

“Traditional” and “Modern” Patterns of Cattle Raising in Southwestern Angola: A Critical Evaluation of Change from Pastoralism to Ranching

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“Nomadism and transhumance are ecological adaptations to the rigours of a stern environment.”¹

One of the greatest dangers in the evaluation of development schemes lies in the comparison made between the extant situation and the projected future. The proposed change is often justified by consciously or unconsciously describing the present largely in terms of its defects, problems, and difficulties, while the future is forecast in purely positive terms.

In rural development planning it is always difficult to foresee with sufficient accuracy the possible ramifications of a proposed scheme. When dealing with rural Africa, the attempt to evaluate a program for the “modernization” of “traditional” African patterns is even more difficult because of several factors. One is the aspect of subjectivity in the analysis; frequently compounded by ethnocentrism, it greatly influences the evaluation of a traditional system and thus reinforces the desire to “modernize” it.² Second, incomplete knowledge and understanding of the existing situation often occur because reliable structural and statistical data are

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¹ John Phillips, *The Development of Agriculture and Forestry in the Tropics: Patterns, Problems and Promise* (London: Faber and Faber, 1961), p. 101.

² While there is now a noticeable trend away from the classical view of the “primitiveness” and “ineptness” of African cultures and systems, recent examples of ethnocentrism can still be found; see Andrew M. Kamarck, *The Economics of African Development*, rev. ed. (New York: Praeger, 1972).

unavailable.³ This lack of knowledge often blinds planners to the negative side effects which can result from a proposed change and which often, in the end, far outweigh the expected advantages. Finally, accurate forecasts of economic growth based on a proposed change are more difficult to establish than elsewhere because situations for comparative analysis generally do not exist. Thus, development planners in rural Africa generally have made optimistic predictions of the results of proposed changes based on evaluations which have been subjectively biased and lacking in accurate or complete data. It is this optimism over the proposed "modernizing" change which leads to modernization often becoming erroneously equated with development.⁴

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.⁵ In Angola this belief has become widely accepted; consequently the policy for the African pastoralist area (southwestern Angola) has been to replace the present "traditional" small African cattle-raising units (family herds) with "modern" large-scale cattle ranches.⁶ As

³ Despite what can be described as a "survey explosion" of African social and economic conditions since the early 1950s, Eicher has averred that "these surveys often lack a theoretical framework, depend heavily on secondary data and are not noted for their reliability . . . they contribute relatively little knowledge of the determinants of agricultural development in Africa and are of little use as policy guides for African nations." Carl K. Eicher, "African Agricultural Economics: Research Direction," in *Research in Rural Africa*, ed. Norman N. Miller (Montreal: Loyola College, and East Lansing: Michigan State University, 1969), p. 153. This lack of accurate and comprehensive data on rural Africa continues to thwart development planning at all stages. Helleiner has argued that "there is no field of economics which so requires further empirical research as that relating to smallholder agriculture in the underdeveloped world." Gerald K. Helleiner, "Research Priorities for African Agricultural Economics," in *Research in Rural Africa*, p. 167.

⁴ "The widespread and often dramatic failure of big schemes in Africa such as the East African Groundnuts Scheme, the Gambia Poultry Scheme, the Mokwa Project in Nigeria, and state farms and large-scale mechanization schemes in Ghana have contributed to a growing conviction among economists dealing with African agriculture that effective planning is much more difficult than has long been assumed and that African economies are much more complex and varied than has been usually realized heretofore. . . . much economic planning is still in the macro tradition of unreliable guesses . . . combined with desired, but unrealistic, growth rates and fictitious capital-output ratios. . . ." Marvin P. Miracle, "Agricultural Economics in Africa: Trends in Theory and Method," in *Research in Rural Africa*, p. 146. Backlashes associated with "modernization" have been extensively analyzed in M. Taghi Farvar and John P. Milton, eds., *The Careless Technology* (Garden City, N.Y.: Natural History Press, 1972). See also Phillips, *Development of Agriculture*, p. 116.

⁵ A similar notion is held about other pastoral regions. See Mohammed Awad, "Nomadism in the Arab Lands of the Middle East," in *The Problems of the Arid Zones* (Paris: UNESCO, 1962), and J. Randell, "The Potential Development of Lands Devoted to Nomadic Pastoralism," in *The Effect of Nomadism on the Economic and Social Development of the People of the Sudan*, Report of the Tenth Annual Conference (Khartoum: Philosophical Society of the Sudan, 1962).

⁶ This policy became apparent in the 1950s with the publication of government acts (2232 and 7695) designed to foster and expand commercial ranching in the area. See *Colectânea da Principal Legislação de Angola*, 1950, 1:14, and 1951, 2:932. During the 1950s and early 1960s a scramble for land ensued as prospective ranchers sought to stake or expand their land claims. By the mid-1960s the number of European ranches in southwestern Angola, most still in a pioneering stage, totaled 115, occupying approximately 3,840,000 acres (ca. 6,000 square miles) and registering about 120,000 head of cattle. See Eduardo Cruz de Carvalho, "Informação sobre a Ocupação Empresarial no Sul de Angola," mimeographed (Luanda: Missão de Inquéritos Agrícolas de Angola, 1970).

the Africans have not volunteered to be integrated into this scheme, ranching in Angola has remained a European enterprise.

The refusal of the Angolan pastoralists to "modernize" their system of cattle raising has been explained as a typical reaction of pastoral societies, and most authors identify a strong resistance to change as one of their major characteristics. This general view of pastoralists as static has encouraged development policymakers to attempt to "develop" such societies by substituting commercial ranching or agricultural systems for the existing systems, rather than improving them.⁷ However, some studies have shown that pastoral societies are quite dynamic, registering impressive changes within relatively short time spans.⁸ Thus the question is not whether change *occurs* but rather the *direction* of change and the *reasons* for the highly selective absorption of innovations into a still largely traditional form of existence. The evidence for the high rate of failure of development schemes and for the dynamic nature of pastoral societies suggests that improvement (rather than substitution) is both desirable and possible even among nomadic herders of the most "extreme" pastoral type.⁹

This article attempts to evaluate the traditional systems of African cattle raising in southwestern Angola and the results of their modernization. Significant statistical data and a brief general description of two of the nine pastoral regions are presented in order to illustrate the traditional patterns.¹⁰ The Cunene and Cuanhama regions were selected because of

⁷ An exception is Alan H. Jacobs, "A Scheme for the Total Development of Maasailand," in "The Pastoral Maasai of Kenya: A Report of Anthropological Field Research" (1963), a cyclostyled document of recommendations for specific improvements, commissioned by the Ministry of Overseas Development, London, to aid in the development of Maasailand, which was never tried.

