deplorable state of livestock production in Nigeria. Although the question of pastoral development has been addressed by pre-colonial, colonial, and post-independence governments, very little research has explored the nature of pastoral production especially, the nomadic variant. Much of the literature on pastoralism in Nigeria is limited to accounts of its spatial and ethnic environment (see, for example Hopen, 1958; Stenning, 1959; Dahl and Hjort, 1976; van Raay, 1973; Delgado, 1979). Little effort has been made to give an adequate and penetrating socio-economic and political analysis of the pastoral production system. This is required to lay out the present (and past) constraints to pastoral production and to define the role government in shaping (reshaping?) the ŧworld' of the producer.

Nomadic pastoralism, as practiced by the Fulani of Northern Nigeria, is a system of livestock production which has as its main strategy the movement of animals (usually cattle, sheep, and goats) and humans from one ecological zone to the other. This movement is in response to the seasonal variation in weather conditions and forage availability. The nomadic pastoral production strategy has been practiced for several generations and continues to be practiced. However, pastoral nomadism has been contracting especially since the turn of the century (see Awogbade, 1981; Galaty and Aronson, 1981; Frantz, 1978; Mohammed, 1976; Sule, et al., 1976). Varied reasons have been

advanced for this decline. One is the increasing pressure put on the land by industrial and agricultural expansion. Availability of grazing land has been estimated to have decreased from 67 percent of the available grazing land in 1951 to 50 percent in 1976 while a further decrease to 39 percent is predicted for 1986. The worsening crisis of grazing land shortages has been summarized in a recent report by the Federal Livestock Department:

> By 1986 the situation (shortage in grazing land) is likely to become very serious. Against 58.5 percent of the total land areas of the country required to feed the national herd of 9 million head, only 50.3 percent will actually be available for grazing. This means there will be a deficit of 8.2 percent. Thus there will be overstocking of the rangelands, leading to heavy grazing, reduction in the protective vegetation cover over the soil, the development and acceleration of erosion and intensification of the process of desertification (Federal Livestock Department, quoted in Okaiyeto, 1982:524).

The rise of a strong state influence/control on the movement of pastoralists, land tenure rights, increasing incidence of conflict between pastoral producers and settled agricultural people are some other factors limiting pastoral nomadism today.

Cognizant of the growing population coupled with the expanding industrial and agricultural sectors and the need for a reliable source of animal products to the population at large, the government of Nigeria has intervened in the pastoral production system. The main interest of the Nigerian State has been to achieve higher levels of livestock production (Federal Government of Nigeria, 1981). The provision of locally produced beef for the urban,

largely civil servant population may be another interest of the Nigerian State. The ultimate beneficiary could then be government, which generates higher revenue (cattle tax) from increased pastoral activities as well as urban consumers who have enhanced access to beef at lower or subsidized cost. Little benefit seems to accrue to low income populations (Horowitz, 1979).

Often interventions are made in livestock production (and indeed other agricultural sectors) without taking into consideration locally available information and resources directly related to the area to be subjected to intervention. The need to draw upon such existing local knowledge-base when external interventions are made has been emphasized (See Ndagala, 1985; Swift and Maliki, 1984; Salzman, 1985). Frankel emphasized this point several years ago while assessing the Kongwa Experiment in the East African Groundnut Scheme that

> It cannot be too strongly emphasized that those who are asked to implement the plan were unable at any time to escape from the fundamental concepts on which it was originally based. Whatever mistakes were made were due primarily to the nature of the task, not to the men who had tried to carry it out... (Cited in Horowitz, 1979:XII).

Similarly, the failure of the huge Mokwa agricultural project in Nigeria has been largely blamed on "a failure to improve on local African agriculture. The plain truth is that very little, if any, was known before the scheme started about the existing agriculture in the Mokwa area" (Baldwin, 1975:166).

Government intervention in pastoral production may be

compared with the Mokwa and Kongwa projects. Projects aimed at enhancing the social conditions of pastoralists tend not to seek the input of the producers. More often than not, development planning in general and pastoral development planning in particular is "top down," and this may produce unintended effects. It has been argued that when local conditions and resources are not taken into consideration in the formulation of projects, the interests and needs of project benefactors may not be adequately served. Argued Shear:

> Planning from the top down, while useful in identifying macro constraints to development, clearly has several limitations. Local societies can be changed and even destroyed by the development process. The impact which technological change brings about at the village (or to the pastoral group) is seldom well understood. And indeed the lack of local feedback and evaluation often brings about significant dislocations at the local level and can presage the doom of any large-scale development effort from the outset (Shear, 1978:4).

A similar observation has been made by Sandford, (1983) concerning the incorporation of pastoralists' inputs and felt needs into plans of pastoral development:

> ... not only is the concept of fulfilling pastoralists' express needs valid in itself, but paying attention to these needs would also incorporate pastoralists' own knowledge into the planning and monitoring systems. There is a good deal of evidence that the usual bureaucratic procedures fail to do this and, as a consequence, planning mistakes are made and opportunities to learn lessons are missed, which need not have been if pastoralists had been properly consulted and full use made of their knowledge. However, usually in planning systems, although lip-service is paid to consulting pastoralists, there are no real incentives for planners, and the pressure on them, are to produce plans involving major capital expenditures quickly; less attention is paid to

> how effectively they can be implemented later (Sandford, 1983:260).

One of the policy objectives of the Nigerian government for the livestock sub-sector is the

> encouragement of private ranching for beef, dairy, sheep and goat through the provision of improved pastures and fodder facilities for grazing, improved breeding stock and settlement schemes for the nomadic herdsmen... and the establishment of livestock service centres in a bid to provide assistance to 10,000 nomadic families to settle down permanently (Federal Government of Nigeria, 1981:106-107).

During the 1981-85 National Development Plan period, the Federal Government planned to acquire 5 million hectares of land for implementing these programs. Similar programs of land acquisition were to be implemented by the state governments. Close to 1,250,541 hectares of new grazing reserves was planned while "over one million hectares were also earmarked for (re)settling the nomadic herdsmen."

These programs and projects are based on perceptions of the problems confronting livestock production in the country. One of the major problems identified is the nomadic system of livestock production itself. Improvement of production has been sought through attempts to alter the migratory behavior of nomadic pastoralists.

From the above, it can be clearly observed that the Nigerian government livestock policies have been geared toward undermining the present systems of production. Government policies toward nomadic pastoralists may be related to the notion held by technocrats about the inefficiency of nomadic pastoral production system (see

David-West, 1982).

Other explanations may be found in the attempt of the state to exercise political control over these producers. Government may impose certain sanctions such as stringent quarantine regulations, animal movement restrictions, fines and increased cattle tax on nomadic pastoralists so as to discourage pastoral nomadism. Government intervention may also be a response to the population pressure which could free more grazing lands for agro-industrial and urban expansion.

All these may be an indication that the relationship between science and policy is a complex mix of social, political, and economic dynamics with specific interest groups influencing and pushing for certain policies. The positions of different groups and their opposition to one another may, therefore, be seen as what McCrea and Markle (1984) described as "outcomes of political, ideological and economic relations."

Given the above observations, the central concern of the present study is to understand the inconsistency in government interventions (policies, programs, and projects) in pastoral production. We seek to provide explanation for the contradictory stance of the intentions of the Nigerian government to increase and enhance local production and the antagonistic policies towards local producers.

OBJECTIVES OF THE STUDY

In this study, the major goal is to understand the inconsistency in the stance of the Nigerian State in enhancing livestock production in the country. We attempt to explain this paradox by addressing the following: 1) the nature and changing forms of livestock production systems; this will help us contextualize government policies and programs for alternative strategies; 2) the history of livestock policy from colonial to present period; this will enable us understand the nature of and changes in the policies of government; 3) the stance of government regarding the existing production systems and the policies that have been adopted; 4) the rationale for government policies, examined in relation to some perspectives on social change and development to see how these help us to interpret and understand better the position of government; 5) the role of research in the paradox. Since technology is the key to modernization, research has a role to play in the development of technology. The extent to which livestock research has informed the stance of government is investigated.

mportance of livestock in the Nigerian economy

Livestock production is the source of about 40 percent of the national income derived from agricultural production and provides about 58.5 per cent of national meat consumption-- contributing $7.4 billion to the country's GNP in 1983 alone.

Despite the size of the Nigerian livestock population, serious deficiencies in local meat and meat product supplies have been recognized (Federal Government of Nigeria, 1981; Olayide, 1976). There exists a wide gap between the level of local production and national needs and demand. For instance, the total meat demand in 1980 was estimated at 388,990 tonnes in contrast to a supply of 275,340 tonnes for the same period-- a deficit of 113,650 tonnes. Similarly in 1981, a supply of 327,840 tonnes of meat was estimated. The supply estimate falls far short of the estimated demand of 438,340 tonnes for the same year (Federal Government of Nigeria, 1981:104). This represents a deficit of 110,600 tonnes (Table 1). It should, however, be noted that these figures reflect only the demand for meat vis-a-vis local supplies. If the nutritional need (as against effective demand) for meat is weighed against the supply, the deficit would be more alarming!

The daily per capita protein intake of the average Nigerian falls "far short of officially estimated minimum requirements of 70 grams of total protein and 35 grams of animal protein per person per day" (Olayide and Olayemi, 1975:252). Only 8.4 grams of the total 53.8 grams of protein consumed by Nigerians is derived from animal sources. This suggests that the contribution of animal products to protein consumption is less than 16 per cent. The country is, therefore, not only a net importer of livestock and livestock products but also has a deficiency of daily per capita protein intake.

ESTIMATED LIVESTOCK POPULATION, PRODUCTION AND MEAT SUPPLY AND DEMAND, 1980 AND 1985

	Population (million)		*Off-take %*		*Carcass Kg.*		*Meat* *Demand '000 m tons*		*Supply '000 m tons*		*Deficit '000 m tons*		*Annual Estimated Growth Rate 1980-81*	
	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	*Supply*	*Demand*
1. Cattle	9.00	12.13	7.75	9.00	170	180	185.02	211.22	133.80	156.20	51.22	55.12	3.35	2.83
2. Goats	23.00	38.70	30.00	32.00	10	11	58.60	61.20	37.40	41.10	21.20	20.20	21.27	0.88
3. Sheep	8.20	11.70	25.00	27.00	13	14								
4. Poultry	162.40	175.70												
Small Scale			130.00	135.00	0.82	1.00	99.20	109.32	71.64	79.18	27.37	30.11	1.11	2.00
Commercial			200.00	205.00	1.50	2.00								
5. Pigs	0.86	1.05												
Small Scale			30.00	60.00	40.00	40.00	46.16	56.60	32.50	51.36	13.66	5.24	4.35	2.53
Commercial			45.00	50.00	45.00	50.00								
Total Meat Demand, Supply and Deficit	—	—	—	—	—	—	388.99	438.34	275.34	327.84	113.65	110.60	—	—

Source: Fourth National Development Plan 1981-84

The deficiency in local meat supply has pushed the Nigerian government to take a number of steps to alleviate shortages. One such measure has been the importation of livestock, meat and meat products as short-term measures to combat shortages. These huge imports are an effort to supplement local protein sources.

Local deficits in protein intake, coupled with the huge import bills and the corresponding drain on foreign reserves calls for a critical appraisal of policies involved in the development of the livestock sub-sector. The number and variety of livestock in Nigeria as well as the abundance of natural pasture offer unique opportunities for dealing with local shortages. Any effort made to enhance local production could contribute toward making Nigeria self-reliant and self-sufficient in meat and livestock production.

We examine nomadic pastoralism because the bulk of Nigerian livestock (mainly ruminants)is in the hands of nomadic producers. These migratory producers constitute about 90 percent of the total stock raising population and have about 85 percent of the country's livestock population. The bulk of meat and meat products comes from the herds of nomadic pastoralists.

Migratory pastoralism as a major strategy of livestock production and resource management technique has been justified as a rational strategy of animal production. It has been asserted by some scholars that nomadic pastoralism is a "widespread response and a way of producing human food

which does not demand large capital investment and does not require a heavy dependence on foods suitable for human consumption to support livestock during periods when plant growth is limited" (Dyson-Hudson and Dyson-Hudson, 1980:51). Nomadic pastoralism has been considered as "ecological adaptations to the rigours of a stern environment" (Phillips, 1961:101). This production strategy has also been observed to "maximize the use of resources" (Konczacki, 1978:15) To what extent can these kinds of assertions be considered relevant to the changing realities of the Nigerian society? What sort of changes need be made in order to enhance the present system of nomadic pastoralism? What are the likelihood that programs and projects (for example, ranching schemes, grazing reserves, sedentarization, etc.) aimed at enhancing production will be fully utilized by or made readily accessible to the producers? These and other related issues need be addressed in order to come to terms with the issues of planned change among pastoral producers.

POLICY AND PLANNED SOCIAL CHANGE

As was observed earlier, the Nigerian government to reduce the shortage in protein supply by intervening in pastoral/livestock production. Interventions by the Nigerian State have been a long-term measure intended to boost local livestock production. Interventionist strategies have been adopted by both the colonial and indigenous governments of Nigeria to change the direction

and form of livestock production. Intervention has often been with the intention of achieving increased and improved livestock production. However, interventions have not resulted in the enhancement of livestock/pastoral activities. Interventions may have some unintended consequences that could adversely affect the present production systems. Interventions may indeed propose changes that are inconsistent with local strategies, values, and customs.

One particular type of action is that which seeks to replicate commercial livestock production systems that exist in the "West". Livestock production in Western countries, notably North America, Australia, New Zealand, United Kingdom, Denmark, and Spain, characteristically adopts the ranching system of herding. This form of herding, which involves the use of supplementary feeds and the use of fenced grazing has been introduced in Nigeria and numerous other pastoral communities in Africa. Ranching schemes have been initiated in Nigeria by both the colonial and federal governments with an intention of "modernizing" the livestock industry. This form of livestock raising has been observed to be "discrepant with traditional practice both in the containment of the animals and in the production of special fodder crops on lands otherwise suited for agriculture" (Horowitz, 1979:14).

However, it has been argued that the present form of pastoralism cannot meet Nigeria's livestock and meat requirements, especially as practiced by the nomadic

producer. The view has been expressed that traditional systems of pastoral production need give way to more efficient systems. Ranching schemes, grazing reserves, breeding programs, and feedlot operations are among alternative strategies that have been suggested as ways of enhancing the local production of livestock (see, for example, Alao, 1975; Awogbade, 1981; and Oyenuga, 1973).

Another set of interventions concern those that involve introducing innovations in range management practices in which specific patches of land are allocated to certain pastoral individuals and/or families and groups. Participants in such projects are usually required to give up many of their age-long pastoral practicies such as their migratory strategies, to decide in certain ways on the herd size and herd composition. In turn for their participation, pastoralists get "improved pasture... and, in some projects, planting of nutritious fodder, veterinary services, wells, credit, rationalized slaughter, market services, and such intangibles as functional literacy" (Horowitz, 1979:18).

Efforts by the Nigerian Government to attract pastoral nomads to settle permanently continued with the provision of infrastructural amenities such as improved roads, subsidized supplementary feeds and fodder and salt licks. The building of Livestock Improvement and Breeding Centers (LIBC) to improve, multiply, and distribute animals to producers was particularly intended to serve as a model for pastoralists who would avail themselves of services

provided by the LIBCs. All these interventions by the state had been with one principal motivation-- that of enhancing pastoral/livestock production by sedentarizing the nomadic pastoralist and thereby improve and increase livestock production in the country.

SOURCES OF DATA AND METHODS

It was not feasible at the time of the study to undertake formal and structured field work in order to generate primary-source data due to logistical, financial, and time constraints. The research relied primarily on secondary data sources. A content analysis based only on formally published research on livestock production since independence was undertaken. The use of formal research reports represented the best source available for the present study. More relevant materials such as special agency reports, bulletins, mimeographs, and other commissioned studies related to livestock were inaccessible at the time of the study. Also, the researcher's past field experience with nomadic pastoralists in Northern Nigeria was utilized.

Analysis of formally published literature (including government and research documents on livestock and pastoral production in Nigeria) was undertaken with the intent of mapping the historical processes of pastoral development in the country since colonial period. A narrative account of the past positions of the state regarding pastoral matters was undertaken. In this regard, government documents

related to pastoral development within the general picture of economic development were examined. Documents include the various National Development Plans, position papers by government agencies, and progress reports on the Development Plans.

Content analysis is a research technique for making inferences by systematically and objectively identifying specified characters within text (Stone, et al. 1966). Krippendorff (1980:21) defined the method of content analysis as: "a research technique for making replicable and valid inferences from data to their content."

We utilized a structured document-analytical procedure in which a set of mutually exclusive and exhaustive categories had been constructed for analyzing the articles (see Appendix 2). We then recorded the frequency with which each of these categories is observed in the journal articles that were reviewed. An underlying goal, as in any other similar content analyses, is to take a verbal, non-quantitative document and transform it into quantitative data with the results to be presented in tables containing frequencies and percentages, in the same manner as survey data (Bailey, 1982). For us, inferences are made about the research findings of scientists that have worked in the area of livestock and/or pastoral production in Nigeria.

Following our earlier observation that livestock production is dominated by nomadic pastoralists, our examination of published research findings is intended to show how much research has actually focused on the

predominant system of production. Content analyses fucused mainly on the substance of researchers' investigations into the different aspects of livestock production. In doing this, we constructed twelve variables with which livestock research activities were evaluated. A detailed description of this construct is provided in Appendix A.

SUMMARY

We have thus far discussed the importance of livestock and the need for enhancing local production in Nigeria. The position of nomadic pastoralists as producers of the bulk of Nigeria's livestock was underscored. It is this group of pastoral producers that has been targeted in an effort to enchance livestock productivity. We described the Nigerian government position on pastoral/livestock production as hostile to and aimed at destroying the existing local systems of production. There is need to understand the grounds upon which government promotes drastic changes in the existing systems of pastoral production. These considerations show that we need to examine the nature of Nigerian State policies on livestock and the role of livestock research. A review of livestock policies promoted by the British colonial and post-colonial administrations is necessary in order to understand government concerns about the livestock situation. Appraisal of the research agenda that has been drawn to address government concerns will be carried out in part by doing a content analysis of published livestock research findings. Analyses of

published livestock/pastoral research findings are intended to show the nature of livestock investigations and their role in shaping the position taken by the Nigerian government.

We proceed in Chapter 2 with a discussion of the forms of pastoral production. A discussion of the existing forms of pastoral production and of rationale is needed in order to fully comprehend the context within which government policies are formulated. The production systems that have been the object of government policies need be examined.

Chapter 3 describes the changing conditions of pastoral production from colonial times to post-independence periods. A discussion of the interests of the Nigerian government as well as interests of the core world are presented. The arguments for and against nomadic pastoralism are presented and analyzed. The chapter closes with an evaluation of government stance on the nomadic pastoral system.

The fourth chapter examines the role of research in explaining government policies on livestock production. Technological advancement often has been considered the key to development in livestock (indeed, agriculture) within the modernization perspective. Technology is usually the outcome of research. The chapter examines how research can help us understand the position taken by the Nigerian State regarding "modernizing" nomadic pastoral production system. A description of the research setting in Nigeria is undertaken.

CHAPTER TWO

PASTORAL FORMS OF PRODUCTION

Introduction

The purpose in this chapter is to describe the strategies of the different pastoral production systems. Particular attention is fucused on the strategies and rationale of nomadic producers. It is essential to understand the structure and rationale of the existing forms of pastoral production in order to properly locate the government stance on pastoral/livestock development policies and programs. An examination of the present systems of pastoral production will enable us evaluate the appropriateness of government policies and programs for enhancing livestock production. An understanding of the pastoral forms of production (especially the nomadic variant) will enable us see some of the contradictions of government livestock policies and programs.

Pastoralists in Nigeria employ a variety of production techniques. There is the group that is primarily nomadic. The form of production adopted by this group differs from that used by settled or semi-settled pastoralists.

The Fulani are only a small proportion of the pastoral population of Africa. In West Africa, where Fulani populations are concentrated, these pastoral nomads are found in the savannah grasslands, an area that stretches from Senegal through the Gambia, to Niger and Chad with

high concentration in Senegal, Gambia, Mali, Mauritania, Niger, Northern Nigeria, Cameroons and the central portions of Chad.

The name Fulani is the Hausa term for this group of nomads. The pastoralists refer to themselves as "Fulbe" (singular is "Pullo"). In this study we shall adopt the name Fulani following its common usage in different parts of Nigeria and in the literature on the pastoral nomads of Northern Nigeria. There are a variety of Fulani dialects but the Fulani language is generally known as "Fulbe."

Where reference is made to pastoral people or nomadic pastoralists in Nigeria, we allude to the predominant cattle-herding ethnic group called Fulbe or Fulani. There are a number of distinctions in the classification of Fulani pastoral producers. In general, the distinction is based on pattern of movement or settlement--pastoral nomadism in its pure form, semi-nomadism (or semi-sedentarism) and settled pastoralism (Konczacki, 1978).

THE NOMADIC FULANI

Fulani pastoral producers, whose entire life revolves around their livestock and live in impermanent dwellings are referred to here as nomadic pastoralists (or pastoral nomads). Their subsistence and wealth derive solely from their herds of cattle, sometimes supplemented with small holdings of sheep, goats, or camels. They live primarily on dairy produce, surpluses of which are sold or exchanged for grain in the markets of agricultural villages (Stenning,

1959).

Pastoral nomadism has been succinctly described by Johnson, (1969):

> ... (it) is an adjustment to a particular set of ecological conditions, at a given technical level, along a continuum of numerous potential economic possibilities, ranging from a completely sedentary agricultural life with no movement at one extreme to a hypothetical (and non-existent) nomadism having no need for use of agricultural products at the other. Along this continuum, an infinite variety of different forms of nomadism, with varying combinations of animal husbandry and agriculture could be found, each adjusted to particular conditions... All nomads share certain common characteristics that distinquish them from sedentary communities associated with them. All nomads live in impermanent dwellings during all or the major part of the year... All nomads herd flocks of sheep, goats, camels or cattle, or some combination thereof, devote the major portion of their time, energy, and thought to the care of their animals, and, while they may trade, raid, or sow and harvest themselves to obtain their agricultural necessities, they derive the major share of their subsistence from their flocks. Finally, all nomads follow regular patterns of movement closely adjusted to the seasonal availability of pasture and water in various zones throughout the year.

The main characteristic of the nomadic Fulani is the constant movement of herds and family units to places of abundant pastures. Stenning describes this feature of the pastoral nomad vividly:

> In the dry season herds are dispersed southwards in response to shortages of pastures and water, and congregate again in the north to avoid tsetse fly in the wet season. A wide variation in the distance and impetus of these movements is found, depending on local variations in savannah habitat, but seasonal movement is a consistent feature of Fulani pastoralism... These are not the only factors which determine seasonal movement; presence of bovine disease and availability of markets are also taken continously into account (Stenning, 1959:4).

THE SEMI-SEDENTARY FULANI

The second type of pastoral system is practiced by the semi-sedentary Fulani. Members of this group raise livestock as well as cultivate crops (mainly grain and vegetables). The herd size of this group of Fulani tend to be smaller than that of nomadic pastoralists. Similarly, their farm size is considerably smaller than that of the agricultural community. Stenning (1959:7) provides a good description of some of the characteristics of the semi-sedentary pastoralist:

> A common feature of the semi-sedentary Fulani community is the split household and the split herd. The household remains in the home area where the farm lies, somtimes keeping a small herd of milch cows. His married or unmarried sons deploy the herd away from the home area in the wet or dry season, returning to the locality in time to help with farm clearing or harvest. Where these duties cannot be carried out by the personnel of the family itself, co-operation in herding is sought from kinsmen, or paid labour engaged to help in farm work. Sometimes (during the period between clearance and harvesting) the whole family resides in the area in which its farm is located; stores its grain in the granaries of sedentary kinsmen and friends; moves off to dry-season pastures, collecting the supplies it needs throughout the dry season, and returns to its home area as the wet season becomes due.

Some authors (for example, Stenning, 1959; Dahl and Hjort, 1976; Hopen, 1958) have expressed the view that cattle losses (mainly through bovine disease) have forced some *former nomadic pastoralists to take up semi-sedentary (or* semi-nomadic) mode of life. Stenning, however, goes on to elaborate the point that semi-sedentarism may not necessarily be the result of loss of cattle. The case of

the pastoral Fulani that moved on to the rich grasslands of the Jos Plateau in Northern Nigeria is an example of semi-sedentarism based on factors other than poverty.

In 1910 a group of Fulani pastoralists found the Jos Plateau to have abundant grazing and water to be free of tsetse fly. Utilizing these resources to their advantage, their seasonal movements decreased considerably and they were able to increase their herds. Markets for their surplus dairy products became available by the presence and growth of the tin-mining industry in the area. Thus, favorable pastoral conditions made extensive seasonal movements unnecessary.