⁸ See Neville Dyson-Hudson, "Factors Inhibiting Change in an African Pastoral Society: The Karimojong of Northeast Uganda," in *Black Africa: Its Peoples and Their Cultures Today*, ed. John Middleton (New York: Macmillan, 1970). Also see Harold K. Schneider, "Pakot Resistance to Change," in *Continuity and Change in African Cultures*, ed. William R. Bascom and Melville J. Herskovits (Chicago: University of Chicago Press, 1962).

⁹ See Harold F. Heads, "Ecological Consequences of Bedouin Settlement in Saudi Arabia," in *Careless Technology*, pp. 683-93. See also Ian George Cunnison, "Nomads and the 1960s" (Inaugural Lecture, University of Hull, 1967), pp. 10-11, and Phillips, *Development of Agriculture*, p. 101.

¹⁰ Before 1960 no general agricultural or livestock census had been carried out. In late 1960 the Missão de Inquéritos Agrícolas de Angola (MIAA) was established under my direction for the purpose of conducting the Angolan Survey and Census of Agriculture within the framework of the U.N. Food and Agriculture Organization (FAO) worldwide agricultural census. See FAO, *Program for the 1960 World Census of Agriculture* (Rome, 1957). In the agricultural year 1961-62, MIAA conducted a pretesting survey to: (1) establish preliminary agro-economic boundaries, (2) test the questionnaires, (3) formulate the methodology of data collection, and (4) train the enumerators and field supervisors. From 1962 through 1969 MIAA surveyed all regions outside the combat zones (in the east and northwest), each regional survey lasting throughout at least one agricultural year. MIAA published the census results in *Recenseamento Agrícola de Angola*, vols. 1-38 (Luanda, 1964-72), hereinafter referred to as RAA. These results then formed the basis for yearly agricultural censuses beginning in 1969/70. The resultant annual information is published by MIAA as *Estatísticas Agrícolas Correntes de Angola*, hereinafter referred to as EACA. For a description of the methodology of data collecting and processing and the level of confidence of the estimates, see Eduardo Cruz de Carvalho, Jorge Vieira da Silva, and Julio A. Morais, *The Agricultural Regions of Angola*, African Studies Center Occasional Paper no. 10 (Los Angeles: University of California, 1973). The present article is based on personal fieldnotes and on data presented in the above publications.

their economic importance and their distinctive ecological and socio-economic characteristics. A comparative statistical analysis is then made between the herd structures of the well-established "modern" ranching in Rhodesia and the "traditional" family herds of southwestern Angola in order to evaluate the effects of modernization in terms of animal productivity.¹¹

The analysis seems to demonstrate that the ranching scheme would not have been implemented in Angola if (1) the structural and statistical data of the traditional systems of cattle keeping had been sufficiently known and objectively analyzed, (2) a more critical study had been made of the general economic success or failure of extensive cattle ranches in ecologically analogous areas, and (3) a greater concern had been given to the effects of such large-scale ranches on the local populations.¹² It would seem evident that when cattle form a fundamental part of a people's culture, the possible sociologically disrupting effects of a cattle-raising "development" program must be carefully studied beforehand—even if the program appears to be economically sound.¹³

The concluding section reexamines the proposed "modernizing" change and synthesizes the arguments and conclusions, suggesting that the traditional system be improved rather than replaced and that it be further integrated into the national economy. Implicit here is my basic commitment to the idea that the best approach to rural development planning in the developing areas of the world is to improve the already existing systems. Fundamental to this approach are the assumptions that (1) these systems have evolved as a result of adaptive interaction between the natural and cultural milieus, (2) all socioeconomic situations are essentially dynamic, and (3) each situation has its inherent dynamics. The attempts to substitute "modern" for "traditional" systems, against the latter's own dynamics, have shown how disruptive this substitution can be, socioculturally as well as economically.¹⁴ In equating modernization with westernization, we are "ignoring . . . the presence of African incentive, imagination,

¹¹ An ecological comparison (energy flow and human and livestock biomass) between the traditional system in the Cunene region and the ranches in southern Angola reveals a number of interesting aspects which have been previously misperceived and/or ignored by economic planners and policymakers. See Eduardo Cruz de Carvalho and Jorge Vieira da Silva, "The Cunene Region: Ecological Analysis of an African Agropastoral System," in *Social Change in Angola*, ed. Franz-Wilhelm Heimer (Munich: Weltforum Verlag, 1973).

¹² As with other so-called development programs, this one appears to aim more at increased productivity than at socioeconomic improvement for the local population—one more example of the "GNP syndrome" where attention is focused on output (usually exportable cash crops) while both the amount of inputs and the local population's well-being are rarely considered.

¹³ Evans-Pritchard has commented similarly on the pastoral Nuer of East Africa that one cannot treat their economic relations by themselves for they always form part of direct social relationships of a general kind. E. E. Evans-Pritchard, *The Nuer* (London: Clarendon Press, 1940), p. 19, see also p. 30. See also P. H. Gulliver, *The Family Herds: A Study of Two Pastoral Peoples in East Africa, the Jie and the Turkana* (New York: Humanities Press, 1955).

¹⁴ See Margaret Mead, ed., *Cultural Patterns and Technical Change* (Paris: UNESCO, 1955; reprint ed., New York: New American Library, Mentor Books, n.d.); see also Farvar and Milton, *Careless Technology*.

and drive which must power any lasting development. Why are we so afraid Africa won't end up as a copy of the West?"¹⁵

African Cattle-Keeping in Angola

Angola may be divided into four macroregions on the basis of the role and importance of cattle in the traditional agro-economic structures. These macroregions and their component regions are shown on map 1.¹⁶

Macroregion A comprises the northern and eastern parts of Angola and includes the regions in which cattle presently have little or no importance. For the 15 regions grouped in this unit, with about 280,000 African small holdings, only 70,000 head of cattle were estimated in 1971.¹⁷

Macroregion B combines six regions (with 243,500 holdings), in which cattle have meaning only as a savings account.¹⁸ The relatively few cattle, about 165,000 head, are used basically for social purposes such as marriages, funerals, fines, etc., and only rarely are they sold to the meat market.

Macroregion C consists of the 2 regions where cattle (about 350,000 head) are used primarily for draft purposes, especially for plowing. In parts of the Central Highlands (region 24 on map 1) draft animals comprise more than 70 percent of the total stock.¹⁹ Cattle are bred in some areas but the offspring do not meet the need for draft animals, therefore young bullocks must be purchased from the pastoral regions (macroregion D).

Macroregion D (southwestern Angola) includes all nine regions where cattle raising forms an important part of the local cultures.²⁰ The local

¹⁵ See Robert M. Netting, "Discussion of Papers on 'Rural Initiatives and Agricultural Development,'" *Agricultural Development and Employment, Rural Africana* (Winter 1973).

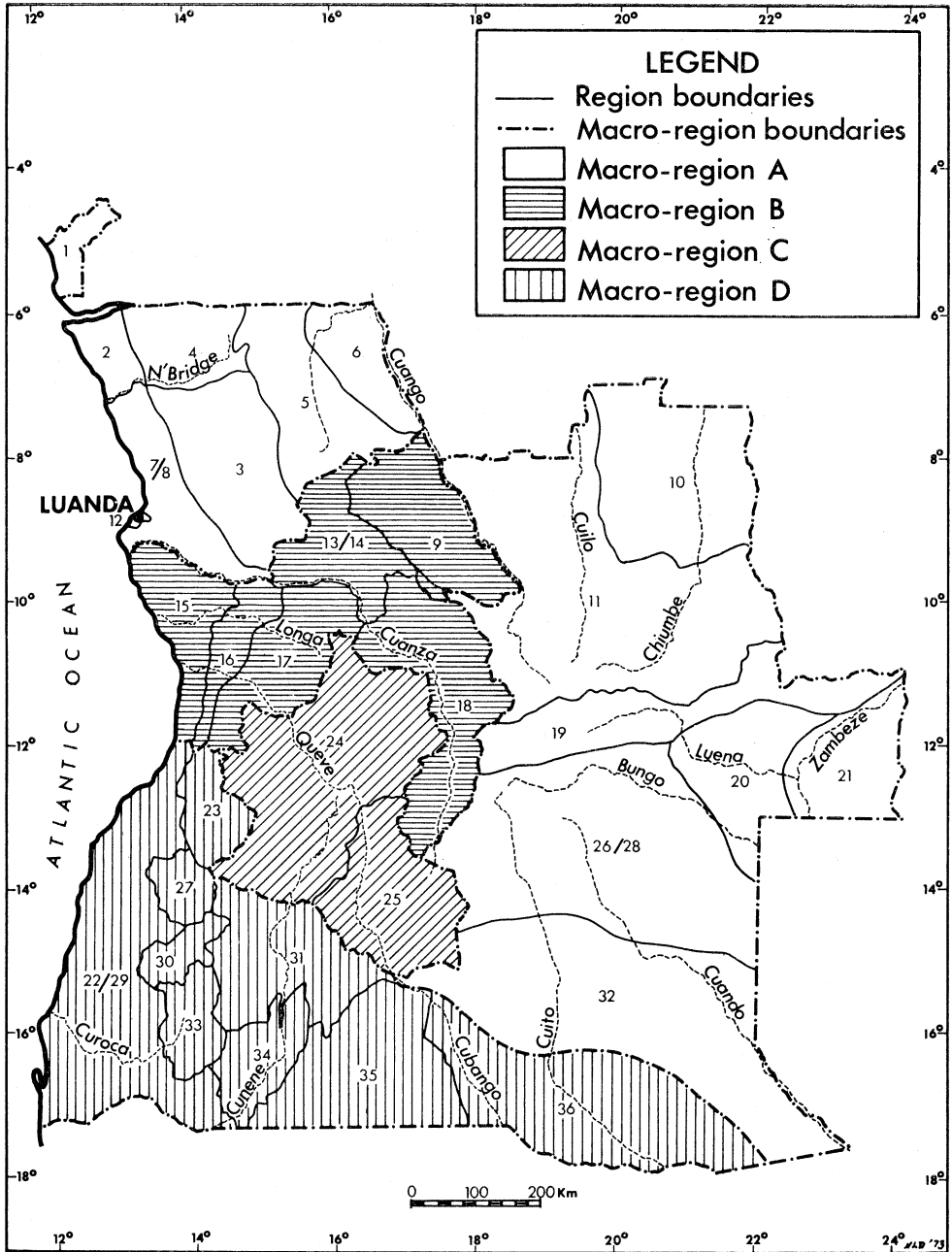
¹⁶ Julio A. Morais, "Efectivos Pecuários das Zonas Pastorais de Angola," mimeographed (Luanda: Missão de Inquéritos Agrícolas de Angola, 1970). For a general description of the agricultural regions of Angola, see Eduardo Cruz de Carvalho, "Esboço da Zonagem Agrícola," *Fomento* (Lisbon), vol. 1, no. 3 (1963), pp. 67-72; see also Hermann Pössinger, *Landwirtschaftliche Entwicklung in Angola und Moçambique* (Munich: Weltforum Verlag, 1968), pp. 51-81. For a generally descriptive study which includes some of the more important agricultural parameters of each region, see Cruz de Carvalho, Vieira da Silva, and Morais, "Agricultural Regions."

¹⁷ EACA (1971), table 0.1. See also Morais, "Efectivos Pecuários."

¹⁸ In the study by Morais, "Efectivos Pecuários," Region 9 (see map 1) was included in Macroregion A because it had practically no cattle in 1965 when the region's census was made. In 1970 a large increase in the number of cattle was observed during the EACA fieldwork, justifying its inclusion in Macroregion B.

¹⁹ Macroregion C is constituted primarily by the Central Highlands, the habitat of the Ovimbundu, the largest African group in Angola which totals about one-third of the rural population and has a cash-crop economy with widespread use of the plow. In the agricultural year 1969/70 animal energy was utilized by 47 percent of the 359,000 total Umbundu holdings. The total African cultivated land in the Central Highlands was about 5,000,000 acres, averaging 14 acres/holding. See EACA (1971), tables 0.1 and 6.1.

²⁰ With the exception of a few "pre-Bantu," the entire area is inhabited by pastoral or agropastoral populations whose cultures are characteristic of the arid or semiarid areas south of the Sahara, classified as the "milking complex." See George P. Murdock, *Africa: Its Peoples and Their Culture History* (New York: McGraw-Hill, 1959). These peoples are Bantu-speaking and comprise three groups: Ambos, Hereros, and Nyanyeka-Humbe. See Carlos Estermann, *Etnografia do Sudoeste de Angola* (Lisbon: Ministério do Ultramar), vol. 1, *Os Povos não Bantos e o Grupo Etnico dos Ambós*



MAP 1. Agricultural Macroregions and Regions of Angola.

(1960); vol. 2, *O Grupo Etnico Nhaneca-Humbe* (1960), and vol. 3, *O Grupo Etnico Herero* (1961). See also Alvin W. Urquhart, *Patterns of Subsistence and Settlement in Southwestern Angola*, National Research Council Publication 1096 (Washington, D.C.: National Academy of Sciences, 1963).

peoples own a substantial stock (1,600,000 head, see table 1) and are the principal suppliers of slaughter steers and young draft animals. The features which characterize the traditional system of cattle raising throughout southwestern Angola are essentially the appreciable use of dairy products in the diet of the population, which requires a dispersed or semidispersed type of settlement, and the complex socioeconomic relationship between owners and holders of cattle, which assures a fairly equitable distribution of animal products.