THE SEDENTARY FULANI

A third group of pastoralists consists those who practice settled pastoralism and whose economic activity involves mixed farming. Movements of animals is limited to the vicinity of the homestead and is done by a few members of the family. Occasionally, livestock is taken care of by the cowherds, shepherds, or goatherds who specialize in their tasks. (Krader, 1968; Konczacki, 1978). Hired labor is used when settled Fulani have to take up employment other than herding.

A group that may be included in this category of settled pastoralists is that which consists of "livestock entrepreneurs". These people may or may not be Fulani who have invested substantially in livestock (usually cattle). They are usually employed in the private or public sector,

but entrust their stock to settled Fulani. These absentee pastoralists often come to terms with herders on how compensation is to be paid for the services of the herder. In most cases little monetary payment is made for the services of the Fulani herdsman. A common practice exists whereby progeny of stock are divided among the Fulani "manager" and the "absentee pastoralist" on agreed terms.

In sum, a pastoralist, for our purposes, is one whose livelihood is derived primarily from livestock raising. Pastoralists raise animals either as the main form of subsistence, or as a combination of both livestock and crop production. Instances where small numbers of livestock are raised by farmers or civil servants on farm lands have not been considered here. Such small holdings as well as herds that form part of an artificially organized commercial enteprise--large-scale capitalized schemes such as ranching, feedlot operations, and other forms of livestock fattening programs are excluded from our consideration. These forms of pastoral production do not rely on natural pasture as the primary source of animal feed. For detailed discussion of the classification and pattern of social organization of pastoral people, see, for example, Johnson (1969); Stenning (1959); Hopen (1958); van Raay (1973); Frick (1979); Delgado (1979); Oxby (1975); Krader (1968).

PRODUCTION STRATEGIES AND RATIONALE OF PASTORAL NOMADISM

The production process of the nomadic pastoralist

entails an interwoven relationship between economic activities and social relations. This network of relationship not only features relations of production, but it also includes the processes of distribution, exchange, and consumption.

The unit of pastoral production is the family/household. This unit comprises the household head (who is usually a man) and his wife or wives and their children. However, the unit may include the wives of married sons and their young children. Normally as soon as a man's son is old enough to perform the tasks of herding, he could establish a separate household if he so desires. This new household head may maintain his old father as a dependent, or his father may, along with his junior sons, maintain his own household. (Hopen, 1958:55).

The general pattern of the division of labor is such that women engage in food processing and milking cows, while men manage the herd. Women engage in tasks such as the grinding of grains, preparations of meals, milking the cows and processing milk into yoghourt, butter, and cheese. It is the task of women to sell surplus dairy products in the market for cash or in exchange for grains. Young children assist women in their daily tasks. The household head (usually male) makes decisions concerning herd management. It is the head of the household who decides when and where to move the herd; he decides when to cull animals especially if such livestock is in danger of dying. The task of herding is jointly performed by the older boys

and the head of the household, although it is the responsibility of the household head to delegate tasks of herding to other members of the family.

Stenning has described the pattern of division of labor among Fulani pastoralists:

> Men have to do with cattle, their seasonal movements, daily pasturing and watering, and veterinary care. Women have to do with milk and its marketing, in addition to their domestic tasks of food preparation and the care of the homestead both at rest and on the move. Adult men are herd-owners and managers, male children and adolescents are herdsmen. Adult women are dairy women and purveyors of milk, female children and adolescents are dairy maids (Stenning, 1959:103).

The pastoral nomad's production strategy relies heavily on the utilization of free pasture which minimizes costs while maximizing the use of pasturage and water. One reason for using open pasture is the fact that nomadic pastoralists have no secure titles to land. They must therefore utilize common pastures and water where such resources are available. In an attempt to maximize the use of water and pasture, periodic and patterned movements are made. The needs of the different animal species will largely determine the pattern of movement and resource utilization. For example, cattle are raised mainly on grass and require frequent watering. They need be grazed in grasslands over which watering points are adequately distributed. Camels on the other hand need to browse and seldom graze. They need only be watered sparingly. Sheep and goats live on both grass and leaves of trees and bushes (Konczacki, 1978).

The frequency of movement depends upon the size of the

pastoral group. Family size varies between five and seven persons for the sedentary and semi-sedentary groups and between eight and ten person for the nomadic group. The former groups have relatively smaller herd sizes (between 15 and 50 cattle, 20 to 40 sheep and goats, and a few chicken). The nomadic Fulani on the other hand have larger herd sizes. Holdings vary between 60 and 300 cattle (Adegboye, et al., 1978). Larger groups or herds will more rapidly exhaust the local supply of forages, and hence will move more regularly. Therefore, among the factors determining herd group's movements are the combination of animal being herded, the seasonality of the natural regime, the physiography of the areas and the spatial and temporal quality and quantity of grazing and water resources (UNESCO, 1979).

Pastoral nomads use their animals to convert grasses and shrubs, which could not be otherwise utilized by humans, into usable food and fibre. Pasture is converted into nutritional, consumable products, the production of which is economical as much of the inputs that goes into production usally have no alternative use (Crotty, 1980; Spooner, 1973). Nomadic pastoralists store their main source of food and sustenance on the hoof, that is, domestic animals which can be moved whenever vegetation and water is available and can be utilized when a need arises (Fumagalli, 1977).

The importance and social value of the cattle in the establishment and reproduction of social relations of the

pastoralist is evident in the daily interaction and expressions of pastoralists. It is the duty of the Fulani not only to bear children but also to increase their wealth in cattle so that this symbiotic relationship may be continued indefinitely. Thus in an important sense, argued Hopen (1958:26-27):

> ... the pastoralists feel that they hold their cattle in trust for future generations and they will say they are entitled to use the resource of the corral only in a frugal way, for by living lavishly they are jeopardizing the inheritence of unborn generations. The herdsmen regard the Fulbe-cattle relationship as a diatomic unity in which the destruction of either part of the unity will inevitably lead to the destruction of the other-- ±if one harms the cattle one harms the Fulbe.' They also say ±If the cattle die the Fulbe will die,' and perhaps their strongest statement on the value of cattle-- ±cattle surpass (in the widest sense) everything, they are even greater than one's father and mother...' Quite apart from their economic value it would be almost impossible to overstress the symbolic importance of cattle in their integrative aspect. Ownership of cattle gives membership in the society and their loss results in expulsion (Emphasis added).

The pastoral nomad therefore considers it a necessary task to maintain a herd of optimum size and structure relative to the range available and the consumption needs of their population (Konczacki, 1978). Pastoral activities are hence carried on with great diligence and dexterity. Fulani pastoralists are known to have a wealth of acquired knowledge and skills that are utilized in the management of their herds (Horowitz, 1979; Konczachi, 1978). Desirable fodder and water are sought and animals led to them, diseases and accidents of all sorts are consciously avoided or their result treated. Herds are protected against the

attacks of wild beasts; calvings are assisted to help cows have easy births. Pastoralists milk cows judiciously to provide milk for human consumption as well as make adequate provisions for lactating calves (Stenning, 1959).

A principal concern of pastoralists is the continuity of their holdings. Some measure of insurance against emergency situations is usually taken. A variety of livestock species are often kept in large numbers to insure against total loss of animals in the event of a major disaster such as drought, epidemic outbreaks or famine. It is not likely that all livestock species would be equally vulnerable to different crisis situations. A quotation from Spencer of the evidence of a Samburu elder to the Kenya Land Commission on the issue of destocking and the need to keep minimum number of livestock clearly illustrates the pastoralist's desire to keep as many animals as possible:

Capt. Wilson:	If your cattle go on increasing and the grass gets finished, what will you do?
Nibilei:	I would still keep my cattle. I do not want them to die. I want to look after them. They are our life. As the government likes shillings, so we Samburu like cattle.
Capt. Wilson:	Would you rather have 300 cattleor500 starving ones?
Nibilei:	I would rather have a thousand starving ones until God gives us grass, because if a man has lots of cattle, and some die, he still has some left, but if a man has a few cattle and they die, he has none left.

This classicillustration of the Samburu pastoral nomad's practice of "herd maximization" is very much true of the pastoral nomads of Northern Nigeria. It underlines the strong determination of the pastoralists to utilize, to their advantage, resources at their disposal to produce and insure against unforeseen disasters and calamities. The conditions under which the pastoral nomads maximize available resources have been discussed in detail by Swift, (1972) and Oxby has summed them up:

> First, when the rains return after a period of drought, there is a speedy recovery, and a large percentage of females conceive: so that 500 cattle which were starving before the rains will produce many more offspring than 300 "healthy" cattle (even allowing for a few of the 500 dying of starvation, and a few not conceiving).
>
> Secondly, given that pasture is usually owned in common, and animals are usually owned individually, and given that there is not usually the power structure that would enable any control of herd sizes, then there is nothing to stop an individual increasing his herd size beyond the carrying capacity of his fair share of the available pasture: the individual gains, and the whole group shares the losses (Oxby, 1975:7).

Another reason for pastoral enterprise to increase without limiting the number of animals owned is associated with prestige: the more animals a man can boast about, the more important he is since he lives "outside or in the fringes of a monetary economy and usually attaches greater importance to the number of his stock than to their productive efficiency" (Nestel, et al. 1973:14). Moreover, and associated with the nomadic behavior of the pastoralist, cattle raising on a fixed area was "impracticable in Northern Nigeria and if cattle were kept

in one place for a length of time they lost condition. Hence the Fulani and other herds wander from place to place seeking fresh pasturage" (Dunbar, 1970:103). It follows, therefore, that in the absence of any concrete ways of absorbing losses during disaster periods, the only rational way for the pastoralists in coming to grips with the realities of natural disasters is a strategy of herd maximization. Until more feasible and practicable alternatives are worked out, continued efforts in persuading pastoral nomads to discontinue their present strategies of pastoral production might not meet with any substantial success.

Although the economy of the Fulani nomad is based primarily on cattle, it also relies to some extent, on smaller ruminants, sheep and goats. Again, the keeping of such variety of livestock species can be associated with the need for protection and insurance against bad years. It is not probable that all species of livestock would be equally adversely affected by an outbreak of an epidemic or some other form of natural disasters. Certain livestock are more prone to some diseases or epidemics than other species. Sheep and goats are known to have better resistance to diseases and certain predators than cattle, for example (Devendra, 1970). Furthermore, smaller stock provide "easy cash flow" for the pastoralists, as small animals can be sold with relative ease (as it is more affordable to the poorer sector) to provide spending money as well as meat for the household.

SUMMARY

There are three primary forms of pastoral production namely: nomadic, semi-sedentary, and sedentary pastoralism. These forms of livestock production are practised by the Fulani of Northern Nigeria, but by far, the nomadic Fulani category constitutes the most important group in terms of livestock holdings. While nomadic Fulani are always on the move, the semi-sedentarized Fulani have temporary homesteads which they return to in the rainy season. The sedentarized Fulani on the other hand have permanent homes and cultivate crops along with raising some livestock. The strategies adopted by these pastoralists are not the same as there are variations in the herd size of thier holdings. The nomadic Fulani usually hold the largest herd size followed by the semi-sedentary group. Herd size tends to correspond with family size, with the nomadic Fulani having the largest family and herd sizes.

The difference in the form of production calls for adoption of various strategies that best meet production needs. The dissimilarities that exist in the forms and strategies of the three systems of pastoral production suggest that change introduced will have to recognize the specific situation within which production takes place. Policies and programs aimed at changing and/or enhancing nomadic pastoralism, for instance, need be conceived in the context of that system of production. Distinction made

between production systems will require different sets of policies and programs in bringing about meaningful changes in these systems of production. These policies and program emphasis may change over time as shifts in interests occur.

We proceed in the next chapter with an examination of the changing positions and interests of the Nigerian State and those of the core world and how these positions affect livestock producers. The stance of government is evaluated along with some of the arguments that have been advanced in favor and against nomadic pastoralism.

CHAPTER THREE

CHANGING CONDITIONS OF NIGERIAN PASTORALISM

Introduction

The past one hundred years have seen important changes in pastoral societies the world over. The issue of planned social change among pastoral producers has constituted a subject of concern for pastoral scholars as well as local and international agencies (see for example, Frantz, 1982; Ministry of Agriculture and Natural Resources, 1973; Leys and Bates, 1974; Nelson, 1973; Meillassoux, 1974; Spencer, 1974; van Raay, 1975; Monod, 1975; Riesman, 1977; Dyson-Hudson and Smith, 1978; FAO, 1976; Horowitz, 1976; Berg, 1976; Sanford, 1977, 1976; Lovejoy and Baier, 1976; Scott, 1979; Galaty and Salzman, 1981, and Salzman, 1980). The intensity and dimension of change may differ from region to region, but one common phenomenon remains the incorporation of pastoral societies into the world economic system. There has been development of marketing of pastoral products, migration to urban centers, and more recently, the creation of industrial centers. The pastoralist may be led to sell part of his livestock on the market or when, totally impoverished, he may be forced to enter an urban labor market where he can sell his labor power. The results are the same: the development of monetary and market relations. Existing economic and social relations are changed very dramatically (UNESCO, 1979).

In the preceding chapter we undertook a discussion of the major systems of pastoral production so that it would be possible to locate the relationship of government policies with the existing system. A further understanding of the positions taken by the Nigerian government regarding livestock development is facilitated by examining changes in government interests and policies. The history of these shifts in interests, policies and programs and how they have affected pastoral production is analyzed in the present chapter.

A description of the changing conditions of pastoralism is presented. The extent to which these changing interests and policies of the Nigerian government are reflections of the interests of the core world is examined. The ways in which changes in interests and policies impinge on the present livestock production systems are explored.

Our discussion of changes in pastoral production will start with the protectorate period in Nigeria. Up to the time of British rule, pastoralists' social and economic life did not undergo the kind of changes in production strategies that was experienced under colonial domination (Dunbar, 1970; Frantz, 1981).

The experience of pastoralists prior to 1900 was that of conflict with communities far removed from the immediate environment of the pastoralist. Constant raids were launched on their herds as inter-ethnic conflict was deepened (Hopen, 1958). The incidence of conflict and raids

adversely affected pastoral activities and was worsened by the widespread rinderpest epidemic of 1887-1893 and agravated by the famine of 1913-1914.

Generally, the activities of pastoral nomads have been affected by historical events in which, they either played a part or had to accommodate themselves. Thus, the pastoralists' life has been adapted to the exigencies of their very participation in the activities of the world of sedentarized agriculturists (through the exchange relationship that existed between then) and to the demands of the state(Stenning, 1959).

It follows therefore, that drastic changes were experienced by pastoralists especially as a result of frequent raids on their herds, natural disasters, and more importantly, the demands of the indigenous and British colonial administrations. While the economic and social organization of the pastoral nomad was oriented toward the maintenance of as large herds as possible, the intent of the British overlords was to force market involvement while ensuring the payment of cattle tax. Cattle tax (Jangali) was imposed on pastoralists and based on the herd size. A proper cattle tax assessement can be expected to be a difficult exercise because of the difficulty in determining the correct number of livestock an individual herder or herding unit owns. The unit of tax assessement was the household, with the household head responsible for making payments. Before the advent of the British, tax was paid in kind with livestock and/or animal products. The

taxes and tributes that accrued to the traditional rulers (Emirs) were collected by representatives of the traditional ruler. But after the establishment of the protectorate, cattle tax was demanded in cash. The British administration still made use of the traditional rulers to collect cattle tax. The demand for cash as cattle tax may be seen as on of the measures taken by the colonial administration to promote large pastoral herds among pastoralists (Stenning, 1959). Some of the more important changes that occured (mainly in the form of policies and programs embarked upon by the colonial administration) are highlighted below.

COLONIAL PERIOD, CONTROL, AND POLICIES

The colonial era in Nigeria can be dated between the establishment of the Protectorate in 1900 and the attainment of political independence in 1960. The British colonial administration, had taken at least indirect control of the area inhabited by the pastoral Fulani by 1903. At this time the ravages of the rinderpest epidemic were still very evident, so one of the first concerns of the colonial administration was to bring bovine diseases under effective control. The colonial government initiated disease control programs in order to raise livestock production and ultimately generate higher income through the imposition and collection of a cattle tax.

The Fulani were consequently brought into the market economy as they sold their stock for "modern currency" in

order to pay taxes. The introduction of cash seems to have forced the pastoralists to raise more stock than they needed. Additional animals seems to have been raised and sold in order to pay their taxes. As higher cattle tax was levied, more animals needed to be raised and sold by pastoralists so as to meet government demands. It may not be an overstatement to suspect that pastoralists were assessed a relatively higher tax during the earlier periods of colonial domination. This is due to the ease with which tax assessment can be done on the basis of the size of herd owned. It was relatively more difficult to do tax assessment on agricultural products than on the number of animals owned. The incidence of the cattle tax must have made it necessary for pastoralists to expand their production, while government derived most of the benefits from increased production.

In 1909, veterinary services were established within the then newly constituted Agricultural Department. Veterinary services offered included both curative and preventive care, through campaigns against diseases as well as the control and treatment of outbreaks. Vaccination and dipping centers were established for the treatment and care of animals as well as the prevention of serious bovine diseases. Initially, the services were provided at minimal or no cost to the pastoralist. In later years, small fees began to be charged for certain veterinary services.

Realizing the importance of the livestock sub-sector, the colonial administration embarked upon the establishment

of Farm Centers. These centers provided feed supplements, mineral and veterinary supplies. Advice was also given in the centers as to how to improve the production of local livestock. Farm Centers were established in different parts of Northern Nigeria between 1921 and 1934.

In addition to the Farm Centers, programs of breed improvement were started. Livestock improvement was sought through selection of quality local breeds and by crossbreeding exotic animals with indigenous ones. Emphasis was put on crossbreeding as it was thought that the characteristics of the exotic breed (which was considered more productive than the indigenous breeds) would be passed on to the crosses. The issue of adaptability of both the exotic breed and their crosses to the environmental and climatic conditions did not seem to be prime at the time crossbreeding programs were initiated.

In 1927, the Shika Stock Farm was established to provide improved breeds to the Farm Centers. The basis for establishing the Farm Centers may be viewed as an attempt to use Farm Centers as models to persuade pastoral nomads to settle permanently. Little success was, however, recorded by both the veterinary services and the Farm Centers. The intended beneficiaries of these programs refused to "take advantage" of the services (Awogbade, 1982).

In the early 1900's the authorities saw a need to sedentarize nomadic pastoralists. Dr. Growers, the then Resident of Sokoto Province in the Northwest, arguedthat

the future of livestock in Nigeria hinged on the sedentarization of the pastoralists. It was not until 1942, however, that the idea of settling nomads was actually put to work in the Jos area. Jos is a plateau with rich grassland and soil. It was also supplied with abundant all-year river and underground water sources. The area was also tse-tse free. Each (pastoral) producing unit or household was allocated four hectares of pasture land in the area with the hope that pastoralists would not only settle permanently but would also engage in mixed farming. At this time, a milk processing plant was operating in Vom (near Jos). The plant had anticipated a constant supply of raw milk from the herds of the pastoralists that were to be settled. However, the anticipated supply of milk did not materialize. The allocated patches of land were soon taken over by mining companies that quickly sprang up following the discovery and mining of tin in the Jos area.

This was one of the earliest attempts made by the colonial administration to settle pastoral nomads. Attempts continued but these met with resistance from the pastoralists (Dunbar, 1970). The pastoralists seem to have anticipated changes in their economic and social organization that would follow sedentarization. The difficulty the colonial administration faced in their attempts to settle pastoralists was one of the terms of reference of the expert study group of the International Bank for Reconstruction and Development (World Bank) between 1949 and 1954.

At the time of the World Bank study, conventional wisdom held that the free-range management system used by the pastoralist was counter-productive, wasteful (ie. resource-depleting), and undesirable. People felt that it should be discontinued by all possible means. The World Bank study did not only reiterate the assumptions of the colonial administration about pastoral nomads, but also suggested concrete ways of settling pastoralists.

Based on these assumptions the World Bank team recommended the establishment of such facilities as marketing channels, watering points, veterinary posts and, most significantly, the establishment of grazing reserves in major producing areas of Northern Nigeria. In recommending the establishment of grazing reserves, the bank argued that reserves would make it easier to provide the pastoralists with social infrastructure as well as to control and/or treat bovine diseases. This way, the pastoralists' basic needs would be better served, it was contended. Also, it was felt that livestock improvement efforts would be enhanced (eg. stock upgrading, crossbreeding with exotic animals, restocking, etc.). The general idea behind the grazing reserve program was that better management practices would be used under conditions favorable to livestock production. There would be feeds and fodders, regular mineral and water supply; veterinary services would also be readily available to enhance animal health.

The recommendations of the World Bank team were

accepted and put into action shortly after independence with the establishment of the Ruma Kukar-Jemgarai grazing reserve. Since then, the concept of grazing reserve has been strictly applied to the problems of pastoral and livestock production in the country. It is evident therefore that the assumptions held by colonial administration concerning pastoral nomadism had been passed on to the newly independent Nigerian administration. The new State shared the same notion that pastoral nomadism is inefficient and needed to be radically altered. Consequently, the development programs embarked upon by the post-colonial Nigerian administration reflected the already existing antagonistic attitude toward pastoral nomads.

Between the 1930's and the 1950's the colonial government embarked upon several stock-raising schemes in Northern Nigeria, but

> none was mounted on a sufficiently large scale to make any drastic or far-reaching changes in the cattle situation. Some small 'multiplication centers' were started with the purpose of upgrading stock, but the scale of operations was so small that effects were not felt beyond a limited range (Dunbar, 1970:122).

These multiplication centers still exist to date under the name Livestock Improvement and Breeding Centers (LIBC). These LIBCs have a variety of sheep, goat and cattle breeds that are bred for improved progeny. The improved breds are intended for distribution among small stock holders, especially those that live around the LIBC. One of the author's visits to a typical LIBC revealed that much less breed improvement is actually done than is claimed.

Not only is breeding and animal conditioning minimal, the distribution of "improved breeds" to local farmers is almost non-existent. Only one stock holder (a civil servant) in the LIBC vicinity is known to have gotten any animal from the Center. Moreover, observation of records and the physical conditions of the animals showed morbidity and mortality rates to be high. This is probably a major reason for the apparent little success of the Livestock Improvement and Breeding Center project.

At this point we focus attention on the part played by the private sector in the development of the livestock industry. The first attempt to establish commercial ranches was made in 1912 when the traditional ruler of Bornu (Northeastern part of Nigeria) transported some cattle and sheep to Lagos (in the South) by rail. He made a substantial profit of about 90 per cent (Dunbar, 1970). Numerous requests were received by the then Governor of the Protectorates of Northern and Southern Nigeria, Frederick Lugard, for permission to establish large-scale commercial ranching schemes. These requests were usually for very large expanses of land and usually proposed to operate such ranches in the Australian or American style. For example, in 1913, a request was made for "not less than 2,400 square miles of grazing land... within say 150 miles of present or projected government railways" (Dunbar, 1970:104-5). Approval for such huge land area was not given by Lugard. His decision may have been influenced by the fear that the colonial administration would lose control of certain land

areas if several requests had to be granted. Also, Lugard did not want to defy native laws which prohibited the sale of large pieces of property to expatriates. This last reason was particularly important because Lugard's experience in India and East Africa suggested that large-scale European enterprises, especially in East and South Africa had resulted in widespread disapproval and unrest. The colonial government did not want to risk political upheaval in Nigeria by allowing large-scale commercial enterprises.

Commercial ranching in the real sense of the word began in 1914 with the establishment of the African Ranches Limited. However, the company was forced out of business and subsequently sold its assets to the colonial government in 1923. The performance of the ranch was not favorable when compared with that of the pastoral Fulani. For example, in 1920, the colonial government visited the ranch and reported that although the "cattle were in very good condition, ...they did not differ materially from the native-owned herds... The ranch cattle were no more protected from rinderpest and other diseases than were native cattle" (Dunbar, 1970:117). Much of the pastoral policies and programs conceptualized by the Colonial administration were inherited and pursued with vigour by the independent administration. The commitment of the new government to the pastoral programs started by the colonial administration is evident in the different National Development Plans (see for example, Federal Ministry of

Information, 1962; Federal Ministry of Economic Development, 1981).