The use of milk requires a proximity of kraal to dwelling which necessitates the relatively scattered settlement pattern in order to avoid undesirable concentrations of cattle.²¹ Thus each homestead is generally composed of one nuclear, joint, or extended family and its kraal. Usually the agricultural plot is near the homestead; in some of the regions it becomes part of the homestead which is then termed a farmstead. This farmstead sometimes includes fenced areas of private pasture.

The owner/holder relationship has particular socioeconomic importance. In effect, the cattle owners, for technical as well as sociocultural reasons, distribute their cattle among various relatives and friends; thus each herd includes cattle from different owners.²² However, the average composition of each herd is maintained in order to insure, as much as possible, a sufficient production of milk for the holder's family. The result of this type of herd organization is that the cattle are identified with the individual (or holder) responsible for the particular herd, rather than with the owner of the cattle.²³ Within this economic relationship and spatial distribution of the cattle and the families dependent on them, the following sharing of herd yields is found: (1) The owner receives the offspring of the cattle from the various holders; (2) each holder can use the milk, the manure, the meat from the animals which die, and the labor of the draft animals; and (3) as a stimulus or reward for good results, the holder occasionally receives from the owner a gift of a calf.

While these features are common to all nine regions, there are important ecological, economic, and ethnocultural differences among them: the rela-

²¹ The major disadvantages of large cattle concentrations are overgrazing and trampling of the range and increased risk of epidemics. Because of these negative factors the proposed regrouping of African agropastoralists in hamlet-type villages has not been pursued. For a description of this scheme, see Gerald J. Bender, "The Limits of Counterinsurgency: An African Case," *Comparative Politics* 4 (April 1972): 335-37, 350-52.

²² The major technical reasons for this distribution of cattle are to insure against epidemics and to keep the herds of manageable size. Sociocultural reasons include the attempt to hide the number of cattle owned in order to avoid the envy of kin and pressures from the administration to sell more cattle and/or to settle as modern ranchers. The distribution extends and strengthens social relationships as well as acting as a leveling mechanism (in this respect, see fn. 44 for the small variation in herd size).

²³ This system is quite similar to the "livestock lending contract" of Portuguese customary law. See Emilio Baptista Cerqueira, "Parecer sobre o ordenamento e povoamento nas zonas pastoris do SW," mimeographed (Luanda: Missão de Inquéritos Agrícolas de Angola, 1965). Similar mechanisms are widespread among African pastoral societies. Note the "Kamanakan contract" of the Sebei people of Uganda, Walter Goldschmidt, *Kambuya's Cattle: The Legacy of an African Herdsman* (Berkeley and Los Angeles: University of California Press, 1969), pp. 16-17; the "stock associates" of the Jie and Turkana, P. H. Gulliver, *Family Herds*, p. 262; the "lending," Evans-Pritchard, *Nuer*, p. 91; and "clients," Derrick J. Stenning, *Savannah Nomads: A Study of the Wodaabe Pastoral Fulani of Western Bornu Province, Northern Region, Nigeria* (London: Oxford University Press, 1959).

TABLE 1
NUMBER OF CATTLE IN SOUTHWESTERN ANGOLA

REGION AND SYSTEM	ADULT FEMALES	NONADULT FEMALES	BULLS	DRAFT OXEN	OTHER ADULT MALES	NONADULT MALES	TOTAL
<i>Region 22/29:</i>							
Traditional	93,770	42,796	3,848	1,692	13,757	35,970	191,833
Modern	23,475	12,119	897	653	5,635	16,308	59,087
Holdings without land	2,585	1,107	93	18	663	2,503	6,969
<i>Region 23:</i>							
Traditional	54,138	20,649	2,882	12,339	8,109	15,873	111,990
Modern	7,942	3,754	331	689	1,875	5,215	19,806
Holdings without land	148	60	5	0	42	37	292
<i>Region 27:</i>							
Traditional	58,412	26,128	2,855	15,769	24,228	20,856	148,248
Modern	3,725	1,428	97	181	758	1,385	7,574
Holdings without land	0	0	0	0	0	0	0
<i>Region 30:</i>							
Traditional	57,822	33,840	3,792	25,999	5,620	29,185	156,258
Modern	5,336	3,593	322	6,989	1,325	4,036	21,601
Holdings without land	1,300	1,390	57	416	3,075	3,100	9,338
<i>Region 31:</i>							
Traditional	118,612	55,301	8,912	50,652	13,304	50,420	297,201
Modern	5,781	3,208	234	1,184	1,631	4,055	16,093
Holdings without land	3,459	2,157	130	539	707	2,672	9,664
<i>Region 33:</i>							
Traditional	39,812	20,316	1,943	4,754	14,516	17,290	98,631
Modern	6,541	3,962	280	74	1,999	5,405	18,261
Holdings without land	277	130	9	4	462	1,472	2,354
<i>Region 34:</i>							
Traditional	81,789	40,225	3,886	6,838	28,486	36,608	197,862
Modern	13,141	8,246	580	1,107	1,746	9,955	33,775
Holdings without land	2,931	1,744	110	20	3,389	5,398	13,592

TABLE 1—continued

REGION AND SYSTEM	ADULT FEMALES	NONADULT FEMALES	BULLS	DRAFT OXEN	OTHER ADULT MALES	NONADULT MALES	TOTAL
<i>Region 35:</i>							
Traditional	143,813	67,690	5,721	12,961	36,004	59,885	326,074
Modern	83	56	5	4	45	203	396
Holdings without land	1,101	593	36	5	236	1,763	3,734
<i>Region 36:</i>							
Traditional	35,376	17,602	1,054	12,449	7,066	11,488	85,035
Modern	416	231	7	0	146	132	932
Holdings without land	0	0	0	0	0	0	0
Total	759,785	368,355	38,086	154,336	174,824	341,214	1,836,600
Traditional	681,544	324,577	34,893	143,453	151,090	277,575	1,613,132
Modern	66,440	36,597	2,753	9,881	15,160	46,694	177,525
Holdings without land	11,801	7,181	140	1,002	8,574	16,945	45,943

SOURCE: *Recenseamento Agrícola de Angola* (Luanda, 1962-69), see fn. 10 above.

NOTE: Europeans only have "holdings without land."

tive importance of farming and cattle raising (related to the reliability of rainfall), the types of crops, and the management of the cattle, including herd structure (see table 2) and the utilization of grazing lands and watering points.²⁴

In three regions (23, 30, and 31), the amount and relative regularity of rainfall assure viable farming. In ecological and socioeconomic terms, the three regions constitute a transition zone between the important farming area of central Angola and the predominantly pastoral area of the southwest. The Benguela-Moçamedes coastal region (22/29) covers the northern extension of the Namib Desert and its margins where the dominant natural hazard is the unpredictability and scarcity of rainfall. Thus this region is predominantly pastoral and farming is only an ancillary activity. The remaining five regions (27, 33, 34, 35, and 36) have a mixed economy of cattle and farming, the latter only for subsistence despite the widespread use of the plow.²⁵

The Cunene and Cuanhama Regions

Of the agropastoral regions of Angola, the Cunene (34) and the Cuanhama (35) are especially interesting for an analysis of the traditional patterns of cattle raising. The two regions comprise about one-third of the African-owned cattle in southwestern Angola (table 2) and form the main part of the recently created Cunene District. With similar geology, climate, and vegetation, they belong to the same "natural" region and form a gently undulating plain, slightly inclined from the northwest (average altitude 4,000 feet) to the southeast (3,600 feet), consisting of Pleistocene and Kalahari sands and sandstones.²⁶

As in all southern Angola, there are two seasons: A dry season lasts from May until November/December; the other season, between December and April, is characterized by occasional (at times torrential) rainfall. Although the rains are erratic in distribution and occurrence, the averages range from less than 20 inches in the extreme south to about 28 inches in the north. This generally assures sufficient yields (at least for subsistence needs) of the basic staple crops—sorghum and pennisetum. In the better years families usually store the surplus in reserve for use in the ever possible drought years.²⁷

²⁴ The identification of each region as an agroecomic unit followed criteria similar to those used in the classic survey of South Africa, *Agro-Economic Survey of the Union*, Bulletin 270 (Pretoria: Department of Agriculture, 1948), p. 1. See also Cruz de Carvalho, Vieira da Silva, and Morais, "Agricultural Regions."

²⁵ In other pastoral regions of Africa, usually with unreliable rainfall, the introduction of the plow (generally well accepted by the agropastoralists) has not increased the area of cultivated fields nor, obviously, the agricultural yields. It has not created any "agricultural surplus" and farming remains for subsistence only. See, for example, the results of the introduction of the plow among the Karimojong in Dyson-Hudson, "Factors Inhibiting Change." See also Goldschmidt, *Kambuya's Cattle*.

²⁶ For the description of such natural regions, see A. Castanheira Diniz and F. O. de Barros Aguiar, "Regiões Naturais de Angola: Esboço de Zonagem," *Fomento* (Lisbon), vol. 5, no. 1 (1967). For a general geography of Angola, see Urquhart, *Patterns of Subsistence*.

²⁷ Agriculture is important in the subsistence economy of the African families. In 1964-65 the Cunene region's arable land was 64,220 acres (12.14 acres/farmstead) of which 58,630 acres were under cereals, yielding more than 13,000 tons of grain, RAA,

TABLE 2
STRUCTURE OF AFRICAN-OWNED HERDS
IN SOUTHWESTERN ANGOLA

REGION	NUMBER OF HERDS		ESTI-MATED TOTAL NUMBER OF HEAD	HERD STRUCTURE (PERCENTAGE IN SAMPLE)												
	Sam-ple	To-tal		1	2	3	4	5	6	7	8	9	10	11	12	13
22/29	814	2,900	191,833	36.46	2.57	0.05	9.80	12.80	9.51	2.01	0.20	0.68	1.56	5.61	10.01	8.74
23	1,816	5,405	111,990	32.20	3.80	0.10	9.40	9.30	9.10	2.60	3.80	7.30	4.30	2.90	5.50	8.70
27	1,284	2,808	148,248	27.48	0.38	0.20	11.34	8.38	9.25	1.92	0.24	10.40	6.60	9.74	5.81	8.26
30	1,061	6,264	156,258	31.13	1.53	0.19	4.15	11.72	9.94	2.42	1.31	15.33	0.50	3.09	8.97	9.72
31	879	8,699	297,201	27.80	2.40	0.19	9.52	10.19	8.42	3.00	6.23	10.81	0.98	3.50	9.38	7.58
33	443	2,919	98,631	30.69	2.66	0.18	6.83	9.81	10.79	1.97	0.16	4.66	2.16	12.56	6.87	10.66
34	515	3,642	197,862	29.28	4.95	0.16	6.94	9.97	10.38	1.96	0.66	2.80	4.48	9.91	8.66	9.85
35	459	8,642	326,074	31.49	3.04	0.09	9.38	11.30	9.46	1.75	1.52	2.46	3.13	7.91	10.06	8.31
36	195	4,039	85,035	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	6,466	45,318	1,613,132	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Source: Julio Morais, "Effectivos Pecuários das Zonas Pastoris de Angola," mimeographed (Luanda: Missão de Inquéritos Agrícolas de Angola, 1970). No herd structure data was available for region 36.

Notes: Column numbers refer to the following:

- (1) Breeding cows under 9 years
- (2) Breeding cows 9 years and over
- (3) Barren cows
- (4) Heifers in calf
- (5) Other heifers
- (6) Female calves
- (7) Bulls
- (8) Draft oxen 7 years and over
- (9) Draft oxen under 7 years
- (10) Steers 7 years and over
- (11) Steers between 3 and 7 years
- (12) Steers under 3 years
- (13) Male calves

Relative humidity is low (below 60 percent), reaching a minimum of 30 percent in August/September. The mean annual temperature ranges from 71°F in the North to 73°F in the south; June is the coldest month (mean 61°F) and October the hottest (mean 79°F). The climographs correspond to the types of climate suited only to tropical breeds of cattle.²⁸

According to the Holdridge classification of plant formations and life zones, the climate of both regions corresponds to dry forest and thorn woodland.²⁹ However, from the low-lying and periodically flooded areas of compact soils to the high-lying sandy areas, a typical catenary sequence of different ecological formations, each with its own specific vegetal community, is clearly apparent.³⁰ Although similar in geology, climate, and vegetation, the two regions differ considerably in physiography, which causes contrasting patterns of interspersions of the ecological formations.³¹ As each ecological formation (with its specific grazing type) allows a particular utilization and at different times, the contrast in the distribution and interspersions in the Cunene and Cuanhama regions results in different patterns of settlement and annual herd movements.