Pastoral/livestock programs and projects can be said to have been conceived and developed outside of their Nigerian context. Often support comes from external interest groups. The push for the "modernization" of pastoral production often accompanied externally funded programs and projects with implications that are either unanticipated and/or counter-productive. Grazing reserve programs were launched in order to offer incentives to nomadic pastoralists to settle permanently. However, little or no permanent settlement seems to have takenplace (See Horowitz, 1979). The often cited example of the advantages derivable from the ranch system over nomadism is the ease of control of diseases and predators in ranch animals. However, an outbreak of epidemic could be more devastating to a flock on the ranch than it would be to nomadic herds. Herds of nomadic pastoralists could move more quickly in response to epidemic, or movement could be planned so as to avoid disease-prone areas. The animals on the ranch tend to be no more protected from diseases than those of nomadic pastoralists (Dunbar, 1970). Attempts made by both public and private concerns to "modernize" livestock production have met with varying degrees of successes and failures. These strategies, policies, and programs which the post-colonial government inherited from their predecessors are the subject of focus in in the section that follows.

POST-COLONIAL POLICIES AND PROGRAMS

Following the attainment of political independence in October, 1960 the newly independent administration expressed no immediate concern about pastoral production and nomadic pastoralism. The newly independent government was occupied with its commitment to rapid economic development in general terms. This was clearly reflected in the 1962-68 First National Development Plan which had as its major objectives certain macro-economic goals:

> To surpass the present growth rate of the economy of 3.9 per cent per year to achieve a rate of 4.0 per cent per annum, and if possible, to increase this rate;
>
> To achieve this aim by investing 15 per cent of the GDP, and at the same time endeavouring to raise per capita consumption by about 1 per cent per annum;
>
> To achieve self-sustaining growth not later than the end of the third or fourth national plan;
>
> To develop as rapidly as possible opportunities in education, health and employment; and to improve access of all citizens to these opportunities;
>
> To achieve a modernized economy consistent with democratic, political, and social aspirations of the people in a manner condusive to a more equitable distribution of income both among people and among regions; and
>
> To maintain a reasonable measure of stability through appropriate fiscal and monetary policies (Federal Ministry of Information, 1962:23).

From the above statement of development objectives, one can find no clear-cut reference to specific agricultural program nor is there any discussion of pastoralism. At independence, however, the World Bank report was reviewed and adopted as a consolidated program named the "Fulani

Amenities Program Proposals." This program proposed to offer, among other things, range improvement, fodder conservation for dry season feeding, improved pasturage, water development, and provision of supplementary feeds. The cost of this proposal was put at 3.5 million pounds sterling, and responsibility for the execution of the program was divided. Development corporations in Nigeria and their agencies were to look after marketing, purchases of local stocks and fattening; while the Ministry of Animal and Forest Resources was responsible for other matters related to cattle development as well as veterinary services (Awogbade, 1982). A bill that legitimized this proposal was passed in 1965 and called the "Grazing Reserve Law". The intent of the law has been described by Awogbade (1982:13) as:

> ... to enable the Ministry of Animal and Forest resources as well as the native authorities to create grazing reserves, so that the grazing rights of cattle owner can be fully protected by law. Besides, it was intended to reduce the constant friction between cattle owners and farmers. Provisions were made for pasture development and permanent water supplies. Another incentive which the law provided was to encourage gradual sedentarization of nomadic Fulani... Economic benefits in terms of regular marketing of their surplus products were to be provided. And where feasible, they would be allowed to form cooperative. It was in pursuance of the above, therefore, that two forest reserves in Ruma and Jangarai... were merged into one to form the nucleus of what is now Ruma-Kukar-Jangarai grazing reserve.

The 1960's saw a number of projects in Northern Nigeria developed in collaboration with foreign agencies, among which was the United States Agency for International Development (USAID). "Several range management

demonstration sites have been opened in former forest reserves in Katsina, Sokoto, and Plateau provinces. These are attempts to settle the Fulani and to introduce them to advanced practices. They are veritable ±community ranches,' but there is probably not space enough in Northern Nigeria to accommodate all Fulani in this way" (Dunbar, 1970:122). The limited success recorded by the attempts of the Nigerian government to settle nomadic Fulani is a clear indication of the seriousness the land tenure issue has always posed. The land holding and land utilization pattern two decades ago was such that grazing land was more readily available than it is at the present time. The pressure put on land by industrial, agricultural, and urban growth is even more today due to the many competing uses land could be put to.

Immediately following independence several ranches were created in collaboration with international agencies. Three of the ranches (two of which were funded by the USAID) will be referred to here. Dunbar (1970:122) has succinctly described these projects:

> The Bornu Ranch, one of the AID projects, is a breeding ranch twenty-two miles southeast of Maiduguri in the Gombole Forest Reserve. It was begun in 1963, and complete Nigerian control was planned at the termination of the original Six-Year Plan in 1968. By 1967, 20,000 acres had been fenced, and 300 Wadara cows had been purchased. An eventual herd of 1,000 breeding cows is planned, and this would mean a total herdof about 4,000, including bulls and young. The cattle would be supported not only by natural forage but also by improved pastures and cultivated fodder crops.
>
> The other AID-supported ranch is the Manchok "fattening ranch" of 5,820 acres sited in a previously

> unused area just under the western scarp face of the Jos Plateau. It was also started in 1963. Although sited in a tsetse area, the ranch can be cleared and kept free of tsetse flies. The grass resource has not been diminished by severe over-grazing, as has much of the Jos Plateau. The Plateau can not only be counted on to supply cattle to the ranch for fattening, but it provides cottonseed for feed as well. In 1967 there were about 560 head of cattle on the ranch, and an actual annual production figure of 5,000 is planned. Cattle are removed by road and rail to Kaduna...
>
> The German venture, the Mokwa Ranch, is not only a "fattening ranch" but a research station as well. This ranch was established in 1964 on lands which were involved in the ill-fated Niger Agricultural Project in the early 1950's... In 1967 there were 600 cattle on this ranch of approximately ten square miles, and an eventual annual production figure of 5,000 is envisioned."

A situation arose in which foreign interests in the programs of the Nigerian government continued to grow. These foreign interests can be documented in government statements of policy or development plans. All projects that were embarked upon after World War II were state-supported, with foreign agencies contributing part of the capital.

In the years of the second, third, and fourth National Development Plan periods (1970 through 1985) similar statements were made concerning pastoral and livestock production.

The primary objective of government had always been to increase livestock production and thereby make more beef and dairy products available to the Nigerian population, particularly urban consumers. The concern of government had been typically expressed in such words as "the eradication of tsetse fly, the control of trypanosomiasis and other

diseases and the settlement of nomadic herdsmen" (Federal Government of Nigeria, 1970:121). More specifically, government has identified a factor militating against increased and improved livestock production in the country:

> Among the most serious deterrents to the breeding and improvement of cattle is the presence of tse-tse fly in the southern well-watered parts of the country. The majority of cattle are therefore concentrated in the seasonally dry and less humid belts across the extreme northern part of the country where conditions are too arid for tse-tse fly. The herdsmen are however forced to migrate in search of water and better pastures for their animals during the dry season and this nomadic way of life is not conducive to increased productivity and general livestock improvement. (Federal Government of Nigeria, 1970:121).

The removal of this bottleneck seemed to have been the main preoccupation of policy makers and major areas of policy were emphasized to tackle the problem:

> establishment of large-scale feed depots and livestock multiplication farms for the production of parent stock;
>
> subsidization of livestock inputs such as feeds, breeding stock, vaccines, drugs, equipment, etc. to livestock products;
>
> encouragement of private ranching for beef, dairy, sheep and goat through the provision of improved pastures and fodder facilities for grazing, improved breeding stock and settlement schemes for the nomadic herdsmen;
>
> intensification of veterinary and livestock production extension services... (Federal Government of Nigeria, 1981:106).

Of all the proposed government activities in the livestock sub-sector the establishment of grazing reserves seemed to have been emphasized the most. For example, the Third National Development Plan of 1975-80 proposed the establishment of a total of 22 million hectares in grazing

reserves. By the end of 1977, only 2 million hectares had been acquired by both the State and Federal governments. A 1978 report on pastoral nomads in Kwara State, submitted to the Federal Livestock Department, suggested that grazing reserves planned for the state be implemented without further delay and that nomadic pastoralists settled around villages (Federal Livestock Department, 1978).

The policies and programs of the Nigerian State on livestock production may have been influenced by the different views that have been expressed about nomadic pastoralism. Arguments in favor and against pastoral nomadism have been advanced. It is to these arguments we turn attention to next. The strength and weakness of the arguments are examined in relation to government stance on livestock production.

VIEWS ON NOMADIC PASTORALISM

Arguments against nomadic pastoralism

Nomadic pastoralism has been criticized. Critics include international agencies such as the World Bank and the United States Agency for International Development as well as operators of the Nigerian State apparatus. The production system has been referred to by these critics as a counter-productive strategy for raising livestock. A variety of arguments have been advanced by antagonists of the nomadic pastoral system.

Some of the more anti-herder (anti-nomadism) sentiments have been expressed by Allan (1965) who argued

that "nomadic pastoralism is inherently self-destructive." Examples of antagonistic expressions directed toward nomadic pastoralism come from Pratt and Gwynne (1977). They contend that "in most cases... the people (nomadic pastoralists) are tied to a way of life that limits their own development and that leads to overstocking of the land."

Commenting on the Nigerian situation, a well respected and very influencial Nigerian animal scientist, Professor V. A. Oyenuga, has argued that ranches and such similar commercial-oriented and capital intensive strategies could lead to increased livestock production. He, therefore, gave his full support to ranching schemes by contending that "the required production level can no longer be met by adhering solely to the traditional practice... It calls for well-managed, heavily capitalized ranch systems utilizing feedlots on an intensive management basis" (Oyenuga, 1973:395).

The recent decline in nomadic pastoralism has been cited as an evidence of the fragility and inevitable replacement of the nomadic strategy of livestock production. Contraction of nomadic pastoralism has been due in large part to the increasing pressure on grazing land. Formerly grazed land patches have been put into alternative uses for industrial, agricultural, and urban development projects. Grazing land has been observed to have declined from 67 percent of Nigeria's total land in 1951 to an estimated 39 percent in 1986 (Federal Livestock Department,

1978).

Alao (1973) contended that "the traditional methods of allowing breeds of livestock... to fend for themselves is most undesirable." He therefore called for a 'modern' method of production which "requires high and superior management ability with economic production for the market in view" (Alao, 1973:54). These views concerning the need to "transform a ±traditional' livestock system to improve human nutrition (especially) in Tropical Africa" (Sullivan, et.al., 1980), has been widely expressed. Referring to the Angolan situation, de Carvalho, (1974) observed that a widely held idea in development planning is that 'the traditional patterns of cattle raising in the pastoral regions of Africa can and should be changed so that these regions become larger producers and direct suppliers of meat... Consequently the policy for the African pastoralist area has been to replace the present "traditional" small African cattle-raising units (family herds) with "modern" large-scale cattle ranches' (de Carvalho, 1974:200).

There is a general view of nomadic pastoralists as primitive and conservative because of their resistance to certain changes that have been introduced. Indeed, some researchers consider resistance to change as a common general characteristic of the pastoralist. They have thus encouraged the State to adopt policies that introduce huge commercial ranching and other pastoral projects, in an attempt to improve the production system. It has therefore, been argued by antagonists of nomadic pastoralism that

change in the system of pastoral nomadism is inevitable if any improvement in production is to be attained. Change has been sought in the form of projects that attempted to replace the nomadic system. Yet little evidence exists to justify government programs and projects. (See, for example, Dunbar, 1970; Dasmant et. al., 1974; Konczachi, 1978; Ghashgai, 1981; Oxby, 1984).

Arguments in favor of nomadic pastoralism

Supporters of the migratory pastoral system emphasize the advantages of nomadism as a response to "seasonal changes in rainfall and drought, the accumulated expertise of herders, and the general failure of ranching schemes... which produce exclusively for the market" (Eicher and Baker, 1982:170). They argue that the nomadic strategy has enabled these herdsmen to maximize resources at their disposal without causing environmental degradation (Hickey, 1978). The strategy presents a "safety valve" function for traditional producers as well as for the ranching complexes government planners have embarked upon (Ayuka, 1978; Hickey, 1978; Haaland, 1977).

Nomadic pastoralism has been seen as a rational strategy with producers acting rationally and adopting innovations that would enhance their production. The argument put forward by antagonists of pastoral nomadism has been countered by protagonists of the system. The latter argue that nomadic pastoralists are very dynamic, accepting change where such changes are proven utilitarian

to the pastoral process (Dyson-Hudson, 1970; Schneider, 1962 ; Breman, 1983). There is, therefore, an ongoing controversy as to what the best strategy to enhance livestock production is.

EVALUATING GOVERNMENT STANCES ON NOMADIC PASTORALISM

Fundamental to understanding livestock development policy inNigeria is the deep-rooted assumption of colonial and indigenous governments that nomadic pastoralism is incompatible with standards of "modern" and "civilized" conduct and values. Pastoral nomads are often viewed as "traditional" or "primitive" in their production strategies; so any policy which introduced changes in their strategy of production was considered not only necessary but justified.

A variety of arguments have been put forward as a rationale for intervention and development efforts in the area of pastoral nomads. Oxby (1975:4) has listed eight of such arguments:

1. to ±raise their standard of living';
2. to integrate them into the national society;
3. to make them easier to administer;
4. to prevent them from possing a military threat to their national governments;
5. to make them economically self-sufficient;
6. to make them contribute to the national economy;
7. to make pastoral nomadism a ±viable' form of livelihood

8. to promote better diplomatic relations with the governments administering pastoral nomads.

In Nigeria, the livestock/pastoral policy of the colonial and indigenous administrations can be viewed from the core/periphery relationship complex in which livestock production is organized or re-organized to benefit the center of the core and/or the center of the periphery. The bulk of the measures taken by the different administrations were often said to be directed at protecting the ecology from serious degradation, and sedentarization was thought to be the answer to resource depletion and ecological degradation

The overgrazing and environmental degradation allegedly caused by nomadic pastoralists does not appear to be as serious as is often stated. Frequently "warnings" have been sounded regarding the dangers posed to the environment by migratory pastoralists (see, for example, Federal Ministry of Information, 1962; Federal Government of Nigeria, 1981; Alao, 1975; Oyenuga, 1973; Sullivan, et al., 1976). It seems incredible that

> people practicing so "self-destructive" an economy could have survived. Yet they were wedded to behavior hundreds if not thousands of years old, hewing to ancestral traditions which are, to the sympathetic but objective observer, so dysfunctional to themselves, to their habitat, and to the national states in which they are subjects (Horowitz, 1979:24).

If the ecology has been so impoverished to the extent that it has been portrayed (over the past three decades), very little would be left of the said ecology today.

It should be emphasized that pastoralists would not

like to jeopardize their livelihood by making unwise decisions regarding the utilization of the "gifts of nature". They are aware of the seriousness of any act of resource mis-management as they are cognisant of the importance of natural grazing to their continued existence.

In planning and implementing livestock production projects policy formulators have constantly ignored the indigenous mode of life of pastoral nomads. They assume that their system is inefficient, wasteful, and unproductive. In part these assumptions and negative attitudes are the result of the fact that operators of the state apparatus possess to a different socio-cultural, political and economic orientation than the pastoral nomads. It follows therefore that programs of pastoral and livestock improvement seldom succeed and often result in unintended and unforeseen consequences.

It should, however, be noted that State intervention is not necessarily bad or undesirable. In as much as some amount of intervention is necessary and probably inevitable, the adverse consequences of intervention is of great importance and our concern here.

Noting the negative effects of government intervention in pastoral production Bourgeot observed that

> ... it is evident that this whole state of affairs, (development of capital accumulation) founded on the imperatives of capital production, is destructive of an already precarious equilibrium which has always existed, despite periodic difficulties, within traditional pastoral production-- an equilibrium between the objectives of consumption and the possibilities of production. The implementation of vertical stratification, together with more widespread

> commercialization not under the direct control of immediate producers, lays the foundation for an 'industrialized' form of pastoral production, to the detriment of its subsistence form" (Bourgeot, 1981:124).

Any intervention in the present pastoral production system should take into consideration the realities within which the pastoralist operates. Intervention should be formulated in ways that the net gain accrues to the pastoralists and society in general rather than serving the needs of interest groups. Programs and projects embarked upon by the Nigerian State seldom serve the immediate needs of the producers as often intended. Rather, the conditions set by donor agencies regarding program admininstration are usually pursued. Conditions are often set in ways that special interests benefit in the long run from programs and projects that have received agencies support.

Reviewing programs of pastoral development in Sub-Saharan Africa, Goldschmidt (1981), draws the conclusion that the schemes seldom succeeded because they attempted to impose a foreign method of production. A similar observation has been made regarding such schemes and programs in Nigeria. Awogbade (1981:329) noted that 'programs that are aimed at improving the quality of pastoral practices almost invariably fail.' Indeed, Galaty (1981) contends that negative effects are often experienced by pastoralists and small-scale livestock producers, whose resources are diminished for the sake of commercial production. Galaty and Goldschmidt are not alone in highlighting the undesirable consequences of sedentarizing

nomads. Aronson (1980), Salzman (9180), Konczacki (1978), all have observed that sedentarization actually inhibits efficient continuation of pastoralism and increases the degradation of the environment. This contradicts government's intention to develop the livestock industry. In Nigeria, evidence abounds regarding the effects of sedentarization. Where sedentarization (usually spontaneous) has occured, nomadic pastoralists are converted into agro-pastoralists with marginal outputs of both livestock and crop production. They attempt to derive the most they can from the few resources (land, water, etc.) that are available to them. Neither do they produce crops nor livestock in any appreciable quantity/quality. The reasons for taking up permanent residence are other than the desire to increase production. More often, agriculturists are turned into pastoral producers, thereby increasing the capitalization of pastoral production.

The Nigerian government has been establishing grazing reserves to provide forage to pastoralists during the drier months of the year. However, serious problems of overstocking (stock pressures) and range deterioration have been encountered. This is probably one of the numerous dimensions of land held in common (Gilles and Jamtgaard, 1982; Artz, 1986). When nomadic pastoralists settle and practice crop farming, especially in semi-arid and arid zones, the combined activity of livestock and crop raising tends to increase environmental degradation. Certainly, livestock production and crop cultivation can be profitably

undertaken in less fragile ecological zones such as the southern limits of the savannah zones where more vegetation is available. However, the major limiting factor here is the prevalence of animal disease.

Government is providing pastoralists high-cost imported animal feeds (at highly subsidized rates) in an effort to induce nomads to settle or at least to minimize migration of animal and human populations. The high costs of such animal feeds do not seem be justified and such subsidized (and sometimes free) supplementary feeds may have the potential of creating permanent dependence on unsustainable subsidies. Such dependence can divert the energies of the producers from self-generating and self-reliant productive activities by making producers dependent upon external support for their production endeavor.

Konczacki (1978) notes that the transition to semi-nomadic or sedentarized patterns of land use, by limiting movement and promoting concentration around watering points led to the destruction of rangelands. This view has been strongly expressed by Dasman, et. al. (1974).Overstocking and consequent overgrazing usually results in a decline of the quality of livestock following sedentarization. Sedentarization policies have often resulted in the

> abandonment of nomadic way of life which increased the incidence of coronary disease. The Somali nomads' daily intake is up to 6,200 calories, and in certain parts of the country camel milk is their main diet. Yet their blood cholesterol level is low and heart disease is extremely rare. Similar findings have been made with regard to the Negev Bedouin (Konczacki, 1978:63).

Similarly, the health of livestock have been adversely affected as there is a build-up of disease and parasitic infections around settlement areas (Dunbar, 1970). Notable among countries which have had strong programs for the elimination of nomadic pastoralism are Egypt and Iran. These countries have suffered significant reduction in the production of meat and other livestock products.

Sedentarized pastoralists in Nigeria have smaller herds since settling. A change from pastoralism to intensive crop/livestock raising in an area of unstable ecology like the Sahel region of Nigeria could turn such areas into what Konczacki (1978) called "dust bowls" The overall impact of sedentarization may be unpleasant for pastoralists in particular and the national economy in general. Observing the Iranian situation, Ghashgai, (1981) argued that nomads generally have suffered economically, politically, socially, and psychologically because of settlement. Sedentarization of nomadic pastoralists has been an unsuccessful experience.

There is need to re-establish a "proper balance between carrying capacities and actual livestock numbers within the framework of institutions that do not overlook the merits of the 'traditional' and well-established systems of regulating communal grazing but take into consideration the requirements and technical possibilities offered by 'modern' husbandry systems" (Hrabovszky, 1981:13).

On the other hand, large herds are inefficient means

of exploiting rangeland vegetation. Large concentrations of animals may destroy vegetation and inefficiently utilize pastures. Cunnison (1966:68-69) notes that:

> a very large herd becomes unwieldly: the tail end struggles out of sight through the trees; towards the end of the dry season when grazing may be scarce, a large grazing herd is bad because the first cattle trample over the small patches of good grazing before the slower cattle arrive.

The central problem with programs of sedentarization seems to be that of rangeland deterioration; sedentarization therefore may not be workable as a unique solution to the problems of livestock production in Nigeria.

It should be observed that commercial agricultural production in general does not seem to have improved the living standards of direct producers, but rather has been instrumental to their impoverishment. The profits from the expansion of commercial production activities, have served only to aggravate the life conditions of the producers (Bourgeot, 1981). Swift (1979) argued that increase in marketed livestock

> has not reflected any sustained increase in pastoral production; rather ±the demand-led boom' in marketed livestock has been created by superimposing a modern market operation on a largely traditional production system; this has induced a shift from a principally subsistence economy to a much more market- oriented one without real development (Swift, 1979:453).

Cole (1981), observed that Bedouin pastoralism, despite the high degree of sedentarization and specialization, is one that "does not lead to increased production of anything beyond the bare necessities" (Cole,

1981:130). This suggests that sedentarization may not necessarily result in increased holdings in livestock as the pastoralist may not be willing to produce in excess of what he thinks can meet his needs.

The Sedentarization Complex

Through sedentarization, nomadic pastoralists become "progressively incorporated or assimilated into the pervasive Town Fulbe/Huasa ethnic category or system" (Frantz, 1981:106). However, the ethnic consciousness and identity of the pastoralists may remain intact while becoming ±Westernized' in a number of their habits. As nomadic movements are increasingly restricted, the degree and frequency of contact with the "host" population has increased. Relationships with agricultural communities could vary from one of complementarity, or competition to that of conflict. It can be complementary when pastoralists rely on the agricultural community for their supply of grain and other foods and the agricultural population depends on the pastoralists for their supply of meat and dairy products. However the relationship may be competitive when both groups vie for fertile land to support their agronomic and pastoral production activities. If this competition is not contained it could create a conflict situation.

Pastoralist contact with sedentary populations may either facilitate or inhibit pastoral production. It may facilitate it in situations where, for example, animals

belonging to pastoralists are allowed to graze on the crop residues belonging to sedentary populations. In return for the used crop residue, animals leave their dung (a rich source of organic fertilizer) on the fields. Animal products and grains are exchanged between pastoralists and agricultural communities. However, when pastoralists settle there is the likelihood that competition for land increases between pastoralists and their host agricultural community. In a situation of tension and strained relationship both pastoral and agricultural activities will be hampered. Conflict is more likely to occur where there is a day-to-day interaction and competition among pastoralists and agricultural population. Nomadic pastoralists prefer to move so as to avoid conflict with agricultural populations as well as in response to epidemics and other emergencies.

Cases of litigation and land related problems have frequently been reported in Northern Nigeria between pastoral nomads and agricultural communities. The incidence of hostile contacts increasing as the populations of both groups continue to grow.

The rift between pastoralists and agricultural peoples over control of land and water resources may be an indication of the potential weaknesses of the sedentarization policy of the Nigerian government, especially in the absence of a well formulated and well administered land reform program. The land on which the pastoralists would be settled belong to individuals and/or corporate bodies. Difficulties in alienating land arise

because it is often difficult to reach a consensus among the land-owners on the terms upon which their land would be alienated. It is easier to secure the use of a piece of land for a limited time period than to acquire large piece of land for permanent use by people from outside the community.

Since nomadic pastoralists do not usually have rights of land ownership, they must depend on the hospitality and goodwill of the agricultural communities to gain access to the use of community resources. If government policy is to settle nomadic pastoralists, it is imperative that land reforms be simultaneously embarked upon so that problems associated with land-use by both pastoral and agricultural peoples would be minimized.

The magnitude of the land problem has been clearly stated in Frantz's comments about the pattern of land-use of pastoralists in Donga-Mantung and Mambila communities in Cameroon and Nigeria respectively. Frantz (1981:110), observed that

> crucial problems concerning land-use and land tenure remain to be worked out in both Nigeria and Cameroon, and despite all efforts of both governments to step up production in these areas, livestock production is still inadequate to fulfill either the goals of governments or the demands of consumers.

Although the Nigerian government seems to be aware of the bottleneck posed by the land tenure system, not much has been done to effectively tackle the problem. The recent Land Use Act which vested all land in the hands of the State has hardly been enforced. Even though the state,

under the Act, is said to have the sole power and right of allocating land for different purposes, this law has hardly been enforced. Nomadic pastoralists still do not have free access to and use of land for livestock production activibties. In reality land ownership and the exercise of use rights is still the domain of local communities and individuals. Government policies of sedentarization (with or without adequate land reforms) are bound to greatly affect the future of pastoralists as well as the future of the livestock industry. In spite of the evidence that sedentarization and technological policies are not resulting in improved pastoral production, (see Frantz, 1981; Dunbar, 1970), the government still pushes ahead with its sedentarization. It believes that by settling nomadic people and introducing new technological practices that improvement in livestock production can be attained. It has been shown above, however, that this is far from being the case. The continuation and intensification of sedentarization policies can be explained by the political, economic, and social control government seeks to have over nomadic pastoralists. It may therefore be argued that the role of the capitalist (dependent) state in pastoral production is one caught in the contradiction of promoting capitalist accumulation while at the same time attempting to fulfill the demands or needs of the general public. Government policies aim at increasing and improving livestock production, at the same time raising the living standards of the pastoralists. However, livestock

production is neither adequate to meet the expectations and goals of government nor is it adequate to meet the rising demands of the Nigerian society.

It may be observed that the central political goals of the Nigerian Government are to be able to effectively control the pastoralist through sedentarization programs, and to meet urban demands for meat and animal products. The political goal of improving the living conditions of pastoralists is only secondary to the other ones.

SUMMARY

From our discussion of the forms of pastoral production in the preceding chapter, and the changing conditions of these systems in the present chapter, it can be observed that the main interests of the British colonial administration and those of the Nigerian government centered on increasing livestock production and controling of pastoralists. Sedentarization of nomadic pastoralists and the establishment of ranching schemes and grazing reserves were among the strategies used.

By examining the changing conditions of pastoral production side by side with the interests and policies of both the Nigerian government as well as the interests of international agencies, we will be able to properly locate the circumstances within which intervention took place. This will set the stage for appraising the appropriateness and effectiveness of government policies and the relevance of livestock research to the existing problems of pastoral

production.

The extent to which the aforementioned livestock/pastoral policies and interests have been shaped by technological advancement in livestock production in the "West" through research activities is examined in the next chapter. Since the enhancement of local production of livestock has been sought through the use of technological innovations, and since technology is often the outcome of research, we examine the role of research in understanding the stance of government on livestock production.

CHAPTER FOUR

THE ROLE OF RESEARCH

Introduction

The position of the Nigerian government regarding pastoral and livestock production can be understood in part by examining the role research plays in the relationship to these policies. Research agenda are utilized to promote government programs of improved and enhanced pastoral/livestock production. It is generally the hope that research would provide new production techniques that can be used to acheive greater productivity of pastoral systems. Livestock research frequently emphasizes technological dimensions of production. The costs involved in livestock research make it difficult for the individual producer to undertake. The high cost of scientific equipment, manpower and logistic support are likely too much for the individual producer to bear in seeking more productive alternatives. The costs involved in research and development are a major reason for State involvement in agricultural research processes. It is the State that must therefore organize and finance most of livestock/pastoral research (Adeyemo, 1984).

The serious food (and protein) problems in recent years have resulted in intensified research efforts into food production problems. The pursuit of a solution to the food crisis led to huge State expenditures on research

activities in the country. The primary interest of State in livestock research seemed to be to generate new techniques and methods that would significantly enhance production. Since research activities are primarily controlled by the Nigerian State, it naturally will be expected that the structure and content of research would be determined by the State. Aid comes from some core countries and organizations for research purposes. Such research grants are usually administered by the Nigerian State in collaboration with the donor agency. Consequently, the policies of the State and the interests of the donor core world would influence the kinds of research that would be emphasized at any one time.

Our purpose in this section is to explore how an an understanding of research can help explain the position taken by the Nigerian government vis-a-vis nomadic pastoralism. The research agenda created to provide the basis for technological innovations is examined in relation to its relevance to the problems of nomadic producers. Are the kinds of research undertaken addressing the central problems facing present livestock production endeavors? We shall examine the kinds of questions addressed in livestock research as well as the motivating factors in undertaking scientific inquiry into aspects of livestock/pastoral production.

The Research and Policy Complex

An examination of the pattern of scientific

investigations is undertaken in an attempt to have a general picture of the nature of scientific inquiry into livestock production in Nigeria.

Researchers are often called upon to provide certain information or knowledge that can be used in the formulation of policies. Scientists are often expected to demonstrate how their research findings would be used in the process of formulating social policy. Research investigations and results, especially the more applied ones, should be utilizable by policy-makers for purposes of program and project formulation to enhance livestock production.

Policies that call for the adoption of technological innovations have been favored in agricultural programs particularly the livestock sub-sector. The question we would like to address at this point is the extent to which policies have been based on research findings. Stated differently, do the research activities of agricultural scientists incorporate policy implications?

As society is often complex, adequate information is usually needed for formulating and guiding different policies. Scientific investigation can

> provide as precise, reliable, and generalizable factual information as possible about the state of society or parts of society at a particular time. This information, when fed into the policy-making process, will enable policy-makers... to reach the best decisions on the basis of the information available (Bulmer, 1982:31).

The relationship between research and social policy is not as simple and as straight forward as it has often been

presented (see for example, the unidirectional relationship portrayed by Bulmer, 1982; Chapter 2). Research and social policy are juxtaposed in a complex fashion. This complex relationship is presented in a simple chart in Figure 2.

The choice of research problem is often the result of a complex and continuing process of negotiation between different groups (Busch and Lacy, 1983; Strauss, 1978). These groups include different scientists and scientic communities, technocrats, investment corporations, etc.

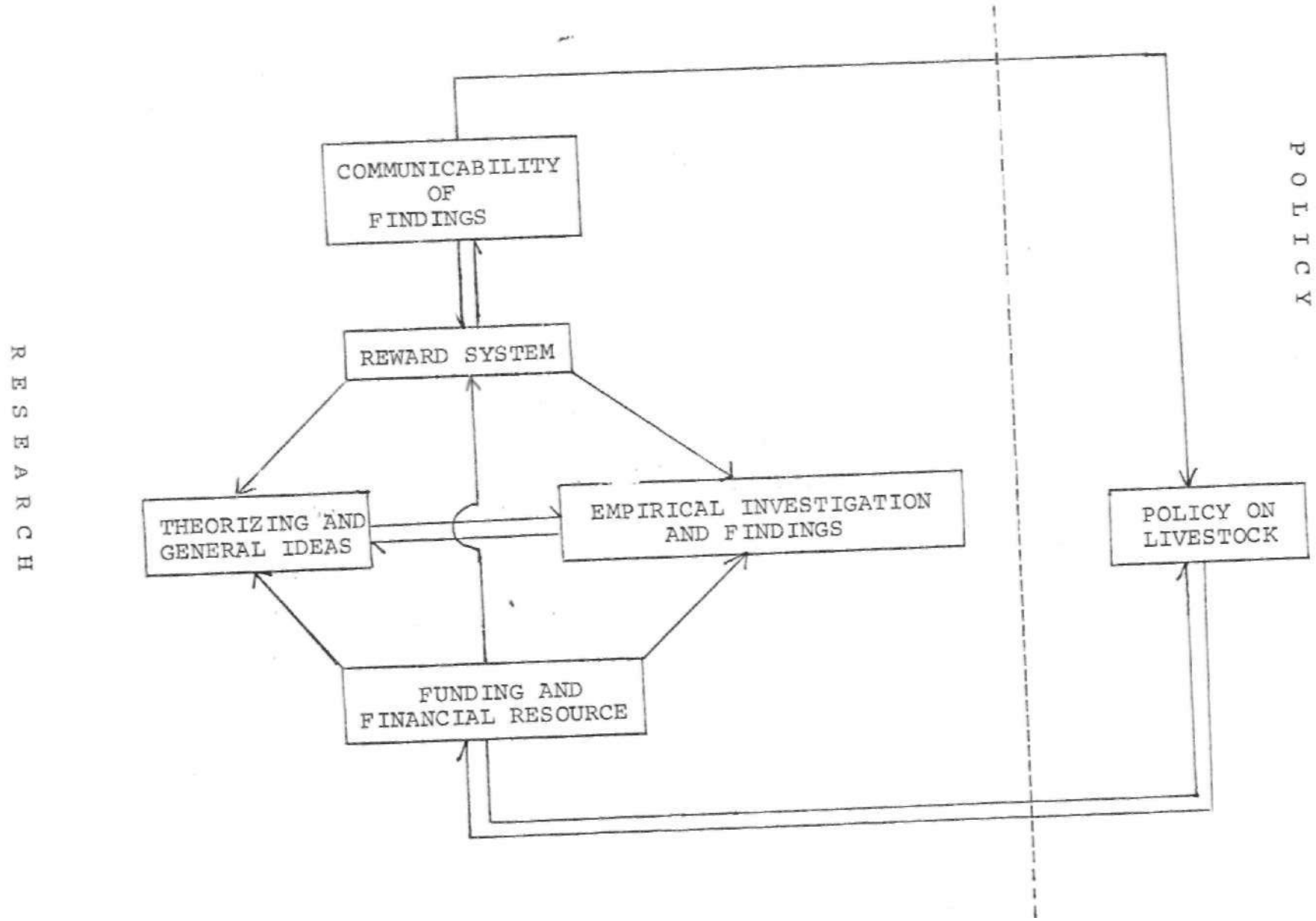
Two arenas (policy formulation and scientific investigation) are primarily distinguished. Generally, what goes on at the policy-making arena is often influenced by what happens at the level of research. While policy could inform research, so also could research influence policy. However, the whole process of policy formulation and scientific research occurs "within an intellectual and political milieu" (Busch and Lacy, 1983:41).

The research activities of scientists are often contingent on a number of interacting factors. These factors can be either internal or external to science itself. For example, the choice of a research problem may be influenced by any one or a combination of the factors charted in Figure 2.

Source of funding

One major factor influencing the choice of a research problem is funding. Funding may come from a variety of sources, including domestic and foreign governments,

Figure 2: Sources of influence on Livestock Research and Policy



private organizations (domestic and foreign) as well as corporate bodies. In Busch and Lacy's study of agricultural scientists, for example, funding was generally an overriding factor in the choice of a research problem. The concern and emphasis on funding was observed by one of the respondents in Busch and Lacy's study:

> I strongly feel that so much attention has been put to funding, to grants, and contracts, that the fundamental purpose of scientific research-- to increase organized knowledge and how to use it-- has suffered greatly. I do not hear colleagues talk of break-through or strong influences anymore, only about "this wonderful new program" or the "number of Ph.D.'s we have turned out" or "how we plan to expand into this or that." The specific objective of the research is seldom mentioned and when it is, it sounds like more of the same old language: "Improve our understanding of...," "study the relationship between...," and "build a model to account for..." All vague, all open-ended-- not a specific goal in sight. Program funding has become the objective of scientific research! (Busch and Lacy, 1983:47).

The tremendous amount of programs and projects initiated in newly independent countries of Africa by international financial institutions and "donor" agencies have resulted in research activities. These activities may not have been embarked upon without the availability of funds and grants to potential researchers. By the same token, the research structure of externally supported investigations has tended to reflect the positions and interests of funding agencies. In some cases, organizations advertise, offering considerable funding for research in certain areas of interest to them. In this instance, terms of reference to which research has to be addressed are stated. The researcher in this circumstance has no direct control over

the choice of research problem. In some cases too, the research procedure and methods are implied or suggested by funding agencies.

The priority of the funding agency may tilt toward either "basic" or "applied" research. The amount of funding the researcher gets therefore depends on the congruence of interests of both parties. Proponents of large-scale agricultural production tend to support applied research over basic research probably because of the practical relatedness of research to the researched problem. Although it is logically difficult to distinguish between basic and applied research (they both inform one another), we would consider as "basic" any research that emphasizes increased awareness, with a major objective of understanding a phenomenon. "Applied" research, on the other hand, can be conceived as investigation that (usually has terms of reference given) is directed at generating information for the purpose of solving a problem at hand.

Another major source of livestock research funding is local research institutes and universities. This source of funds can, in the Nigerian case, however be traced back to the federal government. Both the capital and recurrent budget of these institutions are sustained by the federal government. It should be stated that the funding provided by the federal government, is dependent on the general program of research activities of the recipient institutions. Hence, the more the program of research of these institutions match the current policy and priorities

of the federal government, the more the funding that would likely be approved.

Allocation of funds for specific research is done by the Senate of the universities (subject to approval by the Council--the highest ruling body of the educational institution) in line with the priorities of the college or university/research institute. In periods of fiscal and/or financial crises, some less favored departments and/or programs are usually more adversely affected than others.

Financial hard times have recently hit the Nigerian economy. Universities and research institutes have been affected by these austere times which reached peak points in the early 1980's. Economic crises were blamed on the alledged mis-management of the country's resources by the Shagari administration (the second elected government since independence and sometimes referred to as the "Second Republic"). This led the succeeding military administration to reduce support provided for research programs and projects.

These cut-backs have had differential impacts on departments and programs. While most departments had funds available for recurrent expense (for running and maintaining overhead), some more favored programs received some funds for capital projects. More often than not it is the social sciences that are at the losing end and most hard-hit by cut-backs from funding sources. The natural sciences are more favored as they are more readily

associated with world of technology. Research support for all disciplines have been on the decline in recent years. With the shrinking of research funds, it is not unusual for the scientist to experience some amount of frustration. As funding is progressively cut back, less of the scientist's potentials are utilized. The quality and quantity of research activities are severely affected where there is no firm commitment to provide the budget needed to support them (Pineiro and Trigo, 1981). Limited research funding may more than before compel the research scientist to more readily give in to the demands of agencies that might be willing to fund research. This could have far reaching effects on the type of research done as well as the results that are generated. This would in turn affect the sort of knowledge that is produced. Funding constraints could hence have varying effects on the act of research and the nature of knowledge produced.

Just as the availability of funding may be related to priorities and policies of the funding agency, so also is the disciplinary bias reflected in the hiring of staff. Although recruitment of staff is often contingent on the availability of funds from the central government, the research institutions' biases towards technical and biological science may determine the type of research staff that is hired at any one given time period.

The emphasis on animal and natural science in livestock research activities is a reflection of the technological oriented policy in the agricultural sector.

This tendency may account for the preference for certain research scientists over others. In turn, the emphasis on certain aspects of livestock research may affect or determine the problems that are investigated and reported. Disciplinary biases may thus affect the way livestock problems are defined and conceptualized.

Individual gratification

Related to funding and the "basic" or "applied" nature of research is the reward system that is available to the scientist. In many institutions of higher learning one finds reward system tied to the productivity of staff. Productivity is usually measured in terms of quantity and/or quality of publications (see, for example, Salisbury, 1980). This system can affect the choice of problem as well as the choice of communication channels (ie. avenues for disseminating results of scientific investigation). Where promotion and upward mobility is based on concrete evidence of productivity such as quantity and quality of publications, research activities may be primarily directed toward meeting such needs (reward). In this instance, research may not necessarily have direct bearing on substantive problems. Emphasis on publication (often in professional journals) does not only lead to a proliferation of journals but also tends to increase subject matter specialization. In the words of one of their respondents, Busch and Lacy (1983:46) stated:

I am all too familiar with theoretical researchers who

> have played the "publish or perish" syndrome to the hilt, but have not contributed one bushel increase to crop yields. These people... have related almost none of their papers to the consuming public. The "generalist" is almost an extinct species, and we will regret this situation in the future.

Usually, priority is given to publishing in professional journals even if research findings are inaccessible to livestock producers in the way they appear on pages of professional journals.

The reward system discussed above is interrelated with the "communicability" of research findings. If the probability that a piece of research work would not be published in a desired journal is high, incentives to do such research run low. The converse is also true. If publication probability in a desirable journal is high, the researcher is motivated to continue similar research activities. However, if the object is to disseminate some known new package or technology, the ease with which the results could be communicated tend to be the core concern. The driving force behind research and the reporting of results is the intent and primary concerns of the research personnel. The complex web of interacting factors in research and policy formulation has been simplified here.

THE NIGERIAN AGRICULTURAL RESEARCH SETTING

The structur of agricultural research in Nigeria, like that in many developing countries, has been influenced by government policy. Goverment policy tends to direct research activities. The structure and organization of

agricultural research is also intimately associated with the investigator's goal. The final products of research investigations are often intended for a given client. This client is usually not the direct producer, but corporate bodies and agencies with vested interests in the goods produced.

The notion of improved and increased productivity has been a major theme in agricultural research dating back to the colonial period. There has always been the call (made by both scientists and technocrats alike) for improvement of agricultural practices and production methods through the adoption of certain agricultural innovations. These are either generated locally through local research efforts or (as is often the case) adapted from findings of research communities based outside Nigeria. The subject matter of agricultural innovations and the dissemination of agricultural innovations has generated a huge stack of literature on the diffusion of agricultural innovations (see, for example, Rogers and Shoemaker, 1982; Lionberger and Chang, 1970).

Agricultural research efforts, especially since independence in Nigeria, have concentrated on the high-yielding varieties (HYVs) of crops and livestock. The emphasis on increased productivity has been stressed and developed by international and national research institutions. The transfer of research results from international centers to a national research institute usually encounters problems of relevance to local

conditions. The lack of congruence in the conditions that exist between international and national research settings has been described by the World Bank (1981:13)

> In developing countries... the vast majority of technology from the developed countries, which, by contrast, largely hve temperate climates, is frequently difficult. Sociocultural differences are also sometimes important. Accordingly, the developing countries have particular research needs that must be met mainly through research carried out in the agroclimatic and socioeconomic circumstances in which the resulting technology is to be employed.

For research activities to attain increased agricultural productivity it seems logical to conduct research under different environments and conditions. In this regard, investigations conducted under controlled environments as well as those conducted under the prevailing farm conditions need be undertaken.

Although attention has been focused recently on the structure and dynamics of agricultural research (see, for example, Abalu, 1980; Abalu and D'Silva, 1980; Norman 1973; Famoriyo, 1978), the emphasis of agricultural research has continued to be based on the diffusion of innovation model. Agricultural packages are offered to producers in a manner that suggests the superiority of the new method(s) over the existing form(s) of production. Research which often emphasizes this aspect of production usually concentrates on the social psychological variables/characteristics of the individual farm operator. Very little, if any, attention has been given the broader social, economic, and political context within which research systems are embedded or to the internal dynamics of the research

itself. It is only recently that the farm problem has received a "Farming Systems Research" attention, although the extent to which this sort of approach had been utilized to analyze the pastoral issues has been very limited. Although the "information provided by such studies is accurate, it is incomplete in very significant ways. This incompleteness becomes apparent if one examine the difference between scientific and everyday rationality" (Lacy, et al., 1983:2).

The gap between scientific and everyday reality may be explained partly by the dominance of the agricultural sciences by natural scientists whose preoccupation is with experimentation under controlled conditions. The numeric dominance of the agricultural sciences is evidenced by the increasing number of this community and a corresponding increase in the ratio of research technician to a scientist between 1970 and 1980 (Oram and Bindlish, 1981).

Both the natural and social scientists involved in livestock research utilize procedures that objectify the social forms of their research problems. With this kind of orientation to the study of livestock/pastoral production, "it follows logically that one may adopt a value-free or ethically neutral stance towards one's data" which allows the... scientist to presumably study ±facts' with a minimum of bias or distortion" (Nolan, et al. 1975:447). The efforts of agricultural scientists to undertake a value-free scientific study of human problems such as pastoral

production has led investigators to assume a neutral and unbiased posture in their research activities. The researcher therefore frequently adheres to the positivists' value-neutral orientation and separates his/her personal values from the research process (Nolan, et al. 1975). Research conceptualized and conducted from the point of view of value-neutrality may be of limited utility for the achievement of specific goals of increased livestock productivity. This is because certain factors and variables need to be intentionally included in the research. Research need not only be based on value-neutrality of science. Subjectivity in research designs is in order! In some cases, methodological rules need be relaxed in order to get a grasp of the research problem.

Higher productivity is generally the goal of the scientist's research activities in livestock production. A variety of means are employed to achieve this end. For example means may include the use of artificial insemination, cross-breeding, disease and pest control, improved nutrition and animal husbandry practices, etc. The choice of means for attaining desirable results depends largely on the researcher's discipline and the availability of research facilities and does not usually reflect producers' main goal.

There is therefore, the issue of compatibility of ends from the researcher's point of view on the one hand, and that of the the pastoralists on the other. The lack of congruence in the goals of researchers and producers have

been vividly described by Lacy, et al. as they contend that

> while scientific rationality tends to focus on one or a small group of ends that can be addressed through research, everyday rationality involves a variety of ends, many of which cannot be addressed by a single researcher or even an entire research system. This model of everyday rationality has implications for the way in which the flow of information and political support must occur in research and extention systems" (Lacy, et al.).

Another feature of agricultural research in Nigeria is the short supply of research tools and instruments. Transportation, which is usually one of the major research instruments utilized by the social scientist working on rural livestock production systems, is often grossly inadequate. For instance, the author's department's only vehicle--a Land Rover--was unusable for several years due to lack of maintenance and servicable parts. These and other constraints such as administrative/bureaucratic and logistical problems militate against a well-conducted livestock research program in Nigeria.

Given the circumstances in which research takes place, the immediate benefit of the potential benefit which pastoralists could derive from research undertakings does not seem to be prime in livestock research agenda. Our discussion thus far has concentrated on the nature of livestock research and the role of the Nigerian State in livestock research. We now examine the content and relevance of research to the present systems of production. In the section that follows we undertake a content analysis of some formally published research on livestock production with the intention of examining and evaluating

the relationship between research and government position on livestock production. As earlier pointed out, technological advancement is seen as the key to development of the agricultural sector (ivestock inclusive). Since technology is often the outcome of research, we examine below how research can help us understand better the position of the Nigerian government in modernizing nomadic pastoral production system.

ANALYSIS OF RESEARCH CONTENT

Content analysis was based on formally published research articles on livestock between 1960 and 1983. Articles were traced through bibliographic searches using the computer-assisted scanning system of DIALOG. A detailed description of the databases used is given in Appendix 1.

Analysis focused on twelve variables that were assumed by the researcher to be related to the nature of Nigerian livestock research and reporting. These variables are: 1) Subject matter; 2) Type of production system; 3) Source of data; 4) Assumptions made about nomadic pastoralism; 5) Locus of research; 6) Recommendations made; 7) Type of recommendation; 8) Relatedness to nomadic pastoralism; 9) Type of journal in which article was published; 10) Locus of publication; 11) Sponsor(s) of research; 12) Animal species researched.

The analysis basically used frequencies and percentages. The journal articles were read and coded in categories to correspond to the twelve variables listed

above (see Appendix 2 for detailed description of the categories). Frequencies were based on the counting of articles that have been classified into these categories. Counting was based on the assumption that the higher relative counts (percent wise) represents emphasis of the article with the particular category. The report on frequencies was embarked upon because frequency count is often considered useful as it may reveal aspects of the text that otherwise would not be apparent (Bailey, 1982; Krippendorff, 1980). Furthermore, the use of frequency distribution of each of the variable could give some indications of how that variable varies over time.

To a limited extent, analysis of data involved the use of Chi-square as a statistic to report the existence of any systematic relationship between certain variables. The use of Chi-square was made where variables are thought to be interrelated in some way.

At this juncture, the analysis seeks to discover the nature of research activities in livestock/pastoral production during the twenty-four year period (1960-1983). The immediate purpose is to chart the direction of emphasis that has been put on livestock/pastoral production research during the period under review. What follows, therefore, is a description of the incidence of the variables used in the analysis.

Data Presentation

Table 2 Frequency distribution of journal articles by period of publication

Period	Number	Percent	Average No. Article/Year
1960-69	34	33.7	3.4
1970-79	45	44.5	4.5
1980-83	22	21.8	4.5
Total	101	100.0	

Table 2 describes the total number of articles (from all disciplines) that were published during the period in review. In relative terms, the most articles were published during the 1970-79 period (4.5 articles per year) as compared with the other two periods. The relatively higher proportion of article published in the 1980-83 period can attributed to relatively shorter time period. This period covered only a four-year duration as against the ten-year period covered by the other two time slots. There seems to be more publication of research findings in the 1970's than any of the other periods. The relatively high incidence of published materials may be related to the emphasis placed on self-sufficiency in food production during this decade. The effort of the Federal government to increase levels of food production was accompanied by an increased involvement of research in the attempt to boost domestic production of food products. During this period, many research institutes

were either established or enhanced.

There sprang up multi-disciplinary research into different aspects of livestock production. These research efforts addressed divergent subject matters.

Table 3 reports the classification of articles by subject matter. Articles that dealt with subjects such as marketing, extension, the impact of technology, importance of livestock, systems research, benefit/cost analysis have been collapsed into the socioeconomic category. The most articles that were reported dealt with pastures with over 30 percent of the total articles appearing in abstracted journals on this topic during the period under review.