In the Cunene region, habitat of the Khumbi people, the sandy high plain (*etunda*), covered by deciduous woodlands and constituting about two-thirds of the region's 6,000 square miles, is crossed by 3 rivers: the Cunene and its 2 tributaries, the Calonga and the Caculuar (see map 2).³²

vol. 15 (1968). In 1965-66 the Cuanhama's arable land was 220,537 acres (16.45 acres/farmstead) of which 140,128 acres were under cereals, yielding more than 15,000 tons of grain, RAA, vol. 20 (1968).

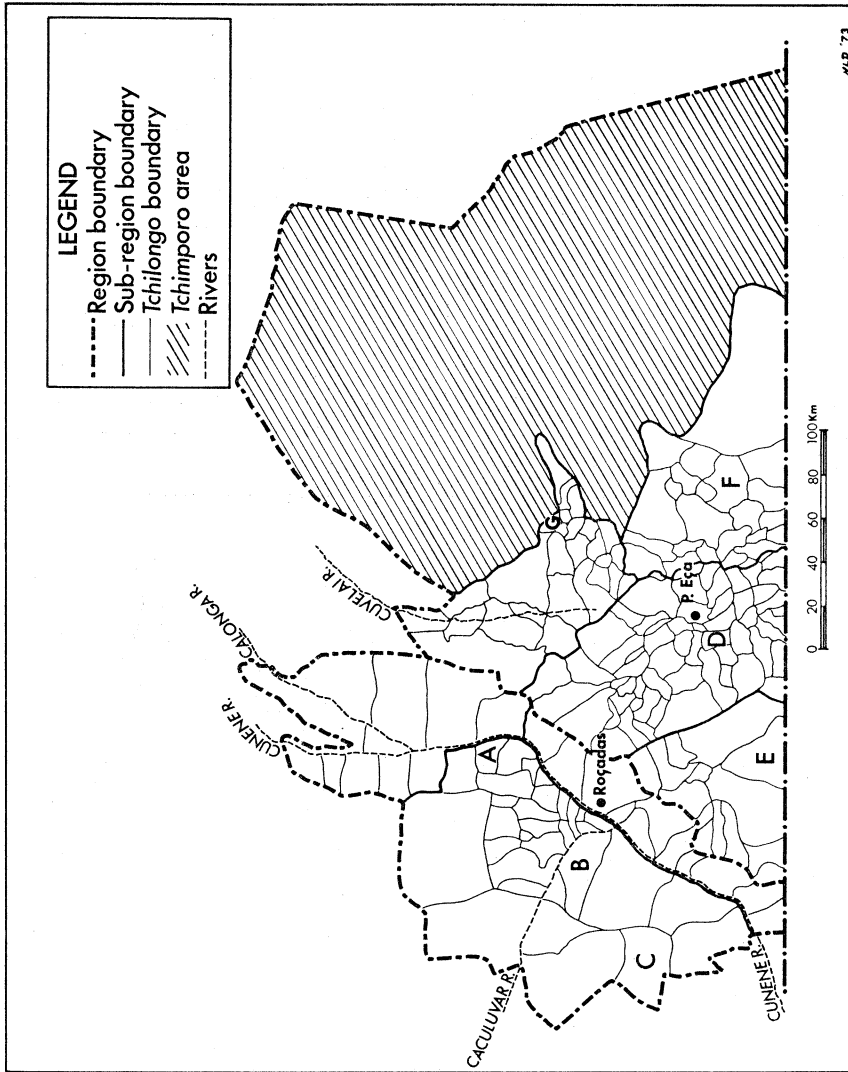
²⁸ See Jorge Vieira da Silva, *Notas sobre a Criação de Gado Bovino em Angola*, Estudos, Ensaios, e Documentos, no. 75 (Lisbon: Junta de Investigações do Ultramar, 1960). The cattle belong to the Sanga group, but the Cunene and Cuanhama types differ. Cunene cattle are fleshier and heavier and the cows are better milch animals than those of the Cuanhama or Ovambo type. See I. L. Mason and J. P. Maule, *The Indigenous Livestock of Eastern and Southern Africa* (London: Farnham Royal, 1960). There have been many (generally unsuccessful) experiments to improve the local types by crossing with European breeds such as Hereford, Charolais, Aberdeen-Angus, Simmental, Brown Swiss, etc. Recently, the trend in the ranches of the Cunene has been to cross the native stock with the Afrikander. However, the ranch cattle are still mainly local in type.

²⁹ See L. R. Holdridge, "Determination of World Plant Formation from Simple Climatic Data," *Science* 105 (April 1947): 367-68.

³⁰ The typical catenas of the Cunene region are described in Cruz de Carvalho and Vieira da Silva, "Cunene Region." The ecological formations of the Cuanhama and their catenary sequence are similar. For a description of soils, see Missão de Pedologia de Angola e Moçambique, *Carta Generalizada dos Solos de Angola*, Memórias, 2nd ser., no. 56 (Lisbon: Junta de Investigações do Ultramar, 1968), and Missão de Pedologia de Angola, *Carta Geral dos Solos de Angola*, vol. 1, *Distrito da Huíla*, Memórias, 2nd ser., no. 9 (Lisbon: Junta de Investigações do Ultramar, 1959). For the regional vegetation, see L. A. Grandvaux Barbosa, *Carta Fitogeográfica de Angola* (Luanda: Instituto de Investigação Científica de Angola, 1970), pp. 133, 193-97.

³¹ The concept of degree of interspersions, related with animal carrying capacity and/or the need for animal mobility, is presented in Aldo Leopold, *Game Management* (New York: Scribner's, 1961).

³² On the Khumbi, see Estermann, "Nhaneca-Humbe." The *etunda* is a dry, sandy, slightly elevated plain which occupies the "top" position within the catena, relative to the "bottom" position occupied by the river valleys. For the characterization of the catenary ecological formations, see Cruz de Carvalho and Vieira da Silva, "Cunene Region."



MAP 2. The Cunene and Cuanhama Regions.

The rivers are bordered by alluvial plains (*evanda*) which are periodically flooded.³³ Some *mulolas* and *tchanas* complete the drainage network.³⁴ The higher sandy interfluvial areas, almost waterless during the dry season,

³³ The *evandas* are generally wide grasslands. The soils vary from the ferrallitic clays of the Calonga and Cunene *evandas* to the heavy black clays of the Caculuar. The vegetation ranges from mesophytic to hydrophytic in character. The *evandas* are interspersed by some slightly elevated terraces (*maputo*) of lighter soils which generally support large tree growth; also occurring are shallow water-filled depressions (*talas*) which contain varied aquatic vegetation.