Research report was least for health-related subject matter. It should be pointed out however that articles dealing with general issues of the place or role of

Table 3 Frequency distribution of articles by subject matter of the research article

Subject matter	Number	Percent
Health	9	8.9
Reproduction	22	21.8
Nutrition	20	19.8
Pasture	31	30.7
Socioeconomic	19	18.8
Total	101	100.0

livestock production in the economy of the country

accounted for more than half of the articles that have been classified as socioeconomic. Only about 5.0 percent of the articles in some way dealt with aspects of pastoral life.It can be shown from Table 3 that research in livestock/pastoral production had concentrated on the biological aspects of production. Emphasis on the biological aspects of livestock production can be explained by the way in which the problem facing livestock production has been defined. Overall, the Federal government assessement of the livestock situation emphasized feeds and fodder as one of the major problems facing the livestock industry. Associated with the problem of feeds was the poor genetic characteristics of local animal species.

Solution to these problems were sought in the sedentarization of nomadic producers in order to provide producers with quality feed and fodder as well as to provide facilities that would enhance the productivity of local herds.

It can be observed in Table 4 that the majority of articles were based on laboratory and/or field experimentation (55.5 percent), while articles based on data from questionnaires accounted for the lowest proportion (3.0 percent). The low use of questionnaires as a tool for gathering information may suggest the relatively low priority given to the points of view of producers by the researchers. On the other hand, the high incidence of reports based on experimental designs can be associated with the nature of problem definition as well as an

Table 4 Frequency distribution of articles showing the data collection method used

Data type	Number	Percent
Questionnaire	3	3.0
Literature search	18	17.8
Field observation/Survey	17	16.8
Experiment (Field/Lab)	56	55.5
Archive/historical records	7	7.0
Total	101	100.0

indication of the common tool used by the dominating fields in animal production research.

Livestock problems defined in biological terms tend to attract biological solutions, using methodological procedures frequently employed by biological scientists. Pasture and reproduction studies typically involves field and/or laboratory experimentation, hence the prevalence of experimental trials.

Table 5 Frequency distribution of assumption made in articles about nomadic pastoralism

Assumption	Number	Percent
Counter-productive	73	72.3
Productive	0	0.0
Unclear	28	27.7
Total	101	100.0

The emphasis that is placed on livestock research often stems from the definition a problem and is related to the assumptions about the problem. The assumptions held by research personnel tend to influence research procedure and results.

The incidence of the assumptions held about nomadic pastoralism by the authors are reported in Table 5. It is most interesting that the majority of the articles (72.3 percent) saw nomadic pastoralism as counter-productive. Such underlying assumptions often led these authors to condemn or say unfavorable things about nomadic pastoralism and to advocate its destruction. One aspect of nomadic pastoralism that was frequently criticized relates to depletion of the range-land.

It is interesting to note that not a single article stated that nomadic pastoralism is productive. The assertions made that come close to assuming nomadic pastoralism to be a productive strategy were those that acknowledged the need for nomadic pastoralists to adopt the migratory strategy because of their social, cultural, and political situation. However, these articles see also a need to discountinue such a strategy which they considered resource-depleting. Articles that made this sort of assumption were coded as "unclear" (27.7 percent).

Table 5 indicates a congruence in the assumptions made by technocrats and research scientists about the nature of pastoral production. The position taken by the Nigerian State is reflected in the stance of scientists as Table 5

indicates. This shared view about local livestock production systems can be seen to re-enforce government positions on pastoral/livestock development strategies.

The rather negative attitude of the research community and technocrats toward nomadic pastoralism has often led to specific strategies mounted to counter this perceived "anti-productive" strategy of livestock production. Attempts to improve livestock production have led to a variety of research activities. Research has been conducted under different conditions reflecting the subject matter of and the defination of the research problem.

An examination of the locus of the investigated reports is presented in Table 6. In the Table, it is shown that the

Table 6 Frequency distribution of the locus of research

Locus	Number	Percent
On-farm	18	17.8
Lab/station experiment	57	56.4
Other	26	25.8
Total	101	100.0

majority of the researches had been conducted either in laboratories or on experimental farms. These investigations are obviously conducted under conditions of controlled experimentation. In this kind of investigation the natural conditions under which livestock production activities take place are often ignored. This is so because the nature of

the discipline tends to define research problems in ways that on-farm investigation is not feasible. More than 56.0 percent of the articles were based on research done on experiment station farms or in laboratories.

It may be observed that the relative high incidence of laboratory/station-based experiments may be associated with the high incidence of studies done by biological scientists The result in Table 6 demonstrates the emphasis put on technology-related role of research by the research community. This emphasis is a reflection of the interests of the Nigerian government who is the sole sponsor of livestock research in the country.

Table 7 Frequency distribution of articles that made policy recommendations in research report

Recommended policy	Number	Percent
Yes	36	35.6
No	65	64.4
Total	101	100.0

Table 7 reveals that only 35.6 percent of reviewed articles offered some form of recommendation or gave some implications for policy action while 64.4 percent did not in any way mention how the results of the investigations could be used to pursue or enhance livestock production. These studies that gave no policy-related recommendations mainly reported the findings of experiments without drawing

specific implications for policy.

Table 8 Frequency distribution showing the nature of recommendation offered in research reports

Recommendation	Number	Percent
Pro-local system	2	5.6
Anti-local system	22	61.1
Unclear	12	33.3
Total	36	100.0

Of the 36 articles that offered some kind of recommendation, only 5.6 percent made recommendations in favor of the local production system (Table 8). These two articles saw some rationale behind nomadic pastoralism and argued for some aspects to be combined with more "modern" strategies. Over 61 percent of the articles recommended policies against nomadic pastoralism, while 33.3 percent made recommendations that could classified in neither sub-categories. The recommendations of the "unclear" sub-category make statements such as "increased livestock production could be embarked upon" without specifying how such increases are to be realized (either through a continuation of the traditional production system or its abanbonment or a combination of the "traditional" and "modern" production method).

Table 9 Frequency distribution showing whether or not research articles are related to local production system

Related	Number	Percent
Yes	38	37.6
No	63	62.4
Total	101	100.0

Table 9 reveals that only 37.6 percent of all the articles reviewed had any relationship with the existing pastoral production system. Most of the articles reviewed dealt with research topics that did not directly relate to the local production system. By far, less articles examined the structure of the present production strategies with the attempt to grapple with some of the constraints inherent in the systems of local production. The predominance of studies dealing with aspects of pastoral production other than the local production system can be explained by the emphasis that is placed on the technical dimension of livestock production research. Disciplinary emphasis may also influence the kind of research that is done. Whether research is related to local system of production will be influenced by the discipline of the researcher.

The predominance and emphasis of technological research relates to the believe commonly held by technocrats and some researchers that it is through technological innovations and adoption that remarkable improvements in

livestock production can be achieved. Practitioners of technological science tend to constitude a "pool of resources" for bringing about the desired technological improvement.

We therefore examined the disciplinary emphasis of the journals. Table 10 shows that 75.3 percent of all articles reviewed were published in journals that are primarily devoted to research in the agricultural sciences. These areas include animal science, pasture and range management, reproduction (cross-breeding, artificial incemination, feedlot operations, etc.), and nutrition.

From the observations in Table 10, it can be seen that the central concern about technological advancement in livestock production is reflected in the research agenda. The concern for technological advancement has been the overriding motivator of livestock investigation in Nigeria between 1960 and 1983.

Table10 Frequency distribution of disciplinary emphasis of journals publishing research articles

Discipline	Number	Percent
Social Science	5	4.0
Agricultural Scien	76	75.3
Veterinary Medecine	9	8.9
Interdisciplinary	11	10.9
Total	101	100.0

An examination of the location of the journals (whether journal was published locally or in a foreign country) revealed that more articles appeared in foreign journals. Table 11 shows that 77.2 percent of all the journals were published outside Nigeria.

There are a limited number of active professional journals in Nigeria. In addition, the slow response time of Nigerian journal editors and/or publishers usually result in huge back-log of journal print. The combination of limited number of Nigerian journals and the low response rate of journal editors and publishers may have contributed

Table 11 Incidence of Journals showing their origin of publication

Origin	Number	Percent
Domestic (Nigerian)	23	22.8
Foreign	78	77.2
Total	101	100.0

to researchers preference for foreign journals. Since most of the research results that are generated from livestock research are based on field and laboratory experiments or trials, foreign journals tend to more readily consider such manuscripts for publication.

The high incidence of articles that appeared in foreign journals can be seen as an indication that these foreign journals are more receptive to research reports based on

field and/or laboratory trials. This may be due to the fact that field and laboratory research activities abound in advanced countries and offer opportunity to compare results drawn from different research loci.

Regarding sources of research support, Table 12 reveals that 83.3 percent of the studies reviewed had been principally supported by institutions of higher learning in Nigeria (universities, colleges of agriculture, research institutes). The bulk of the studies reported had been undertaken by personnel from these institutions. Almost 11 percent of the sponsorship came from foreign governments,

Table12 Frequency distribution showing the funding source for research articles

Source	Number	Percent
Degree requirement	3	2.9
Nigerian government (special study)	3	2.9
Foreign institution	11	10.9
National (Nigeria) institution	84	83.3
Total	101	100.0

private organizations and corporate financial organizations. Studies that were specially commissioned by the government of Nigeria and studies counting towards the fulfilment of a degree each contributed almost 3.0 percent. The predominance of studies that have been supported by

institutions of higher learning was expected. Livestock research is the primarily concern of specialized research institutes.

An examination of animal species which were objects of investigations is presented in Table 13. Most of the articles did not deal with a specific breed of animal. Where reference was not made to a particular animal species, we coded for "unspecified" This category accounted for 44.7 percent of all articles reviewed. A high proportion of articles referred to the improvement of the livestock sector generally without specific reference made to any one breed. Research on beef and dairy cattle ranked next in that order. The combined contribution of research on cattle (44.5 percent) was expected to be this high because cattle are the major source of animal products.

Table 13 Frequency distribution of articles by the type of animal species studied

Breed	Number	Percent
Dairy cattle	15	14.8
Beef cattle	30	29.7
Sheep	8	7.9
Goats	3	2.9
Unspecified	45	44.7
Total	101	100.0

Research on goats and sheep ranked relatively low. This

observation may be due to the low status accorded small ruminants, especially goats in the Nigerian society. Table 14 indicates that only 9.9 percent of the articles were classified as dealing with the local system of production (nomadism). Most of the articles dealt with mixed-farming (45.5 percent), followed by research on improved pastures (25.8 percent).

Little research attention was paid to native pasture/ranching (7.9 percent). Research that could not be classified into any of our determined system (the "All

Table 14 Frequency distribution of research articles according to type of production system under which animal researched was raised

Production System	Number	Percent
Nomadism	10	9.9
Native pasture/Ranching	8	7.9
Improved pasture	26	25.8
Mixed-farming	46	45.5
All systems/Not determined	11	10.9
Total	101	100.0

systems" category) constituted 10.9 percent.

The finding that only a handfull of the articles reviewed dealt with nomadism returns us to a fundamental issue of this study. This issue relates to the importance and centrality of nomadic pastoralism in the livestock industry of Nigeria (see Chapter 1) and the attention (or inattention?) for improving it, with a major attention on

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technological transformation. The predominance of studies on improved pastures and mixed-farming indicates that the major research activities in livestock has not stressed the production system as practiced by the primary producers. The finding in Table 14 suggests that emphasis was put on developing alternatives to the nomadic pastoral system. This observation can be tied to the stance of the Nigerian State which heavily favored a technological "revolution" of the livestock industry. There is therefore, a congruence in the position and programs of the Nigerian government and livestock research activities. The situation regarding the emphasis placed on technological advancement in livestock production is better demonstrated in Table 15.

Table 15 Cross tabulation of production system of research articles by whether or not they made policy recommendations

Production System	Recommended Policy Yes		No	
Nomadism	8	(7.92)	2	(1.98)
Native pasture/Ranching	5	(4.95)	5	(4.95)
Improved pasture	3	(2.97)	24	(23.76)
Mixed-farming	15	(14.85)	29	(28.71)
All systems/not determined	5	(4.95)	5	(4.95)

$X^2 = 17.50$; $df = 4$; $p < .01$

Table 15 shows that the majority of the articles dealing with nomadism made recomendations for policy action

(8 out of 10) while research done on improved pastures gave very few policy recommendations (3 out of 27). Similarly, studies that were classified as "mixed-farming" made little policy recommendations (15 out of 44). The proportion of articles dealing with native pasture/ranching that offered policy implication equals those articles in the same sub-category that did not give any policy recommendation.

An explanation for this relationship can be linked to the type of science and the nature of scientific research undertaken by the different scientific communities. The more experiment-oriented research may not be directly applicable to the conditions of pastoral production. Experimentation is usually confined to laboratories or research station farms due to the nature of the investigation. This is particularly so in the case of improved pastures which are mostly found in experiment stations. The need to control certain variables and make careful observation makes it practically impossible to set up such experiments under local production conditions.

The key point here is that the type of research activity engaged in by different scientists stems from different goals. The goals of the researcher tend to determine what aspects of a larger problem gets more attention from specific community of scientists. A major goal of scientific research is to find solutions to the poor reproductive performance of Nigerian livestock. One of the solutions--the provision of feeds--has been pursued vigorously by research personnel.

The intensification of research on feed and fodder production is seen as a way of dealing with the seasonal migration of nomadic producers. The intention is that nomadic sedentarization would be possible if feed is made readily available to the producer all year round without having to migrate. With producers settling permanently, animal productivity would be enhanced, it was thought. It is not unexpected therefore that research dealing with pasture improvement and animal preproductiom are considerable more.

Table 16 Frequency distribution of the production system of articles by the source of research funding

Production System	Funding agency: Degree requirement	Nigerian government	Foreign inst.	National inst.
Nomadism	1 (0.99)	0	3 (2.97)	6 (0.94)
Native pasture	2 (1.98)	0	0	8 (7.92)
Improved pasture	0	1 (.99)	4 (3.96)	22 (21.78)
Mixed-farming	0	2 (1.98)	2 (1.98)	40 (39.60)
All systems/ determined	0	0	2 (1.98)	8 (7.92)
Total	3	3	11	84

In Table 16 it can be observed that funding is related to the production system. Of particular note is the incidence of higher research sponsorship by the Nigerian national universities and higher institutions. The high

incidence of funding coming from local institutions may be associated with the fact that the bulk of the research done on livestock production has been undertaken by academics residing in those institutions. Research on man-made pastures and mixed-farming dominate (21.78 and 39.60 percent respectively) all studies supported by local research institutions.

Research into the traditional production system received the least attention (5.94 percent); while native pasture and general studies (all systems) received equal attention (7.92 percent).

The universities and other research institutions can be seen from above observation to encourage and give more support to research which emphasized the technical aspects of livestock production. This institutional bias toward technical and biological sciences tend to be reflected in the hiring of academic and research personnel. There is a tendency to de-emphasize social science to the advantage and preference of other disciplines, with the result that the social sciences have minimal personnel and facilities for effective and meaningful research. It may be argued that the institutions influence (directly or indirectly) the direction and scope of research activities to the extent that when there is limited financial resources research funding would be made more readily available to investigate problems the funding agency deems fit, or issues in which the institution has the most interest. It

may be concluded, therefore, that the availability of funding andthe emphasis of the funding organization playa vital role in the kind of problems that are investigated.

Considering the likelihood that the policy making process would be influenced by the existence and availability of policy relevant studies we seek to consider the characteristics of policy-related articles. In other words, an examination of articles was undertaken to discover how policy-related articles differ from those that are non-policy-related.

Table 17 Relationship between subject matter of research articles and the locus of their research

Subject Matter	Locus of research: On-farm		Lab/Station farm		Other	
Health	3	(2.97)	4	(3.96)	2	(1.98)
Reproduction	3	(2.97)	14	(13.86)	5	(4.95)
Nutrition	1	(0.99)	18	(17.82)	1	(0.99)
Pastures	7	(6.93)	21	(20.79)	15	(14.85)

$X^2 = 47.09$; df = 8; $p < .01$

Table 17 shows that the majority of research was carried out in laboratories and/or on experiment station farms. These studies were mostly in the areas of reproduction, nutrition, and pasture agronomy. By far, pasture and nutrition studies dominated.

The explanation for the predominance of studies under controlled experimental conditions can be found in the

subject of investigation of the different disciplines. Feed trials, for example, need to be closely observed and certain factors are made to vary. Similar experimental procedures are usually followed in other discipline like reproduction and to some extent veterinary medicine. In brief, the definition of the research problem within certain disciplinary confines tends to be related to the locus of research.

Table18 Relationship between the subject matter of articlesandthe type of productionsystem of animals researched

Subject Matter	Production System				
	Nomadisn	Native Pasture	Improved Pasture	Mixed Farming	Not Determ.
Health	1	0	0	6	2
Reproduction	1	2	3	12	4
Nutrition	1	0	1	18	0
Pasture	1	6	21	2	1
Socio-economic	6	2	2	6	3

$X^2 = 74.94$; $df = 16$; $p < .01$

In Table 18 it can be observed that more studies were done in the "mixed farming category, with the reproduction and nutrition disciplines dominating that category. However, man-made pasture related research was almost exclusively dominated by pasture scientists, while social science related research was predominantly undertaken in the study of nomadism. In Table 18 a distinct pattern of

relationship emerges between the subject matter and the production system under which animal studied were produced. This relationship can be used to explain the strong association that exists between some disciplines and the formulation of research problem.

Table 19 reveals that most of the articles that mentioned policy come from social science reports. Of the

Table 19 Relationship between subject matter dealt with in articles and policy-relatedness of articles

Subject matter	Recommended Policy Yes		No	
Health	4	(3.96)	5	(4.95)
Reproduction	4	(3.96)	18	(17.82)
Nutrition	7	(6.93)	13	(12.87)
Pasture	8	(7.92)	23	(22.77)
Socioeconomics	13	(12.87)	6	(5.94)

$X^2 = 13.44$; df = 4; $p < .01$

36 articles that offered some policy options, 13 articles dealt with subject matter related to socioeconomic dimensions of livestock/pastoral production. Pasture-related investigations comes next in making policy recommendations while nutrition, health, and reproduction subject matters follow with 7, 4, and 4 respectively. Again, the type of science and the goal of scientific inquiry tends to influence the nature of research, the findings, and the format of result reporting.

Table 20 shows the relationship between policy-relevant articles and the articles related to local production system. The Table reveals that, nearly half of the articles neither gave policy recommendation nor dealt with a problem that can be considered relevant to local systems of production. Over 46.0 percent of all articles

Table 20 Proportion of articles that made policy recomendation by local system-relatednes of research

Local System	Recommended Policy Yes	No
Related	19.8	15.8
Not Related	17.8	46.5

$X^2 = 6.52$; df = 1; $p < .01$

fell into this sub-category. Only 19.8 percent of all articles related to the local system made policy recommendations.

It is evident from Table 20 that a considerable amount of research time and resources had been devoted to studying phenomena that have little direct relevance to the predominant system of production, that is pastoral nomadism. Very little policy-relevant results have been emphasized in the research reported by the the authors whose articles were reviewed. One obvious question that arises relates to the justification for continued research undertakings in the area of livestock production if the results of such investigations do not bear on the primary

mode of production or inform policy that could be used to better understand and enhance local production of livestock and animal products.

The high incidence of articles which neither indicated how research could be used nor dealt with problems directly related to the main form of pastoral activities may be regarded as an indication that little consideration had been given to examining the fundamental factors that may be associated with livestock and pastoral production during the period in review. Just as Larson (1965) suggested several years ago that sociological research is capable of making meaningful contributions to policy formulation process by providing leads or by making concrete and substantive policy statements, so do we here assert that research results in the livestock sector could provide "policy-makers with ±understanding'" (Nolan, et al., 1975:445) with which to properly and adequately address the problems of livestock/pastoral production.

However, as this study reveals, it can be observed that the contribution of research in enhancing our understanding of the position of the Nigerian government on livestock production is not clear. One is very much inclined to pose a similar question as did Nolan, et al. (1975:445) about "how such a contribution (of research) is possible if the appropriate issues are not being addressed". The concentration of research efforts on non-pastoral issues do not make research activities direcly relevant to policy formulation. If anything at all, it

could be argued that it is policy that informs research activities in the livestock sector, rather than vice versa.

The observation that the majority of the research findings reviewed were neither policy related nor bore any relevance to the local production system leads us to ask if this could have come about as a result of the publication priority of the journals. That is to say, could the emphasis of the journal have accounted for the nature of reporting?

Table 21 examines the relationship between policy-related articles and the concentration area of journals. It is shown that most articles fall in the agricultural science sub-category (75.25 percent). Of this proportion only 30.3 percent of the articles made policy recommendations, while the majority of articles published

Table 21 Proportion of articles that made policy recommendations by disciplinary concentration of publishing journal

Disciplinary Concentration	Recommended Policy Yes		No	
Social Science	5	(4.95)	0	
Agricultural Science	23	(22.77)	53	(52.47)
Veterinary Science	2	(1.98)	7	(6.93)
Interdisciplinary	6	(5.94)	5	(4.94)
Total	36	(35.66)	65	(64.36)

$X^2 = 12.41$; df = 3; $p < .01$

in agricultural science journals did not give any policy

recommendations (69.7 percent). From Table 21 it can be shown that all articles that appeared in social science journals (4.9 percent) made policy recommendations; while journals concentrating on veterinary medecine usually published articles that carried no policy implications as against those that made policy statements (6.9 and 1.9 percent respectively). Journals with an interdisciplinary blend tend to devote equal attention to articles with and without policy recommendations (5.9 and 4.9 percent respectively). There is therefore a sytematic relationship between the disciplinary emphasis of publication sources (journals) and policy-relatedness of articles. The relationship tends to suggest that the sort of issues and questions dealt with by different disciplines will determine the kind of research finding that emerges. Non-policy related research in this instance is therefore not directly relevant to the local system of production.

Table 22 Proportion of policy-related articles by funding organization/source

Recommended Policy	Funding source: Thesis	Nigerian Govt.	Foreign Agency	Nigerian Univ. & Res. Institutes
Yes	1 (0.99)	1 (0.99)	4 (3.96)	30 (29.70)
No	2 (1.98)	2 (1.98)	7 (6.93)	54 (53.47)
Total	3 (2.97)	3 (2.97)	11 (10.89)	84 (83.17)

$X^2 = 2.66$; df = 3; $p < .10$

Table 22 describes the relationship between policy-relatedness of articles and the source of research funding. From the table it can be determined that there is no strong and systematic relationship between the two variables. The articles supported by universities and research institutes in Nigeria fell in both policy recommendation and non-policy recommendation sets (29.7 and 53.5 percent respectively).

The observation that very few research articles made policy recommendation is an indication of funding source influence on livestock research activities. Although our finding does not offer a strong relationship between sources of research funding and whether policy recommendations are made or not, yet this influence exists.

Our finding to a limited extent corroborates the observations made by Busch and Lacy (1983). They had argued that there exists considerable amount of relationship between funding sources and the outcome of research. Busch and Lacy admitted that the grant they received from the Ford Foundation "has influenced us in both direct and subtle ways, and probably in many ways of which we are not fully aware... (We) have been urged to pursue certain lines of research in furtherance of certain ends. In short we have both been selective in our choice of funding sources, and been influenced by them" (Emphasis added) (Busch and Lacy, 1983:164).

Although our data shows, to a limited extent, that

some relationship exists between funding source and the nature of research output, this observation may have arisen from the one-sidedness of funding source-- the fact that there is only one major funding agency responsible for research undertakings in the country. The universities and research institutes provide the bulk of research resources (manpower, equipments, funding, etc.). Table 22 shows that 83.2 percent of all the research was funded by local universities and research institutions.

The observations in Table 22 may be related to the fact that researchers are expected to follow certain guidlines in submiting proposals for funding. Often, research proposals are approved on the basis of established departmental allocation criteria for research grants disbursement. Researchers therefore tend not to have a wide latitude of research problem definition and format of reporting.

Table 23 Relationship between policy related articles and origin of journal

Recommended Policy	Journal Origin	
	Domestic	Foreign
Yes	11.88	23.78
No	10.89	53.47
Total	22.77	77.23

$X^2 = 3.68$; df = 1; $p < .05$

We next examine the policy-relatedness of articles and

origin of publishing journals. This relationship, as expected, is shown in Table 23 to be systematical. In Table 23 it can be shown that more articles have been published in foreign-based journals. The findings observed above do not support some earlier observations, especially Busch and Lacy's studies in which "over 60.0 percent of the scientists indicate that domestic journals... are very important resources for research" (p.82). However, the observed preference for foreign-based journals as revealed by our data may be explained by the relatively few prestigious local journals devoted to researches in livestock/pastoral production systems. Furthermore, the observed preference for journals based outside Nigeria may be due (as earlier mentioned) to the huge backlog of issues of the few existing local journals. Since foreign-based journals are more likely to respond faster to manuscripts, preference seems to be given to foreign-based journals by authors of journal articles.

From the foregoing presentation it is clear that research in livestock/pastoral production in Nigeria has not focused directly on the existing production problems at the local level. A variety of explanations may be advanced for the little policy-relevant researches that had been undertaken. One reason may be related to the willingness of researchers to present research findings in ways that are highly regarded by colleagues and/or employers. In this regard, research findings are usually reported in a sophisticated manner, to the extent that such findings are

not in usable form for the pastoralist or farmer. This scientific nature of livestock research gives little room for praxis.

Associated with the inclination of scientists to sound sophisticated in their writings are theexpectations and demands of journal editors. Some editors and reviewers expect authors to conform with certain ±journal standards' and formats. Such requirements may be biased against certain kinds of research findings, such as studies that make inferences beyond the relevant study, but encourage research findings to be reported in a manner that only subject-matter specialists can understand.

Similarly, the need for scientists to produce both quality as well as quantity articles motivates researchers to communicate their findings in certain ways. This includes publishing in highly reputable journals, usually foreign journals, if he must maximize the benefits that could possibly accrue to him (reward system). The need for scientists (especially those that reside in university communities) to publish has been very well stated by Wooster:

> The young scientist learns, as part of the formal code of behavior of the scientist, that publication of the results of his research in a standard, authorized, refereed scientific journal is not merely right and proper, but a high duty and behavior expected by his peers and employers. He learns informally that promotion comes about through visibility and that, at least up to certain point in his career, visibility comes about through publication. He learns that there are "good" journals, and others not so good, but that every manuscript can eventually find a home somewhere and that, for the platitudes about refraining from unnecessary publication, this must apply to someone

> else— it is better to publish something in anything, even if only a government report, than not to publish at all (Quoted in Busch and Lacy, 1983:75).

The reward system, the reality within which the scientist has to work, contributes significantly to the type of research findings that are reported. It is not unusual, therefore, to push the meeting of this need (need to be adequately rewarded) to extremes. Extreme situations often include the establishment of professional journals by certain interested society members (usually younger professionals). The journal, as the offical publication of the professional society, is therefore used as an instrument to enhance their publication interests. The interested parties often constitute themselves as the editors, associate editors, and editorial board members so as to positively influence the publication of their articles. And as soon as these individuals attain their desired professional pinnacles, they cease to serve in these various capacities of the journals they had held so dearly. The cases of at least three journals in Nigeria point to this assertion. The Nigerian Journal of Animal Production, Ife Journal of Agriculture, and the Nigerian Journal of Social and Economic Studies were all started in the manner described above. As at the time of writing none of these journals are known to be active.

All these indicate that research may be undertaken by scientists in part to pursue their personal goals. In this regard to be able to publish their research findings in professional journals in order to be rewarded by promotion

or pay increases. The nature of research in livestock/pastoral production in Nigeria needs to be severely altered if any relevance to the local production is desired. We shall examine the implications of research activities for the policies that are being pushed by the Nigerian government in the concluding chapter.

In the above tables we can discern a pattern of relationship that exists between the type of research (science) and the goal of modernliing livestock/pastoral production. At the core of livestock development efforts is the goal of promoting technological advancement which is anticipated to led to significant increase in livestock production. Once this technological goal has been set, research act is often set in motion to validate the identified technological solution to livestock/pastoral production.

SUMMARY

The nature of livestock research in Nigeria is such that scientists' activities are "fine-tuned" with the interests of funding agency. Research does not seem to provide any basis for government policies on livestock production. The role of research in livestock production can be seen as an instrumental one in which State interests and programs actually direct research activities rather than research informing the action of the State. The State therefore uses research as an instrument to promote and

sometimes justify programs. On another level, the nature of scientific research does not lend itself to practical policy action (the absence of praxis). This makes research more of a tool for promoting the interests of the Nigerian State and other sponsoring agencies of livestock research.

CHAPTER FIVE

LOCATING THE PARADOX WITHIN SOME PERSPECTIVES ON SOCIAL CHANGE AND DEVELOPMENT

Introduction

In the preceding chapters we examined the interests of the Nigerian government as well as those of the core world in livestock/pastoral production in Nigeria. The instruments used by the Nigerian State to promote these interests in an effort to affect planned social change among pastoral producers were also discussed. We discussed how government policies and programs that were meant to enhance livestock production have been unsuccessful. Policies and strategies have been directed more toward destroying the local system of production rather than improving it. The strategies include sedentarization programs and a variety of technological innovations. These programs, in many ways, can be located within the tenets and propositions of modernization, dependency, and views on the State.

The purpose in this section is to explore some of the views that have been presented in the development literature that relate to pastoral/livestock development. The extent to which attention has been given traditional pastoral production systems in the livestock policies and programs will be discussed. Our goal is to understand the rationale for government livestock policies. In doing this

we examine some perspectives on social change and development to make us interpret and better understand paradoxical government livestock policies. The question we seek to answer here concerns how the contradiction can be explained by development perspectives. In what ways do the theories help us to better understand the inconsistency of the Nigerian government position on livestock production? With an exposition to the divergent views presented in the development literature, especially as they relate to agricultural production, we shall be able to map out the extent to which the interests of the Nigerian State (and/or the interests of the core world) is influenced by certain line of thought.

MODERNIZATION PERSPECTIVE

A theoretical position which has been widely used in the formulation and execution of guided change programs in many developing countries is the modernization approach. This perspective, by and large, stresses correlates of industrialization and the use of inanimate power sources on a very large scale (Bernstein, 1971, 1979; Levy, 1967; Moore, 1963). In relating to conditions of industrialization and industrializing societies, certain aspects of this approach attempt to explain how pre-industrial societies eventually become industrial. Other aspects of the perspective try to describe prevailing conditions prior to and after industrialization. In doing this, characteristics of pre-industrial societies and those

of industrial societies are constructed as though all societies were identical.

Our focus on the modernization approach is limited to a modern variant of evolutionary theory as explicated by scholars like Levy (1967), Smelser (1966), Moore (1963), Rostow (1961), Etzioni (1964), Leibenstein (1957).

There are differences of emphasis among proponents of modernization regarding the meaning of the concept "modernization." The diversity of conceptualization is due in part to the relationship of the term modernization with the concept of development. Some writers emphasize structural aspects while for others the concept of modernization has to do with transformation of culture and of personality in so far as it is influenced by culture, rather than of some aspects of social organization or of human ecology (Bernstein, 1971:141).

Modernization has, therefore, been defined in a variety of ways to emphasize such concepts as technology, industrialization, economic development, "Westernization," "Europeanization," "Americanization" and other concepts that have some connotation of the "traditional-modern" distinction, "backward-progressive" societies and the Gemeinschaft/Gesellschaft dichotomy. For example, the notion of technological advancement is presented in Levy's definition: "I would consider any society the more modernized the greater the ratio of inanimate to animate power sources and the greater the extent to which human efforts are multiplied by the use of tools" (Levy,

1967:190).

Relating modernization to economic development, Smelser distinguished four interrelated processes:

> (1) In the realm of technology, a developing society is changing from simple and traditionalized techniques toward the application of scientific knowledge. (2) In agriculture, the developing society evolves from subsistence farming toward the commercial production of agricultural goods. This means specialization in cash crops, purchase of nonagricultural products in the market, and often agricultural wage labor. (3) In industry, the developing society undergoes a transition from the use of human and animal power toward industrialization proper, or men working for wages at power-driven machines, which produce commodities marketed outside the community of production. (4) In ecological arrangements, the developing society moves from the farm and village toward urban concentrations. Furthermore, while these four processes often occurs simultaneously during development, this is not always so (Smelser, 1966:110-111, as quoted in Appelbaum, 1970:37)(Emphasis added).

From the above characteristics associated with modernization, the approach can therefore be seen to include elements of economic development and other indicators of improved economic performance. Elaborating the concept of "modernization" Smelser (ibid.), argues:

> ... technical, economic, and ecological changes ramify through the whole social and cultural fabric. In an emerging nation, we may expect profound changes (1) in the political sphere as simple "tribal" or village authority systems give way to systems of suffrage, political parties, representation, and civil service bureaucracies; (2) in the educational sphere, as the society strives to reduce illiteracy and increase economically productive skills; (3) in the religious sphere, as secularized belief systems begin to replace "traditionalistic" religions; (4) in the familial sphere, as extended kinship units lose their pervasiveness; (5) in the stratificational sphere, as geographical and social mobility tended to loosen fixed, ascriptive hierarchical systems.

Important assumptions of modernization are (1) that

modernization is a total social process associated with (or subsuming) economic development in terms of preconditions, concomitants, and consequences of the latter; (2) that this process constitutes a "universal pattern" (Bernstein, 1971). The assumption, which hinges on the "tradition-modern" dichotomy, is made that all societies (industrial and pre-industrial) at a particular development stage, were similar since they were all "traditional" and that traditional societies would experience similar changes as happened to societies of the West, and eventually become "modern."

Generally, modernizationists defined a society as "traditional" if relationships were "particularistic" instead of "universalistic;" if roles were not clearly separated (that is "role diffuseness" vs. "role specificity); if affection (feelings) rather than neutrality (objectivity) guided associations of different sorts; and if ascription (birth) rather than achievement was the general recruitment format into positions of responsibility (Parsons, 1951). Other traits that have been associated with "traditional" societies include a low level of division of labor, predominance of agriculture, low rates of energy consumption, low Gross National Product and low per capita income, low rates of production and growth, high population growth rates, and so on (see, for example, Levy, 1967; Leibenstein, 1957; Moore, 1963; Etzioni, 1961). A modern society exhibits the antithesis of these characteristics. Hence, modernization has been widely

conceived as the process of transition from "traditional" to "modern" social organization. The emphasis on economic development (entrepreneurship and capital accumulation) appears to be the lesson to be learned from the experience of the West and to be mechanically applied to the rest of the world so that they can repeat the transition (Roxborough, 1979:16).

A concept associated with modernization is the "big push" which has been widely used by economists to explain the transition of societies from traditional to modern, with an increasing GNP and per capita income. The mechanisms involved in the "big push" have been elaborated in the version Rostow (1961; 1964) made popular. Rostow (1964), conceptualized the transition from traditional to modern society in terms of an analogy to an aircraft (the period of "take-off" to a period of "self sustained growth"). For Rostow, there was need to increase the rate of capital investment in society up to a point where growth would occur automatically.

This view of development emphasizes capital accumulation, increases in GNP, and improvement in the economic realm of society, even though it may not be correct to equate development to increases in the GNP or increased per capita income. Indeed, economic growth cannot be equated with development as we need to address such issues as who produces what, who benefits from what, and how production is organized, among other considerations. For a summary of a checklist of correlates of

modernization, and the Rostownian model see Appelbaum (1979:40-54).

Within the modernization perspective may be located the "diffusion model" which placed heavy emphasis on the direct transfer of agricultural technology from advanced countries of the West to the Less Developed Countries (LDCs) of the Third World. The diffusion model basically makes similar assumptions about agricultural development as modernization does. It assumes that farmers in Third World societies can raise their productivity quite substantially by allocating their resources more carefully and more efficiently along with adopting agricultural technologies from advanced countries. Progress, according to this view, comes about through the spread of "modernism" to backward areas. Like the modernization perspective, the diffusion model postulates that backward areas evolve from "traditional" to "modern" state as technology and capital are introduced (Chilcote, 1980).

The diffusion of animal production techniques from the advanced capitalist bloc to Nigeria, for instance, would be considered the way to go about developing the livestock industry, proponents of the diffusion model and modernization would argue. Stated differently, these two perspectives would contend that it is through more effective dissemination of technical knowledge and a narrowing of the productivity differences among farmers and among regions that agricultural development can be brought about (Ruttan, 1984; Ruttan and Hayami, 1984). Like the

diffusion model, modernization approach has been the raison d'etre of Nigerian government livestock/pastoral development programs. Both models have been predominantly utilized as the guiding principle for scientific inquiry in the agricultural sciences.

Nigerian livestock policies are usually couched in the rhetoric of modernization. There is the often expressed concern for the need to "modernize" the agricultural sector (the livestock sub-sector). Modernizing crop and animal production has frequently been based on the application of western technologies in the production of crop and livestock species. The use of western technologies is often assumed to be linked to increased and improved levels of productivity. Higher and better yields are assumed to result from the use of technologies which originate from outside Nigeria.

For livestock and pastoral production, many programs and projects have been embarked upon by the Nigerian government which have had strong influences from the modernization perspective. Programs such as cross-breeding (both by natural and artificial means), ranching schemes, grazing reserves, feed lot operations are attempts to improve the productivity of local livestock species through the application of methods that would lead to the "modernization" of the livestock sub-sector. The use of western technologies has been associated with increased production of animals and animal products. The use of

foreign technologies has been argued to result in the transformation of pastoral production activities from simple and "traditionalized" techniques to those based on modern and scientific methods. Moreover, the application of western technologies in pastoral production has been associated with an evolution of the Nigerian livestock/pastoral production system from a subsistence one to that of commercial production.

The arguments of modernization run through the policies and programs instituted by the Nigerian Government. This is vividly illustrated in the National Development Plans. More recent evidence of the modernization-informed policies and programs can be found in a position paper by David-West, director of the Federal Livestock Department. He argued that the the success of the Nigerian Government's effort to enhance the livestock industry lies in the "ability and acceptability of producers to practice innovative technology" (David-West, 1982:46). He therefore advocated intensified efforts in technological advancement in the areas of breeding, pasture utilization, nutrition--all of which have not typically been practiced by livestock producers in Nigeria.

Policies that emphasized increased and efficient livestock production, through sedentarization, ranching and irrigation schemes (see Wallace, 1978, for example) can be seen as being conceptualized in modernization terms. The call for change from the present local systems of production to these based on foreign techniques can be seen

as a dimension of the modernization tenets on livestock policies.

It should be mentioned briefly that the foregoing tenets of modernization have a number of problems; all pre-industrial societies do not have identical social, economic, political, and cultural structure as modernization assumes. In fact, there is no reason to think that they are identical. Also, there is no reason to assume that the forces of change are the same in different and divergent pre-industrial societies. For a detailed critique of the assumptions of modernization, see, for example, Roxborough (1979), Appelbaum (1970), Frank (1967), Taylor (1979), and Bernstein (1971).

Despite the continued serious criticisms leveled against this perspective, modernizationists did not give up their argument under fire. Instead, they responded to their critics by devising "numerous articulations and ad hoc modifications of their theory in order to eliminate any apparent conflict" (Kuhn, 1970:78). An instance of this sort of response can be found in the works of Huntington and Nelson, (1976) and Almond, (1974). Moreover, modernizationists have been able to draw up concrete plans for program implementation such that can be used to address real problems. Although the course of action suggested by modernizationists may not be the most appropriate in certain situations, it can be said that the perspective attempts to grapple with tangible issues. It is no surprise, therefore, that the modernization perspective

still informs many projects and agricultural development programs in different parts of the Third World. Nigerian livestock production situation is no exception. This is especially the case where development programs and projects are sponsored by western-based international financial institutions such as the World Bank (IBRD), International Monetary Fund (IMF), and other financial agencies and corporations.

UNDERDEVELOPMENT PERSPECTIVE

Attempts at "modernizing" livestock production may be seen as attempts at creating conditions under which capitalist development could thrive. The Nigerian State, in an attempt to raise the efficiency of livestock production, does not simply embark upon policies that are stimulated by the realities that exist within the Nigerian society in general. The interests of the Nigerian State are also influenced by what goes on outside the geographical confines of Nigeria--interests of the core world. The Nigerian Government in pushing for measures that would "improve" the conditions under which livestock production takes place may constitute a path toward peripheral capitalism--through the development of commodity relations that emerge.

A policy of sedentarization, along with the accompanying capital-intensive projects, makes it possible for the Nigerian State to occupy a central role in

reshaping livestock/pastoral production. The state, through its policies, acts to "promote extension and intensification of commodity production both in its own interests and in conditions where it might not be immediately profitable for private capital to invest" (Bernstein, 1979:433).

Often, investment funds for programs in improved livestock production are in short supply. So also are technical and managerial expertise needed to run these programs in short supply. These shortages partly explain the role and interests of the core world in the promotion of schemes that provide large capital. These schemes represent what Bernstein called an "alliance between the state which organizes the political, ideological, and administrative conditions of this form of capital penetration in peasant agriculture, and the provision of technical and financial means of this penetration by either private capitals or the particular forms of finance capital represented by the World Bank and other aid agencies" (Bernstein, 1979:434). Projects such as the grazing reserves and accelerated livestock production programs are cases in point of alliance between the Nigerian State and the core world.

The interests of the Nigerian State in modernizing the existing systems of pastoral production often call for the use of technologies that are not available locally. Technologies are provided by corporations and international agencies usaully based in the core world. The technological

interests pursued by international business organizations is met by the interests of the Nigerian State to modernize livestock production. The association that emerges from this common interests often leads to situations of unequal and dependent relations.

The alliance between the Nigerian State and external organizations tends to generate conditions of dependency and underdevelopment (Baran, 1973; Cardoso, 1972; Dos Santos, 1970). The notion of dependent relationship has been inspired by the works of Latin American scholars like Frank, Furtado, and a host of others. Subsequent dominating thoughts on development issues in Africa followed the novel works of Amin (1977, 1976, 1974, 1973, 1972); Leys (1975); Rodney (1972); Brett (1972); Lipton (1977); Evans and Timberlake (1980).

The term "underdevelopment perspective" is used in this study to include what are commonly termed theories of dependency, world systems, and imperialism. Our reason for collapsing these three theoretical orientations hinges on their shared assumptions and reference to similar terms and situations in describing conditions of underdevelopment (see Haru, 1982). In particular, dependency and world system theory can be regarded as variations of the same theory, sharing the same assumptions, the same approach and the same terminologies (Koo, 1984:38). However, the vantage point from which dependency examines the center-periphery relationships is the standpoint of a given peripheral country, while the world system looks at the structure of

center-periphery from the standpoint of core nations. In spite of this difference in emphasis, we shall consider both sets of theories similar, and therefore, refer to them as the underdevelopment perspective.

The underdevelopment perspective focuses on the ways in which the economies of non-industrialized social formations are integrated into the capitalist world economy. It examines how surplus value is extracted from peripheral nations and transferred to countries of the core. The unequal relationship that results from the alliance of core and peripheral economies paves the way for the "formal or informal control over local economic resources in a manner advantageous to the metropolitan power, and at the expense of the local economy" (O'Connor, 1970:118). There exists, therefore, a dialectical relationship between development and underdevelopment as the industrialized countries develop while underdeveloping the rest of the world. The unfolding of this dialectical relationship "started with the mercantilist stage around the middle of the sixteenth century and continued until the end of the 19th century. This period included the era of the slave and free trade when European merchants transversed the globe in search for spices, gold, slaves, and the new trade routes" (Ollawa, 1983:127).

The process of underdevelopment is facilitated by the economic role of the State. The Nigerian State, in collaboration with agencies such as the World Bank and the others, have tended to promote and stress the production of

commodities. This sort of emphasis tends to deepen the dependency relationship that usually results. This kind of relationship can be exemplified by the emphasis put on cash crop production (such as palm produce, cocoa, groundnuts, and hides and skins) especially in the 1950s and 1960s. The emphasis changed, however in the 1970s when the concern for food production for national self-reliance and self-sufficiency emerged. This was accompanied by the call for the provision of production inputs and credit to the primary producers. For these concerns to be effectively dealt with, there was a need to seek support from outside. Donor agencies quickly responded with aid programs such as grazing reserves, Integrated Agricultural Development Projects, farm service centers and other farm improvement projects.

The reason for this emphasis on food production in Nigeria may be summed up in what Bernstein described "the chronic state of food production in many African countries, particularly the commodity production of food staples; the political instability associated with food shortages and inflationary food prices in the cities; the cost of foreign exchange for food imports to make up for shortages in domestic production" (Bernstein, 1979:434). These conditions were particularly so in the Nigerian situation in the 1970s when livestock production remained stagnant in relation to population increase. The high food import bills that arose from the importation of meat and animal products are cases in point (see Chapter 1).

The foreign-aided agricultural projects that flooded Nigeria in the 1970s were expected to boost local production of both crops and livestock. These projects, as expected, were heavily capital-intensive and were largely financed by the revenues derived from crude oil production. Equipment and personnel (management) were brought in from abroad. Imported equipment and manpower were attained at prohibitive costs. These projects were enhanced and extended to many parts of the country even as food prices and food supply soared. A preliminary evaluation of the impact of some of these projects indicated that much is yet to be derived from the projects (see Abalu and D'Silva, 1980; Nkom, 1982).

The interests of the Nigerian State in the pursuit of such agricultural programs may be located within the notion of alliance between the core and periphery as part of a capitalist structure.

Proponents of the underdevelopment perspective argue that the understanding of underdevelopment requires the examination of the international system as an integrated unit of economic interaction. The network of interrelationships between capitalist system impacts on the social, economic, and political processes in all nations, be they peripheral, semi-peripheral, or core (Wallerstein, 1974). Important to this perspective is the location of the specific historical antecedents of the underdeveloped countries in relation to their mode of incorporation into the capitalist economy and their function within that

capitalist economy and the ways such conditions of underdevelopment are upheld. Following the premises of the underdevelopment posture,

> an understanding of underdevelopment, for example, in Africa, must take into account the nature and degree of capital penetration and resource exploitation, structures and varieties of dependency and economic domination, their impact on development policies and strategies as well as the mechanisms through which surplus value is extracted and transferred. Thus, although underdevelopment is a consequence of and integrally linked with the expansionary dynamics of the world capitalist system, it does present a given mode of production which generates and reinforces the formation of various kinds of classes, class contradictions, and class alliances. Corresponding to the specific mechanism of incorporation and the degree of capitalist penetration dominant economic groups and multinational corporations with requisite capital, technological skills, and power develop definite forms of social relations with domestic classes, which make it easy for them to improve investment policies and influence market structures that promote their hegemonic positions and vested interests (Ollawa, 1983:128).

The Nigerian State, which usually serves particularly powerful interest groups, continue and even enhance relationship with such interest groups even when it is clear that such alliance is of very limited value to the generality of Nigerians. The situation described above about agency-funded projects is a case in piont. This has been emphasized by Cabral while underscoring the role of the national middle-class (national bourgeoisie) in the study of African underdevelopment.

> In the concrete conditions of the present-day world economy ... the imperialist action takes the form of creating a local bourgeoisie or pseudo-bourgeoisie, controlled by the ruling class of the dominating country... Thus the local pseudo-bourgeoisie, however strong nationalist it may be, cannot effectively fulfill its historical function; it cannot freely direct the developemnt of the productive forces; in

> brief, it cannot be a nation bourgeoisie (Cabral, 1969:82).

It is in this regard that some scholars argued that not only did growth strategies result in dualist and polarized societies, foreign investment in Third World nations brought them underdevelopment. Evans (1979), contends that dependent development will continue to be the main feature of many developing countries. The end result of the incorporation of the periphery into the international capitalist system, was to create a complex alliance between business and power elites, local capital, international capital, and state capital-- "the triple alliance" (Evans, 1979:11).

The underdevelopment perspective, useful as it may for the insights it provides for the relationship between powerful and weak economies, has been severely criticized for lacking focus on class relationships. The alliance between countries can be better understood if one examines the interests served by the power structure. It is the power-elite, through some form of class alliance that often dictates the direction of relationships, for example at local, national and international levels. The Nigerian State has been influenced by local interests of businessmen, civil servants, and military high-ups to enter into certain relationships with the outside world in the field of agricultural development. The interests of these groups in the establishment of ranches, large irrigation schemes, importation of feed and feed additives, all is

reflected in the position taken by the Nigerian government in livestock related matters. In this regard, the benefit that may arise from such alliances would not accrue to the general populace but to interest groups (see Nkom, 1982).

The importance of the tripartite relationship dicussed above has been underscored by reference to social classes and social alliances such as "comprador bourgeoisie," "international capitalists," "labor aristocracy," and so on. The functioning of the capitalist world economy must be understood as the "arena of social action and the fundamental political reality of that world-economy is a class struggle," argues Wallerstein (1979:230). Underdevelopment and development need be viewed and understood from the point of view of class interests and class conflicts. The influence the capitalist world system has on the internal structure of any given economy, and particularly underdeveloped economies, is primarily through the varying interests and the roles assumed by local groups and classes. This idea is well illustrated by Cardoso and Faletto (1979:xvi):

> We conceive the relationship between external and internal forces as forming a complex whole whose structural links are not based on mere external forms of exploitation and coercion, but are rooted in *coincidence of interests between local dominant* classes and international ones, and, on the other side, are challenged by local dominated groups and classes.