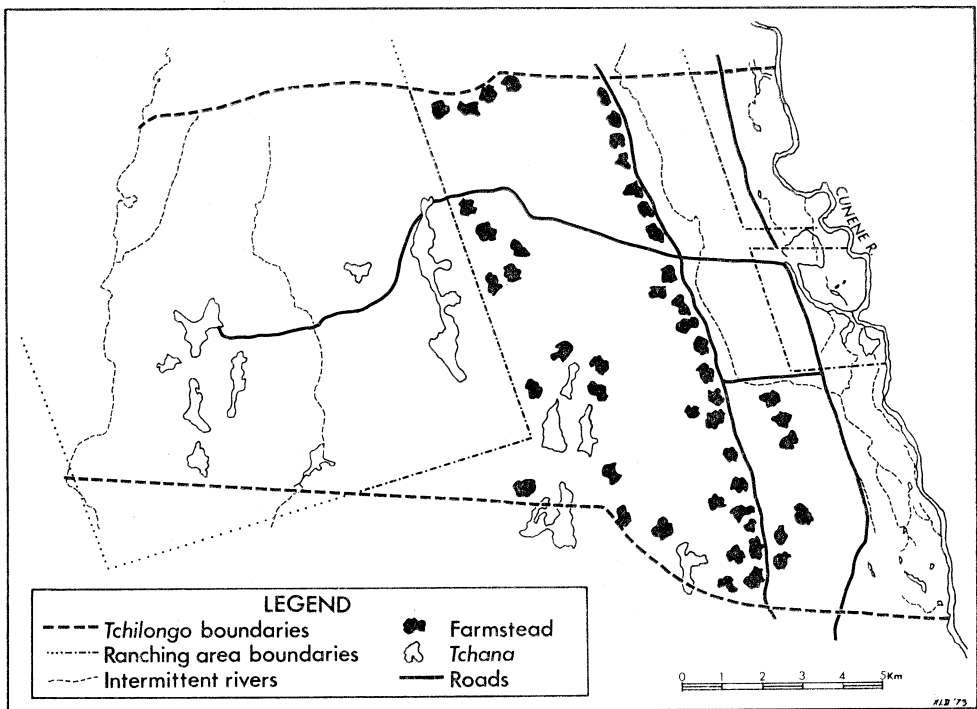
³⁴ The *mulolas* are intermittent tributaries, channelized to some extent, which flood during the wet season. Due to the extreme flatness of the terrain, much of the water seems to be lost by evaporation rather than by drainage. The *tchanas* are broad, shallow, and generally elongated depressions of low gradient which occur in interfluvial areas. The *tchanas* are less channelized than the *mulolas*; they also flood during the wet season to form often quite extensive, shallow pools.

are in general large; consequently the interspersion of ecological formations is very low.

Although adjacent to the Cunene region, the area inhabited by the Angolan Ovambo (or Ovakuanyama, "the ones of the meat") forms a completely distinct agroeconomic region consisting of two differing areas. One is the densely populated Cuanhama proper; the second, the Tchimporo, is populated only by a few groups of "bushmen" (!Kung).³⁵ Cuanhama proper (about 6,700 square miles) is an endorheic basin flowing from north to south with one intermittent river, the Cuvelai, which has a well-defined channel in the north. The region as a whole is a slightly undulating plain where tchanas combine with *mufitos* to form a highly interspersed mosaic.³⁶

Traditional Cattle Raising in the Cunene and Cuanhama Regions

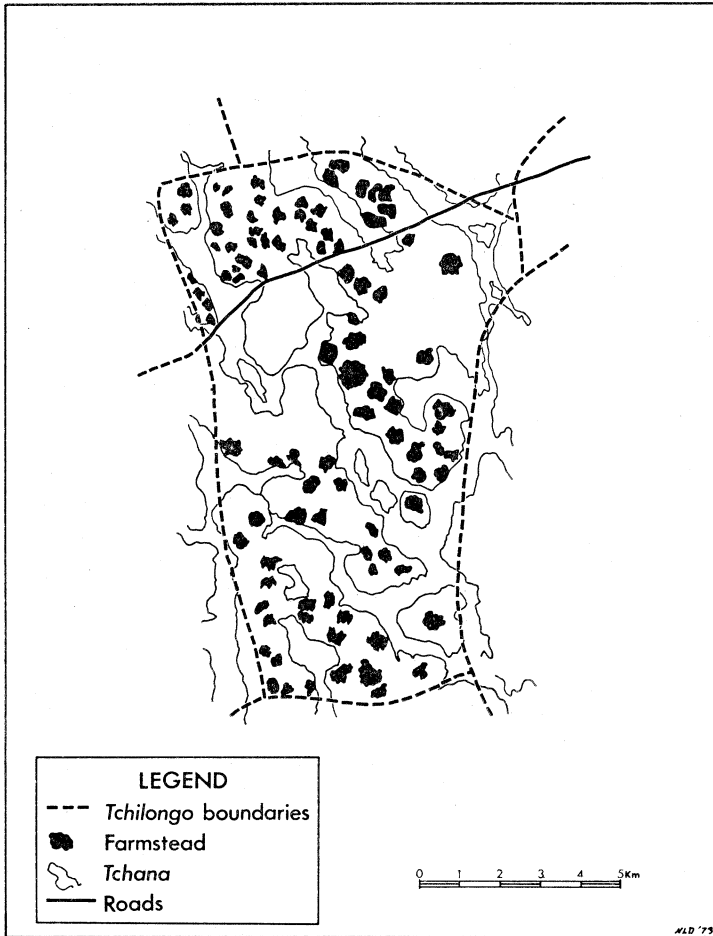
In both regions the rural population is divided into communities (*mukundas*); each community consists of 100-300 family units and lays claim to a sometimes loosely defined area (*tchilongo*) (see maps 2, 3, and 4). A small or extended family unit occupies its own farmstead (*ongubo*)



MAP 3. The Kamba Tchilongo.

³⁵ See Estermann, "Povos não Bantos."

³⁶ The *mufitos* are generally not very extended and slightly raised areas of settlement with usually leached brownish psammitic soils; gray-brown or reddish brown semiarid soils also occur. The vegetation forms an open woodland with many shrubs; the grass cover shows the continuous presence of man and animals. See Mariano Feio, "A Evolução do Relevo da Bacia Endorreica do Cuanhama (Angola)," *Finisterra*, vol. 1, no. 1 (1966), pp. 33-59.