We therefore have a situation whereby international capitalism has become internalized through the configuration of class relations and class interests of

groups in underdeveloped societies. This notion runs through the arguments of current political economy scholars. Locating Nigeria within this world capitalist system has meant that the interests of the different classes form a crucial part of the whole analysis of economic development in general and pastoral development in particular.

In general, capital invested in order to enhance local production of livestock has a great tendency to extend and intensify commodity relations. This situation of commodity relations may in the long run lead to decline (even stagnation) in livestock production. The solution that the Nigerian government has sought for the declining livestock production may result in the expropriation of the pastoralist and their replacement by capitalist production enterprises. The attention of the Nigerian government to heavily capitalized farming schemes has been observed (see Wallace, 1978; Ayuko, 1980; Nkom, 1982; Beckman, 1981).

The Nigerian State utilizes the research institutes to promote the idea of mechanized and capitalist agricultural production. Many of these research institutes themselves were products of international interests. For instance, the Leather Research Institute of Nigeria was established in 1975 but actually dates back to 1964 when the FAO established the Hides and Skins Demonstration and Training project in Zaria (see Adeyemo, 1984).

Research institutes were established to undertake scientific investigations (applied and basic) into all

aspects of livestock production. It was the hope that the research institutes' findings would be used to inform policy on agricultural matters. Research activities in the livestock sector grew considerably as the expressed needs to bring tehnology to bear on pastoral/livestock problems became frequent. The research agenda drawn up by the research institutes may be interrelated with the policy complex and interests of funding agencies, since the research institutes are the creation of the Nigerian State. The State's central role in the formulation of livestock policies can be located within some views contained in the perpective on the State.

PERSPECTIVES ON THE STATE

There is the view that has been expressed by some Marxist analysts to the effect that the capitalist state has some degree of relative autonomy: "it is free from active control by members of the capitalist class or from the structural requirement of the capitalist economy" (Koo, 1984:43). The writings of Louis Althusser (1970; 1971) and Poulantzas (1968; 1969; 1975; 1978) put forward the argument that the nature of the capitalist state is largely determined by the class relations inherent in the capitalist mode of production. The state is also conceived, by this perspective, as the scene

> where the dominant capitalist group(s) organizes the competitive fraction of the capitalist class into class ±unity' (hegemony). Politics in the structuralist view is principally the politics of the dominant class in establishing or maintaining its

> hegemony over subordinated groups; the dominant fractions of the ruling group must-- through the state-- constantly create and extend capitalist hegemony over an inherently antagonistic working class... the state and politics are the arena of capitalist-class fractions attempting to mediate that struggle (Carnoy, 1984: 5-6).

Following these observations, therefore, the relatively autonomous state is seen as a factor that brings the bourgeoisie together in their bid to dominate society (Offe, 1975; Poulantzas, 1973). Development policies shape the way economic activities are organized, especially in the economy of developing nations. The problem of what to produce, how to produce, and who decides what to produce are important and significant social and economic problems in any economy. These problems are influenced by and worked out in political as well as in production arenas. That is to say that politics is an important dimension of economic development and the state plays a central role in shaping economic growth (development?). The sedentarization programs may be an instance of the political dimension of state policies. To understand politics in today's world economic system, therefore, is to understand the national state.

States in the economies of Third World nations are important and essential instruments for the administration of the dependent roles of these economies with regard to the international division of labor and the capitalist world process of capital accumulation-- dependent financially, technologically, institutionally, ideologically, militarily, on the international

bourgeoisie(s) and their metropolitan states (Carnoy, 1984). "The exigencies of the process of capital accumulation and the international division of labor, world-wide and in the underdeve- loped countries themselves, thus become the principal determinants of the role and the form of the state in the Third World (as well as elswhere in the capitalist world)" (Frank, 1979:1 quoted in Carnoy, 1984).

The role of the state in shaping and/or reshaping the activities of nomadic pastoral people is increasingly becoming more crucial in deciding and determining the pattern of development in the economy of such societies. Although the impact of increasing state interference in the activities of agricultural producers is stronger and more evident in developing countries, a similar observation may be made of the role of the state in the activities of pastoral communities in the more advanced industrial societies (O'Donnell, 1980).

The state has been brought into the center of analytical attention especially with regard to its role as an ±investment broker' or as an agent or ±stimulator' of economic development. The ever increasing role of the state in pastoral economic activities of nomads is therefore no surprise. The role of the state in redirecting nomadic pastoralism may be conceived within the framework of the nomadic pastoral system of production and the capitalist state which is "free from active control by members of the capitalist class but not free from the general interest of

the capitalist class or from the structural requirement of the capitalist economy" (Koo, 1984).

Issues relating to the extent of pastoralist activities as economic and rational, calculating, accumulating, and maximizing economic value need be considered before any meaningful program of pastoral development can be undertaken. This is especially so with programs of sedentarization. Divergent views have been expressed regarding these issues, especially as they relate to non-capitalist pastoral production. A view that sees the pastoral production activity as primarily a subsistence activity is represented by Bourgeot who observed that pastoralism (in particular, pre-capitalist pastoralism) is mainly a simple form of pastoral production for food-provision... with the pastoralist's aim to satisfy biological and social needs and herds are considered only as a means of production and an object of consumption (Bourgeot, 1979; 1981). This view sees livestock as a means of achieving the goal of subsistence rather than certain economic goals such as capital accumulation. Schneider is representative of a contrary view which contends that pre-capitalist pastoral production is oriented toward producing wealth and not toward producing food per se. This view sees livestock as playing the role of money (that is as a medium of exchange, store of value, standards and means of deferred payments), and as an asset to be manipulated in whatever way will bring the best return (Schneider, 1981). It is these divergent views on the nature of pastoralism

increasing alternative uses into which land is being put for industrial, commercial, and agricultural purposes tend to limit nomadic pastoralism.

The restriction of nomadic movements may be related to the pressing shortages of animal-source protein required by the ever increasing population. It is often considered that sedentary pastoral production would efficiently produce meat and meat products, while at the same time protecting the environment (Oyenuga, 1973; Alao, 1973). It followed therefore that change in the nomadic system of livestock production is needed (in this view) to better utilize natural resources. The way to achieve this end of improved livestock production, according to this view, would be to "modernize" and educate pastoralists. This assumption has been heavily influenced by the modernization model which views sedentarization as the first and ultimate step toward improving the livestock production activities of nomadic pastoralists. It would be argued by this perspective that improved and increased animal productivity can not be undertaken under migratory or nomadic conditions. Improved livestock production would therefore be enhanced, it would be argued, when "modern" production inputs are employed under sedentary conditions. The modernization approach has been a basis upon which government has attempted to settle nomadic pastoralists. This is with the hope that increased economic benefits would accrue to the nation, even if such "national benefits" did not "trickle down" or brought about improvements in the living standards of pastoralists. The

benefits that might accompany large projects accrue to corporate bodies that have the capacity and resources to take advantage of large scale and capital-intensive investments. So also do powerful interest groups of military and civil personnel take advantage of investment oppurtunities that livestock/pastoral project might offer. Such policies and projects are continued even if there seems little evidence to show that sedentarization enhances pastoral production or the commercialization of animal products (Haaland, 1977).

Furthermore, the modernization assumption, coupled with the commitment of the state to overall economic growth and political stability, can be seen as extensions of colonial policies of dependent development in Nigeria which has gone a long way to strengthen the role of the state in pastoral activities. To "improve" livestock production, the national government is motivated by what Bourgeot (1980), calls "a transnational project of vertical stratification" which can only be implemented through the support of the peripheral state. Hence the state becomes the crucible in which classes are found. Bourgeot therefore predicts that

> the present phase of the penetration of capitalist market relations, with privilege given to ranchers and fatteners will be followed by the development of food production, for the necessary economic and political conditions will have been created for the transformation of food produce into a form of merchandise, just as the logic of produce stratification, specialization and commercialization, transforms livestock, a means of production, into merchandise (Bourgeot, 1981:126).

In all, the interventionist, budgetary, and

entrepreneurial activities of the state may progressively lead to increased state power and control of pastoralists, especially government expenditures are utilized to sedentarize and control nomadic pastoral people. In providing such amenities the Nigerian state may be adopting the strategies in which state policies attempt to reconcile the constituent elements which Offe calls "allocative" and "productive" strategies. According to Offe (quoted in Carnoy, 1984), allocation is a

> mode of activity of the capitalist state that creates and maintains the conditions of accumulation in a purely authoritative way. Resources and powers that intrinsically belong to the state and are at its disposal are allocated. Such powers are the rights to tax and spend, and to make laws and administer (enforce) them. These are legal rights, powers vested in the state through a constitution or other legal and widely (if not universally) accepted documents that constitute the social contract. State authority to allocate resources and power is politically legitimated, and thus political power is the sole criterion and determinant of allocation (Carnoy, 1984:137).

On the other hand, productive state requires more direct role of government directed toward some physical input into production so as to maintain allocation.

SUMMARY

The introduction of innovation and promotion of technological development for increased productivity is the "gospel" of modernization. This perspective has been strictly utilized to effect changes in nomadic pastoral production system. The Nigerian pastoral problem has been informed by the modernization perspective to the extent

that extensive changes have been embarked upon in order to "improve" and enhance productivity. Changes have been sought to "modernize" livestock production in ways similar to the systems of production in advanced countries of the West. The idea to modernize usually receives strong support from countries that are willing to provide the "tools of change"--manpower, finance, equipment, and so on. Modernization assumes that livestock production would be greatly enhanced if pastoralists settled permanently as well as adopt improved animal husbandry practices. However, the practices suggested by this perspective can not be used by the primary producers who do not have the resource capabilities to engage in "improved" systems of livestock production. This makes it possible only for the more privileged few to take advantage of government policies and programs of enhanced livestock production.

Special interests groups are served in the process of accumulating capital. The underdevelopment perspective shows how the Nigerian livestock industry is integrated into the capitalist world economy. Through the utilization of inputs that go into "modern" livestock production enterprise--inputs that often originate from advanced capitalist countries--surplus value is extracted from pastoral economies and transferred to countries of the core. The extraction of surplus value is facilitated and sometimes enhanced by the interventionist role of the Nigerian State. Through policies and programs, the Nigerian State, in collaboration with the core world, promote large-

scale and capital-intensive livestock/pastoral projects. These sort of capitalist projects are usually out of the reach of the primary producers, who can not afford the expensive inputs that are often involved. The Nigerian State occupies a unique position in shaping the structure of livestock/pastoral production by its alliance with different interest groups within and outside the country.

This chapter demonstrates how modernization theory is used by policy makers in matters relating ot the pastoral/livestock problem. The underdevelopment perspective explains the activities of the Nigerian State in livestock production endeavors. This indicates that pastoral and livestock production activities can not be fully understood from the point of a single theoretical perspective. Rather, the complex problem of pastoral production can be better understood by juxtaposing different perspectives that inform the problem. A combination of theoretical perspectives is more effective in unmasking the various dimensions of a problem like pastoral production.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

Introduction

Livestock contributes about 40 percent of GNP derived from agriculture. It provides about 58 percent of all meat consumed locally. Nomadic pastoralists constitute about 90 percent of the stock-raising population, carrying about 85 percent of the estimated 10 million cattle population. It is this group of pastoral producers (nomadic Fulani) that government policies have been targeted, and it is on the same producers that our study has focused.

The study examined the policies and strategies of the Nigerian government in enhancing livestock production of nomadic producers. The intention was to increase local production, but efforts have not resulted in increased or enhanced productivity of nomadic pastoralists, instead nomadic livestock production system has been undermined by the very government that sets out to enhance nomadic production. It was this paradox that the study sought to understand and explain.

The study was an attempt to understand why livestock policies are hostile to nomadic pastoralists instead of improving their production and lives.

To understand this paradox we examined the nature and changing forms of livestock production systems so as to

help us contextualize government policies and programs for alternative strategies. Also the history of livestock policy from colonial to present period was examined to enable us understand the nature of and changes in the policies of government. An evaluation of the stance of government in light of the existing production systems and the policies that have been adopted were discussed. To further understand the rationale for government policies we examined some perspectives on social change and development to see how the theoretical orientations make us to interpret and understand better the position of government. This helped us understand the paradox by locating government action within some theoretical premises. We also expore the role of research in understanding the paradox. An examination of the role of research was undertaken because technology is often considered the key to modernization in some quarters, hence the assumption that research has a role to play in the development of technology. The extent to which livestock research has informed the stance of government was investigated.

The primary concern of Nigerian administrations has been the short supply of locally produced meat and meat products. This concern has been expressed in various forms, one of which is a set of policy actions which lead to the sedentarization of the majority of primary producers (Fulbe) who are migratory pastoralists. The policies adopted by the state are contingent on a number of assumptions and attitudes concerning these primary

producers. These have often been reflected in the research activities of scientists in the area of animal and pastoral production (see Table 5).

Scientific investigations into livestock/livestock production reflect anti-nomadic assumptions of many technocrats and operators of the state apparatus. We therefore sought to highlight the role of research and researchers in the current strategies of livestock and pastoral production in an attempt to relate pastoral/livestock research to the present production systems. In our attempt to investigate the relevance of scientific investigation to local systems of animal production, we tried to answer the question how much attention is being given local systems of production in the endeavors of livestock researchers.

Following the above concerns the research proceeded by examining some of the development perspectives that may have influenced or informed certain positions that had been held on the Nigerian livestock/pastoral situation. The changing conditions of pastoralism was examined vis-a-vis interests of the State. Analysis of some published research was undertaken to investigate the nature of and relevance of research to the existing pastoral production systems.

In general, the study raised a variety of issues that relate to the problems and structure of pastoral production in Nigeria. The issues raised by the study have important implications for research, policy and theory. In the section that follows, we present a summary of the study.

The pastoral production system

The majority of livestock producers in Nigeria are nomadic pastoralists whose main source of livelihood and identity is animal husbandry. Irrespective of the form of pastoralism practiced (whether transhumance, semi-nomadism, or nomadism) the production strategy relies heavily on the utilization of open, green pastures and upon the movement of animals and humans in search of pastures. This migratory form of production has been in practice for several generations and is still the major form of pastoral activity today.

One reason for the continued migration strategy relates to the fact that pastoralists, especially the nomadic group, are in a double-bind situation. On the one hand, because they have no secure title to any land of their own, they have to be on the move and continue to utilize marginal pastures as best as they can. There has been no legislation that would make land freely available to pastoralists without the fear of being harassed by the host community or sections of the host community. On the other hand, the problem of secured access to land has worsened in recent years as land speculation has been on the increase. More of the land that used to be available to pastoralists for temporary grazing are being put into alternative uses. Large scale agricultural projects, ranching and grazing schemes as well as rapid industrial

and urban expansion are taking grazing lands. Pastoralists are hence cought in a "double jeopardy" situation in which they do not have secured access to land of their own as well as losing the marginal land to rapid urban and industrial expansion.

The process of pastoral production entails both economic and social relations. Animals have symbolic meanings in terms of social relations. Cattle are passed on to younger generations in the form of inheritance and gifts for the young family. Cattle and other smaller stocks enter into exchange and distribution in the larger society. Livestock is sold to meet cash needs for a variety of purposes including the acquisition of consumable household items, payment of taxes, levies, and court and/or community fines, school and medical/veterinary fees, and so on. But more importantly, pastoralists hold their animals (especially cattle) in trust for the future generations. Because of their concern for the future, pastoralists often utilize pastures and other natural resources in a careful and frugal fashion so as not to jeopardize generations yet to come.

Pastoralists have a sharp sense of resource management. They are cognisance of the fact that any action likely to adversely affect the continued pastoral activities of future generations must be consciously averted. Pastoralists understand that the destruction of any part of the ecology will have serious consequences for their present and future production endeavor. Pastoralists

utilize a wealth of acquired knowledge and skills in the management of livestock and pastures. Movements are carefully planned to provide desirable fodder and water for their livestock. Conscious efforts are made to avoid contact with diseases and vectors, and in the event of contact with disease, the result is treated.

The large number of animals held by most pastoralists reflect a grave concern for insurance against emergency situations. Crisis moments may arise in times of drought, epidemics, famine, floods, or other forms of natural and/or man-made disasters.

Phases of pastoral transformation

In general terms, the production activities of pastoral nomads have been affected by efforts to draw the pastoralist into the administrative set-up of the state. The pastoralists' life has been adapted to the exigencies of their very participation in the world and to the demands of the state under both colonial and post-colonial administrations.

It was the intent of the British administration to enhance pastoral production. Increased herd size would generate higher revenue through imposition of cattle tax. Export duties would also increase when livestock products (notably hides and skins) are exported. The colonial administration embarked upon policies which would increase considerably livestock numbers. Programs of animal health and breeding were started with the ultimate hope and

intention of settling the nomad through the establishment of grazing reserves and ranching schemes.

The position of the newly independent administration on issues of livestock and pastoral production did not differ significantly from that of the colonial administration. The post-colonial government was primarily commited to the rapid economic development in all sectors. This emphasis on general improvement of the economy is reflected in the lack of a concrete policy positions on pastoral production, especially in the early years of independence. The noticable activity of government at independence was the implementation of the "Grazing Reserve Law" which had been initiated by the colonial administration. Many international-funded projects and programs quickly sprang up. Grazing projects and ranching schemes were started by the federal and state governments with the intention of raising production levels of domestic animals.

All the programs and projects were designed, assuming that only sedentarized population would benefit from the introduction of modern livestock production techniques. The message became very clear-- that the primary concern was to sedentarize nomadic pastoralists using the various projects and programs as the means.

Where settlement of pastoralists have been effected, the combined activity of livestock and cropraising tends to aggravate the incidence of desertification and degradation in the ecology especially in fragile ecological zones such

as those of the major producing areas of Nigeria. The provision of high-cost (often imported) animal feeds, which are usually heavily subsidized by government, in an effort to induce pastoral nomads to settle does not frequently match output. Such subsidized feeds create permanent dependence on supplies and products that are unsustainable. Bulk feeds and feed additives, veterinary supplies, and so on were imported and distributed to pastoralists at token charges. In some cases supplies were provided free of charge. If for any reason these supplies cease to be available to pastoralists, producers could be worse off as they would have become dependent on government for these supplies. Policies geared toward the enhancement of sedentarization can be explained in part by the political, economic, and social control government seek to have over nomadic pastoralists in particular and the Nigerian society in general.

The Role of Research

The content analysis revealed that most articles related to pasture. Almost one third of articles reviewed were pasture-related. Considerations of socio-economic matters ranked second in the research activities of scientists, contributing only 18.8 per cent of the total studies investigated during the time period (1960-1983). The proportion recorded for socio-economic articles was this high because the classification included humanities and social science related matters-- sociology, economics,

anthropology, history, ecology, geography).

Research on livestock/pastoral production has been dominated by the natural sciences with a strong adherence to the "value-free" notion in which scientific methodological "hardware" such as control experimentation and sophisticated statistical tools of data analysis predominate.

From the content analysis, it was revealed that 55.5 per cent of the articles reviewed had used experiment (laboratory and/or field) as the method of data collection. This process of knowledge production has left a wide gap between research and effective utilization of scientific craftmanship. Little of the research results can be used by the primary producer in the form these investigation results are being reported.

The assumptions held about nomadic pastoralism in the articles reviewed indicated that most researchers assume local production systems to be counter-productive and therefore need to be altered through the adoption of alternative production strategies. Over 72 per cent of the articles reviewed held this "counter-production"assumption about nomadic pastoralism.

Following the observations that research activities in livestock production have been dominated by the non-social science disciplines, the locus of research has primarily been the laboratory or station experiment farms. Content analysis results showed that 56.4 per cent of all articles reviewed were done on experiment station farms or in

laboratories under control conditions.

A majority of the articles reviewed (64.4 per cent) did not make any form of recommendation for policy action or related in any known way to the practical utilization into which research could be put in order to enhance livestock/pastoral production at the production level. Where policy recommendations were given they were anti-local system. Of the 33 articles that offered recommendations for policy action, about 66.7 per cent (22) gave recommendations against nomadic pastoralism while only about 5.6 per cent made recommendations that favored a continuation of some form of the nomadic strategy of production.

The bulk of the articles reviewed dealt with problems that were not related to the local system of pastoral/livestock production. Over 62 per cent of research done between 1960 and 1983 bore no relationship whatsoever with pastoralism. This is a very significant finding. The intention of the Nigerian government is to, by and large, enhance local production of livestock on the one hand, while, on the other hand, research activities have not demonstrated any commitment to this very goal.

It was revealed that the major publication channels of research findings is foreign-based journals. Over 70 per cent of the research findings were published in journals (mostly professional publications) based outside Nigeria.

By far, the majority of studies (83.3 per cent) were sponsored by universities and research institutes. It would

be recalled that the research funds available to these institutions come from the national government Only 2.9 per cent of the cases were directly supported by the federal government as special commissioned studies. Foreign institutions and agencies accounted for 10.9 per cent.

More than one type of animal is usually studied, sometimes all ruminants are studied collectively. This category represents 44.7 per cent of all the articles reviewed in the content analysis. The next most frequently researched species is cattle which constitutes 29.7 per cent of all the research reviewed. Smaller ruminants (goats and sheep) received relatively little research attention (2.9 and 7.9 per cent respectively).

The mixed-farming production system has been emphasized and has dominated the research activities of animal scientists during the period under review. Research on mixed-farming accounts for 45.5 per cent of all research conducted. Native pasture/native ranching and nomadism have been studied the least (7.9 and 9.9 per cent respectively).

The results of chi-square analysis indicated that there is a systematic relationship between articles that gave policy recommendations and the kind of production system studied (Chi-square = 17.50; df = 4; $p < .01$). Articles that dealt with nomadism made more policy recommendations than did studies dealing with other production systems. On the other hand, studies of "improved pasture" gave policy recommendations least often.

There exists a systematic relationship between the

system of production studied and the source of research funding (Chi-square = 23.35; df = 12; $p < .05$). For all production systems combined most funding came from the universities and research institutes). Also, more articles on socio-economic matters made policy recommendation (Chi-square = 13.44; df = 4; $p < .01$) while more non-local-system-related articles made no policy recommendations.

One general conclusion can be drawn from our analysis of published livestock research findings in Nigeria. There is a relationship between the research problem investigated and the discipline of the scientist. Researchers defined problems from their disciplinary stand point. This usually led them to investigate problems that are located within their subject matter. The policy-relatedness of results can be located in whether the nature of the problem is "applied" or "basic". The more a research tends towards the applied dimension, the more related the research would be to policy.

Theoretical implications of present study

Modernization and underdevelopment theories see the development process differently. The modernization approach emphasizes the utilization of technologies that move producers from an emphasis on subsistence to that of commercial-oriented economic activities. The use of technologies that have been developed outside the country of adoption is frequently advocated.

Agricultural policies in Nigeria have reflected a deep

commitment to the transformation of the subsistence nature of agricultural production (livestock included) to that oriented to commercialization, with the accompanying use of and reliance on Western technologies. The underlying assumption has been that productivity would be enhanced if and when advanced, foreign technologies are employed in the production process. The overwhelming emphasis on technological advancement in the field of agricultural production has kept the social aspect of agricultural production in the background.

Considering the Nigerian livestock/pastoral situation, programs of accelerated livestock production with the injection of expensive technologies are evidence of an increasing tendency to move away from livestock production based on subsistence needs to that oriented toward commercial purposes.

Cross-breeding programs between local and exotic breeds, ranching schemes and grazing reserves, are a few examples of technologies based on the modernization perspective of pastoral/livestock development. These strategies of the modernization approach have been seen to achieved little or no success in reaching desired levels of increased animal productivity.

The lack of relative increase/improvement in the livestock sector suggests that the introduced technologies are ill-suited to local production conditions. In spite of the unimpressive results achieved by the utilization of "modern" technologies in livestock/pastoral production

activities, government efforts still very much in the direction of seeking such technologies and applying same especially when some form of external support is involved.

With the provision of "assistance" or "aid" by foreign donor organizations/governments, several strings (explicit and/or implicit) are frequently attached. Such strings usually involvs fiscal and monetary manipulations of the recipient country. For example, under an arrangement of livestock improvement in Nigeria, a donor organization may dictate the terms of the contract as it best suits the donor agency. The recent debate as to whether or not Nigeria should take an IMF loan to offset its foreign debts clearly illustrates ways in which donor agencies could manipulate a recipient country. In the Nigerian case, severalconditions were set by the IMF, among which was the devaluation of the Nigerian currency by about fifty percent, the removal of petroleum subsidies to local consumers, anda requirement that the Nigerian goverment would agree to carry out certain economic programs that would stimulate local employment. The effect of these condition on the local economy are only too obvious. So that in the final analysis the net gain accrues to the donor in terms of profits which are often repatriated to their home countries.

This situation gives rise to a dialectical relationship between development and underdevelopment as the donor agency (usually the industrialized core) develops

while underdeveloping the recipient country. Some instances involve the importation of sophisticated machinery for processing dairy products, for artificial insemination, breeding, and pasture projects that can hardly be sustained without hiring people (for maintaining equipments) from the countries where these technologies come. Therefore, capital penetration into the Nigerian livestock sector creates dependency and external domination of the Nigerian livestock economy through the creation of surplus value that are extracted and transferred outside Nigeria. The benefits of planned social change do not usually accrue to the people it is intended for. Livestock projects that were conceived to raise the living conditions of pastoralists failed to do just that. Instead, the benefits that are derived usually get appropriated by individuals and agencies other than the pastoralists. Livestock projects in this regard can be seen as not meeting their stated objectives of enhancing the standard of living of producers.

In the attempt to develop the livestock sector, therefore, a situation of unequal relationship is entered by the Nigerian government with the outside world--frequently with advanced capitalist societies. Through this unequal relationship of the core and peripheral nations, the economies of the latter's social formations are integrated into the capitalist world economy. There is hence a continued exploitation of the less advantaged nation that results from the direct impact of technology

transfer and the indirect manipulation of the economy of the developing country through the administration of aid programs and other similar forms of assistance.

The argument put foward by proponents of the underdevelopment perspective, that the understanding of conditions of underdevelopment is in the examination of the international system as an integrated unit of economic interaction, holds partially for understanding the problem of livestock/pastoral production in Nigeria. The situation arises such that international capitalism becomes internalized through the configuration of class relations and class interests of groups in both underdeveloped and developed societies.

Class interests are often expressed through the workings of the state apparatus. The state is hence the scene where the dominant capitalist group(s) organizes classes into some sort of hegemony in an attempt by the dominant class to establish its hegemony over subordinated groups such as the pastoralists. The national state assumes an important role in the understanding of today's world economic system as the state apparatus can be used to shape the direction of economic and socio-political goals to be pursued.

The Nigerian State has featured very prominently in the production activities of nomadic pastoralists. The Nigerian government has frequently taken the role of "investment broker" in pushing certain production strategies. The state in its increasing intervention role

can be seen as an "entrepreneurial state." The unique vantage point of the national state in determining what development paths to follow relates closely to the modernization and underdevelopment perspectives discussed above. The state plays a central and unique role as a catalyst in the workings of the modernization and underdevelopment strategies of economic development.

The pastoral production at any one given period can be associated with the available level of technical-know-how. But by and large, a given form of production is a result of the combined interaction of the forces of state interests and interventions, class interests, and the dictates of the world economy. The transformation from one mode of production to another is usually facilitated by interest groups in both core and peripheral countries. The transformation of mode(s) of production is often accompanied by the destruction of the previous dominant mode(s). In the case of the Nigerian pastoral system, the situation is slightly different. The establishment of the capitalist mode of production in the livestock sector has not completely destroyed the nomadic mode of pastoral production. An explanation for this could be the complex nature of the capitalist system of livestock production one which the pastoralist can ill-afford. The means of pastoral production under conditions of capitalism do not correspond to conditions of nomadic pastoralism. Hence the capitalist mode has not been embraced by a majority of producers.

Implications for research and policy

It can be observed from this study that emphasis has been on technical pastoral/livestock development strategies. Not only are livestock development strategies "technological" in nature, but they focus on one type of production system. The bias towards technical development in livestock production can be associated with the way livestock development problems have been conceptualized and examined in the past. Too often the constraints to improved or increased animal production have been associated with the genetic structure of local livestock species. Hence livestock researchers, especially animal breeders have come to occupy a dominating role in animal production research. A close association with other related disciplines such as pasture agronomy and veterinary medicine is established. Problems of pastoral/livestock production have too frequently been examined from these disciplinary view points, with technological packages being offered as the ultimate solution to the problems of pastoral and livestock production in Nigeria.

This kind of research effort has largely encountered difficulties in matters regarding the appropriateness of technological innovations to local production systems. Other difficulties ecountered include the translation of technologies into practical, usable and affordable means of production. These difficulties are demonstrated in the huge amounts of resources that are put into the design and development of projects and programs that never took off

from the confines of experiment station farms and/or experiment laboratories. The collosal amount of resources that have been invested (especially during and shortly after colonial rule in the country) in the development of technological packages such as ranching schemes, grazing reserves, livestock service centers, artificial insemination (A.I.) programs, veterinary posts, livestock improvement and breeding centers and farm centers have not been justified due to the non-use or rejection of most of these technologies especially by the pastoral producer.

There is a need therefore to re-direct research and policy attention away from the technical aspect of pastoral development. More vigorous efforts need be directed toward social and economic aspects of pastoralism, with a recognition of the logic and rationale of the production goals of pastoralists. Research and policy based upon the socio-economic and tehnical capabilities of producers stand a better chance of impacting local production of livestock as a better idea of the present pastoral crisis and the reasons behind the decline in animal productivity is better grappled with. With equal emphasis of research and policy on the social, technological, and economic aspects of pastoralism the underlying structure of the nomadic strategy of herd management and resource utilization is better understood and important factors that could be brought to bear on the mobility of nomads better understood in a more contextual format.

Furthermore, for research in livestock production to

contribute to the attainment of production objectives at the national and/or regional levels, emphasis should be given to location-specific research. It should reflect the varying ecological, social, economic, political and cultural circumstances. If livestock investigations are specifically designed with a given ecological zones in mind, there would be a better understanding of the major constraints and problems inhibiting production in such specific ecological zones.

For research undertakings in livestock and pastoral production to be effective, there is need to make research findings more applicable to specific problems rather than emphasizing aspects of research findings that are primarily scientific in nature. This observation is, however, not meant to denigrate the importance of the production of scientific knowledge based on the analysis of concrete situations. Nevertheless, it is difficult to produce knowledge based on scientific procedures and at the same time make research relevant to concrete and practical problems. Methodological rules used to guide scientific investigations in terms of propositions or theoretical stances should be relaxed for a less formal methodology that would take into consideration other practical ramifications of the problem being investigated.

By the above statement it becomes apparent that a case for applied research in the study of pastoral/livestock production problems should be favored over more basic research, The realities of Nigerian nomadic pastoralism

calls for a more applied-oriented research approach than it does basic research efforts. Since basic research more often emphasizes "objectivity" and "value-neutrality" of research findings, research based on orientations of objectivity does not usually provide the practical knowledge base for tackling specific social dimensions of livestock production.

However, both theoretical (basic) and applied research inform one another. Theoretical implications can be derived from applied research findings and vise versa. But for practical problem solving in the area of livestock/pastoral production in Nigeria, a more applied-oriented research would be more meaningful and effective in grappling with the issues involved in this multi-dimensional human endeavor.

The above argument for applied research should not be construed as an attempt to under-rate the usefulness basic research or to pretend that all investigations ought to be oriented to solving specific societal problems. However, the question is, as Beal (1969:467) very well sums it "whether theory building (basic research) and testing, and methodology especially, do not become ultimate ends in themselves." Livestock research should de-emphasize hypothesis testing and disciplinary jargons that make little sense to persons outside of the researcher's disciplinary enclave.

Associated with the meaningful communication of research results is the conceptualization and

operationalization of problems based on the felt needs of the people or community concerned.

More conscious effort (on the part of technocrats) should be made to identify the priorities of the people that are targeted by development efforts. Input should be sought from the potential beneficiaries of government interventions. With a greater level of meaningful local participation, problem identification could be facilitated and strategies for solution worked out. Local participation should transcend a nominal representation by individual(s) who would only tow the line of decision that do not reflect the views of the community in general. Rather, consultation with the sincere representative(s) of the community should be done. The issue of defining "true representation" presents some difficulties. This is a tough issue to which no definite answer can possibly be offered within the framework of this study because it is often too difficult to have conscensus on the issue of community priority of needs, no matter how small a community might be. Nevertheless, the inclusion of community members in the definition of community problems would bring "insider" perspectives to bear on the problem at hand. Perspectives offered by community members should form a very crucial dimension of problem identification and the emergence of appropriate strategies to deal with the problem.

CONCLUDING STATEMENT

From this study it can be concluded that no one particular theoretical perspective has informed the pastoral/livestock problematic in an exlusive fashion. That is to say that no specific perspective by itself offers complete understanding of the pastoral problem. The perspectives examined above have informed the problem of livestock production. However, since the State plays a central role in development, a comprehensive understanding of the different ramifications of the national state could further our understanding of the pastoral/livestock problem.

The study revealed that there are many dimensions of the pastoral problem. This multi-dimensionality calls for a good grasp of the key elements that influence pastoral activities. The present study revealed that the needs of the producers to meet both subsistence and non-subsistence ends constitutes the core of pastoral activities. It has also been demonstrated that the investigation of pastoral and livestock problems have too often been far removed from the very circumstances surrounding pastoral production. Concerns for increased livestock production have not been matched by practical efforts that could ameliorate the condition. Research into pastoral/livestock conditions have frequently concentrated on the use and adoption of technologies that are inappropriate to local production conditions. It becomes imperative therefore, that more

attention should be given the human aspects of pastoral production rather than the present domination of technological policy.

In sum, greater attention should be given to the relevance of scientists' work to the needs of producers in particular and other client community members in general. The emphasis on the practicality of research undertakings would encourage scientists to embark upon meaningful research and not just doing research for the sake of getting as many publications from a study as possible.

Also the evaluation of certain technologies that are proven to have considerably enhanced animal productivity should be more carefully undertaken before a decision of adoption is reached. The evaluation of technologies used in livestock/pastoral production should be undertaken with the potential contribution of such technologies in mind. More importantly, technologies should be evaluated vis-a-vis producers' goals and priorities.

As the structure of the reward system available to scientists hinges on the quantity and/or quality of published materials, the system of promotion and reward should be restructured to de-emphasize the weight presently given to publication per se. The incorporation (into the present reward system) of such elements as the relevance and practicality of research undertakings to the local system of production should be considered an important ingredient that needs to be demonstrated in researchers' work. As Lacy et al. (1983:74) have put it: "annual reward

to scientists whose on-farm research directly contributes to farm (livestock) production might be instituted, with these awards taken into consideration for promotion..." and be encouraged to "demonstrate the relevance of their work to organizational and national goals." With a re-ordering of the reward system, scientists' research activities would become less of an end in itself.

Programs of pastoral development, and indeed rural development, that are aimed at improving the quality of life of pastoral producers could be enhanced if less emphasis and importance is given criteria based on premises that are alien to the producers and to the environment. More utilitarian ends would be met if livestock development programs are based on the existing pool of knowledge of the people that programs and projects purport to serve.

The use of pastoralists' knowledge in formulating development programs should incorporate the legitimate interests and purpose of the producers, including their use of livestock as an important dimension in their social relationships (Goldschmidt, 1981). Programs of development should understand change and needs of the people from within rather than imposing criteria and values from outside the locality.

Improvement in pastoral production should be directed toward integrating aspects of the present systems of production and made compatible with same. If State intervention in pastoral production is to benefit both the producers as well as the public at large, there must be an

attempt to compromise national goals and needs with those of the producers. In doing so, an initial step would be to adequately understand all the important motives underlying the pastoral forms of production. For instance, the movement of pastoral nomads is not a movement for the sake of it but it is because they have to move. Since pastoral nomads do not have any right to land, the best option opened to them at this time is to continue to utilize open pastures for as long as these are available to them. However, if government feels very strongly about sedentarization, adequate plans and permanent arrangements must be made to facilitate all aspects of human existence in the new settlement. That is to say that nomads are to be settled in areas where they can have as much right to natural resource use as the agricultural population does.

FUTURE RESEARCH

A number of questions which were not the subject of this study need be addressed in future pastoral studies. Questions on production should include the primary purpose of pastoral production (subsistence and/or exchange?); the trend toward a market-oriented production; what are the conditions under which subsistence pastoral production is giving way to other forms of production; how are pastoralists responding to the process of capital accumulation in livestock production? What is the unit of production/consumption? Is the unit of consumption the same

as that of production?

Also questions relating to herd size and composition as well as ownership of livestock are important in describing livestock production systems. Other questions that need be asked include the optimum herd size and why pastoralists keep herd sizes at the level they do. Does the herd size kept have anything to do with a trade-off between individual animal productivity and risk management? Are large herds kept to ensure that enough animals will survive a severe drought or epidemic so that herds can be rebuilt quickly soon after major disasters? What other economic activities do pastoralists engage in that are related to livestock production? For example, do nomadic pastoralists raise a variety of livestock in order to be assured of something to fall back upon in bad production years (a measure of insurance or liquid asset?). How does the pastoralist view his herd, for example, as a "mobile bank" and investment devices? What does the herd actually symbolize (prestige and/or influence?) in pastoral societies.

It is especially important to know the position of the pastoralists in matters relating to their own well-being. The sedentarization issue is an instance. Do they actually want to become sedentarized or would they prefer to remain a nomadic people even though their production strategies may not be as efficient as some others?

Questions as diverse as these can only be best investigated by using a "participatory research method

(Comstock and Fox, 1982). According to this approach,

> members of the community under investigation should participate in the entire research process. The aim is self-clarification of community values, needs, and projects. The researcher (and policy planner) and subjects work together in the conceptualization, design, collection of data, data analysis, and posing of solutions to problems (Antonio, 1983:347).

Through this sort of research method, an adequate understanding of the more important aspects of pastoralism will be possible.

In order for government to come up with appropriate and beneficial policy programs, there is need to integrate all available knowledge on the issue. This knowlegde should not, however, come from a segment of the community, but from across all groups and interests. It is especially in this regard that the participatory research method is being favoured in the study of pastoral people of Nigeria. This procedure would utilize multiple procedures of inquiry such as participant observation, survey of different sort, (simple) statistical analyses, structured and unstructured interviews, documentations, and so on. This multiple method approach has been termed "Triangulation" and has been popularized by Denzin (1978).

The main reason for advocating a triangulated study of the pastoral problem can be found in Denzin's contention that "no single method is uniformly superior; each has its own special strengths and weaknesses" (Denzin, 1978:339). By employing divergent approaches, the multi-faceted dimensions of pastoralism would be better understood.

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APPENDIX A

A total of 101 articles were read and classified according to the categories listed in Appendix 2. Our primary data source was the different abstracting bodies referred to in Appendix 1. The most recent issue of these abstracting bodies contained materials that appeared in journals published two years prior. Hence the latest year of journal publication was 1983.

Prior to deciding on definitional categories (variables), the clarity of the category definitions was tested by coding a small sample of articles to reveal any ambiguities. This step produced some insights which helped to suggest areas of revision of the classification scheme. Categories were hand-coded and fed into the computer for analysis.

Each article was read to determine if the author(s) "explicitly discussed the application of... (the) research findings, either in terms of general policy concerns or specific recommendations for action" (Nolan, et al., 1975:437-8). Initially, we considered studies as having policy implications as those that devote at least a section of the article to analyzing the research findings in the context of specific policy recommendations. By using this criterion, only a handful of articles fell strictly into this category. We therefore modified our construct and included articles that have any discussion of policy

implications, even if such policy-related statements are presented in a summary form. Therefore, an article which only discussed (even in a peripheral manner) the implication(s) of research findings for a wider societal application was counted as a policy paper. The discussion of policy implications often appeared in the "abstract", "result and discussion" or "summary and conclusion" sections, with only one or two sentences that point to some policy implications. The nature of the recommendations of the studies reviewed can be inferred from the same sections as the recommendation category. Recommendations may be "pro-local system", anti-local system", or "unclear" (Appendix 2).

To determine the sort of topics that researchers investigated during the period under review, a subject analysis was undertaken. There are five subject matter areas namely: animal health, socio-economics, animal reproduction, animal nutrition, and pasture agronomy. In classifying by subject-matter our approach is similar to that of Sewell (1965) and adopted by Nolan, et al. (1975). Each article was assigned to a specific subject matter category, which best reflected its major emphasis. In instances of overlapping emphasis, the dependent variable was given more weight than the independent variable (Sewell, 1965).

Another phase of the analysis involved an attempt to categorize articles by system of production. This classification followed the emphasis of the subject matter.

The object here is to capture the context in which the subject matter is done. For example, if an article dealt with health related issues of animals raised under nomadic pastoralism, the "subject matter" of such an article would be "health". The production system of such article would be classified as "nomadism". However, if an article combined some sub-categories under production system or made no reference to one particular production system, we coded as "not determined".

The data source used in the research is usually derivable from that section of the article dealing with "methods and procedure". This is especially so for articles that are based on the report of controlled experiments. The source of data used by the researcher may also be known from the abstract, introduction, and/or the summary and conclusion sections of the article.

Assumptions held about nomadic pastoralism were initially classified as considered productive (ie. desirable), counter-productive or unclear (mixed assumptions). However, on reading all the articles it was found that not a single article held the assumption that nomadic pastoralism was productive in a definitive way. The "productive" category was therefore dropped. Assumptions about nomadic pastoralists and their mode of production are usually easily inferred from the introductory and/or concluding statements. Assumptions could be explicit or implicit. Where assumption is implicit, direct condemnation of nomadic pastoralism is not usually present. However a

push for a "Western-styled" husbandry practice is often promoted.

The "locus of research" category (that is where the research was conducted) was classified into: 1) "on-farm" (that is field experiment under existing local and farm conditions); 2) "laboratory or research/experiment station" for studies done under control environments; and 3) "other" for studies based on a general review of one or more animal species. The "locus of research was mainly determined from the "methods and procedure" section of the articles reviewed.

Next, we attempt to determine whether the research is related to the local system of production or not. For studies that are related to local production system we coded "yes" and "no" for those that are not related to the local system of production. If, for example, a research focused on the exhange function of cattle within the social organization of the producing unit, such article was classified "yes"--as one related to the local system of production and treated as such.

Journals were classified (on the basis of disciplinary concentration) into "social science" (including sociology, economics, anthropology, history, political science); "agricultural science" (including pasture agronomy, entomology, animal reproduction); "veterinary medicine" (including health, mortality, epidemiology) and "interdisciplinary" (a combination of at least two of the aforementioned categories). These categories were decided

from the emphasis of the "Notice to contributors", where the intended audience and emphasis of the journal is usually clearly specified. In most cases, identification is facilitated by the knowledge of the publishing professional body or association. The journals were then classified as either published locally (in Nigeria) or in a foreign country.

The "funding source" category was determined from the ±acknowledgements' and ±disclaimers' sections of the article as well as from the institutional affiliation of the author(s) if no acknowledgement or disclaimers were included. The "funding source" category was classified into 1) "degree requirement" if the study was conducted as a partial fulfillment of a degree (usually a higher degree); 2) "Nigerian government" if the study was specially commissioned by the Federal (or State) government of Nigeria; 3) "foreign institutions" if the research received funding support from external sources. This includes grants and financial support granted by foreign governments, private and public institutions abroad as well as grants and support received for research into livestock-related matters from foundations and voluntary organizations that are based outside Nigeria. The last classification "national/state institutions" consists of research sponsored by Nigerian educational institutions, usually universities, colleges of agriculture and research institutes.

The final category deals with the animal species upon

which the research was based. This could be one or a combination of dairy or beef cattle, goats, or sheep. If reference is made to cattle, goats and sheep, we classified as dealing with multiple species and hence refer to such studies as concerned with all species. Where no one particular species has been mentioned we coded for "all species".

APPENDIX 1

SOURCES OF MATERIALS USED
IN CONTENT ANALYSIS

Materials used for content analysis were partly derived from bibliographic searches using the computer-assisted scanning system of **DIALOG** and partly the ABSTRACTS ON TROPICAL AGRICULTURE. DIALOG retrieves data only to as far back as 1973 from the present; therefore, the 1960 - 1974 period was searched mannually, using the same databases as was used for the computer search.

The **DIALOG** search used three main databases: the **AGRICOLA**, the **CAB**, and the DISSERTATIO**N ABSTRACTS ONLINE** databases. AGRICOLA is the indexing and cataloging of the U.S. National Agricultural Library, which provides comprehensive coverage of world-wide journal and monographic literature on agriculture and related subjects. Because AGRICOLA represents the actual holdings of the National Agricultural Library, there is substantial coverage of all subject matter normally contained in a very large library such as the Library of Congress in Washington, D.C. The CAB ABSTRACT database is a "comprehensive file of agricultural and biological information containing all records in the twenty-six main abstract journals published by Commonwealth Agricultural Bureaux. The third source is the DISSERTATION ABSTRACTS ONLINE

database which comprises practically all dissertation done in and accepted by academic doctoral-degree-awarding institution in North America. The search of the ABSTRACTS ON TROPICAL AGRICULTURE database was done manually, covering the same period.

Search was limited to journal articles on all aspects of ruminant (cattle ie. dairy and beef, sheep, and goats) production in Nigeria since the country attained political independence in 1960. Articles were traced in the respective journals. Not all the journals were carried by the University of Missouri libraries. However, unavailable journal articles obtained through Interlibrary Borrowing Service. The categories into which the articles are classified are: subject matter (health, reproduction, nutrition, pasture, marketing, etc); type of system of production (nomadism, native pasture, man-made pasture, mixed-farming, etc.); sources of data (questionnaire, literature, observation, experiment, documents, historical records); assumptions (explicit and implicit) about pastoralism; whether or not articles make policy recommendations; nature of recommendation (whether or not such policy recommendations are pro- or anti-local system of production); whether or not articles are related to local system; journal classification (social science, agricultural sciences, veterinary science, interdisciplinary); origin of journal (local, foreign); sponsor of research; type of

animal breed researched (dairy cattle, beef cattle, sheep, goat, no specified breed).

APPENDIX 2

CODEBOOK FOR CONTENT ANALYSIS

A. Subject Matter

1. Health [vet., mortality, morbidity]

2. (Re)production [(cross)breeding, performance, A.I. feedlots, management techniques]

3. Nutrition [feeds, supplements, agro-byproducts, crop residues]

4. Pastures [fodders, forages]

5. Socio-economic dimensions [extension, technology impact, place/importance of livestock, marketing, cost-benefit analysis, systems research]

B. Type of production system

1. nomadism

2. native pasture/ranching [open pastures]

3. improved pasture

4. mixed farming [feedlot, supplementary feeding]

5. not determined

C. Source of data

1. questionnaire/interview

2. literature

3. observation/survey

4. experiment [field or lab]

5. documents/historical records

D. Assumptions about pastoralism [Refer to A]

1. counterproductive and undesirable

2. productive & should continue

3. mixed/unclear

E. Locus of research

1. on-farm [field experiment]
2. lab/station experiment
3. other

F. Recommendations for action/policy

1. they say how research can be used
2. did not say how research can be used

G. Nature of recommendations

1. pro-local system
2. anti-local system
3. mixed/unclear

H. Is research related to local system?

1. yes
2. no

I. Journal classification

1. Social Sciences
2. Agricultural Sciences
3. Vet. Medecine
4. Interdisciplinary

J. Origin of publication

1. local (Nigerian)
2. foreign

K. Who supported the research

1. Thesis requirement [in part or whole]
2. Nigerian govt. [special commission]
3. Foreign government/agency
4. National/local institution

L. Type of animal breed researched

1. Dairy cattle
2. Beef cattle
3. Sheep

4. Goat
5. All species/unspecified

APPENDIX 3

AGRICULTURAL RESEARCH INSTITUTES BY RESEARC AREA

Livestock

National Animal Production Res. Inst., Shika

National Veterinary Research Inst., Vom

Nigerian Inst. for Trypanosomiasis Res., Kaduna

Leather Res. Inst. of Nigeria, Zaria

Fisheries

Kainji Lake Res. Inst., New Bussa

Lake Chad Res. Inst., Mechoun Fatori

Nigerian Inst. for Oceanography & Marine Res., Lagos

Tree Crops

National Inst. for Oil Palm Res., Benin

Cocoa Res. Inst. of Nigeria, Gambari

Forestry Res. Inst. of Nigeria, Ibadan

Rubber Res. Inst. of Nigeria, Iyanomo

Food Crops

Institute for Agricultural Res., Samaru

National Root Crops Res. Inst., Umudike

National Cereals Res. Inst., Ibadan

Inst. for Agricultural Res. & Training, Ibadan

National Inst. for Horticultural Res., Idi-Ishin

General

Nigerian Inst. for Social & Economic Res., Ibadan

Center for Social & Economic Res., Zaria

Agricultural Extension & Liaison Services, Zaria

Nigerian Stored Product Research Institute, Lagos

The undersigned, appointed by the Dean of Graduate Faculty, have examined a dissertation entitled

The Pastoral Paradox: Livestock Development Policy and Nomadic Pastoralists in Nigeria

presented by Jerome O. Gefu

a candidate for the degree of Doctor of Philosophy

and hereby certify that in their opinion it is worthy of acceptance