MAP 4. The Ombala Tchilongo.

of 15-50 acres which is surrounded by entwined thorn shrub branches. It is composed of the dwelling/kraal complex (*ehumbo*), the farming plots (*tchikove*), and the area of private pasture land (*ongole*). The *ehumbo* is stockaded and divided into areas for social life, sleeping and storage huts, and cattle pens. Over the years the respective position of the *ongubo*'s components is rotated, but the total farm complex is quite permanent, corresponding to the usual concept of private property, at least with respect to the family unit. Ideally a farmstead (or settlement) contains a single or extended family and the herd on which the family subsists, and is identified by the family head's name. However, because of the family unit's development and variations in the livestock held, settlements often contain two or three families whose heads are kinsmen or friends. The farmsteads tend to be clustered or evenly distributed according to the low or high interspersion of the ecological formations.³⁷

³⁷ The field interviews clearly indicated that the choice of settlement sites is a complex operation in which suitability for people, animals, and cultivation is considered.

The soils of *evanda*, *mulola*, and *tchana*, being heavy and subject to flooding, are not conducive to either cultivation or the establishment of homesteads, but these formations allow good grazing as the flood waters recede. During the most critical period (the end of the dry season) hundreds of herds congregate in the large and continuous *evanda* of the *Cunene* to feed and to water. The sandy soils of *etunda* are very poor and waterless in the dry season, except where occasional depressions collect water—sometimes by means of small earthen dams or by wells dug in the dry *mulolas*. There are two types of *etunda*: (1) the arboreal, characterized by a sweet veld of average density with various trees and shrubs which allow browsing, principally after the first rains, and (2) the *kiteta*, a thicket of thorn shrubs which offers little if any grazing for cattle. The only soils adequate for traditional agriculture are in an intermediate or transitional ecological formation: the *epia-etunda* in the *Cunene* and the *mufto* in the *Cuanhama*; thus the settlements (farmsteads) are usually established in these formations.³⁸

Given the low interspersion typical of the *Cunene* region, the *epia-etunda* forms long continuous bands (bordering the *evandas*) where the farmsteads are clustered (see map 3). This clustering and the geographic distribution of grazing types and watering points combine to determine the regional patterns of transhumance.³⁹

The *Cunene* regional herd of 197,862 head (an average of 37.4 head/farmstead or 6.4 head/inhabitant) grazes on the 4,872 square miles of communal range (15.63 acres/head). The annual movement of the herds is as follows:

From harvest time until mid-September, the family herd stays at the *ehumbo kraal*. The cattle are fed primarily from the stubble of the harvest (*omaluengo*), but they also graze in the *ongubo's* private fenced pasture and peripheral pasture. In August/September the cattle can begin to graze in the *evanda* of the *Cunene River*. Cattle holders who live far from the *evanda* build small cattle enclosures (*sambos*) near it or bring the cattle at night to the *ehumbo* of a friend or relative in the area. In December/January when the river begins to flood the *evanda*, the herds are pastured closer to the farmsteads. At this time also preparation for planting begins.

After April the majority of the cattle, excepting a few head kept to supply the family's milk, are moved to the communal pasture lands in the interior *etunda*. Here they are grouped in those areas with some water sites, often so far from the permanent settlements that the trip requires two or three halts. The cattle usually remain in the *etunda* for four or five months, returning to the settlements in July or early August for the new harvest.

³⁸ The *epia-etunda* is a dry open woodland which, ecologically and economically, is comparable to the *mufto* but with less leached soils, generally of the gray-brown semiarid type. The choice of these soils for cultivation represents a compromise between chemical fertility and physical conditions; their fertility is maintained and even improved by heavy manuring.

³⁹ This clustering, bordering the *evandas* contrasts with the scattered distribution of settlements in the hinterland.

It should be pointed out that some cattle holders (either in areas of heavier settlement or in especially dry years) have to begin the transhumance to the interior etundas immediately after pasturing in the evanda of the Cunene. This occurs at the end of January to the etunda areas which then have a sure water supply; the cattle therefore remain in the interior sambos for nearly seven months. It should also be noted that the annual herd movements generally involve, during certain periods, the use of one tchilongo's pasture by cattle from another tchilongo.

In the inhabited area of the Cuanhama region the highly interspersed mosaic pattern of low and high areas provides numerous potential sites for settlement, and there are no permanent water channels. The settlements are therefore more uniformly distributed than in the Cunene region (see map 4). The importance of the tchanas increases from north to south, and the wild fruit trees along their borders provide an important economic resource for the population.⁴⁰ In years of normal rainfall about one-fifth of the area is transformed into shallow lakes and lagoons during the wet season. The region during this period takes on the aspect of a vast sheet of water which covers the tchanas and from which the mufitos emerge as populated islands. All of the flooded water eventually drains to the Etosha Pan, and a dry period with total absence of surface water follows. This seasonal cycle of extremely contrasting environmental situations makes the region quite distinctive. It should be noted that fishing during the flood season has great importance for the subsistence economy.

As in the Cunene region, the slaughter of game in the Cuanhama region has been intensive for the last 15 years.⁴¹ This has not been due to ranching but to commercial hunting. Although this activity is now outlawed, once prevalent game is now scarce.

The traditional herds (about 320,000 head) utilize 5,300 square miles of communal grazing lands, which averages only 11.52 acres/head—notably insufficient given the local conditions (see tables 3 and 4). The ecological balance, however, appears to be maintained, and overgrazing is avoided by the annual major transhumance (*ohambo-yo-kwenye*) of 76,000 head to the Tchimporo area. After a long and painful journey of more than 100 miles, they remain in the Tchimporo from August until January. Those cattle which do not take part in the journey graze in the tchanas and browse in the mufito, generally losing much weight during this period.

During the wet season (January-May) the herds are kept on the farmsteads, grazing in the peripheral areas. In June and July the cattle graze in the tchanas and, after the harvest, they feed on the stover of the harvest fields and in the fenced grazing area. An annual minor transhumance (*ohambo-yo-kufu*) is made in May/June from the areas of denser popula-

⁴⁰ Wild fruit gathering and fishing are very important in both regions, but more so in the Cuanhama. Unfortunately, these activities have not been quantified in the MIAA surveys. Small livestock (goats, swine, and poultry) are also important economically: the number of goats/farmstead is 15 in the Cunene and 18 in the Cuanhama; the number of swine/farmstead is 4.7 and 1.8 in the Cunene and Cuanhama, respectively. RAA, vols. 15 and 20.

⁴¹ The present abundance of game in the two national parks of the area, Mupa (Cuanhama region) and Bicuari (northwest of Cunene region), reflects the former game density.

TABLE 3
 STATISTICAL DATA FOR THE CUNENE AND CUANHAMA REGIONS
 AND SELECTED TCHILONGOS

	CUNENE				CUANHAMA			
	Region	Selected Tchilongos			Region	Selected Tchilongos		
		Kamba	Xango	Tchipa		Ombala	Okaku	Mukua	Dandema
Total area ^a	6,000	75.08	148.32	226.45	6,700	183.36	124.30	30.98
Ranching area ^a	5,945	36.45	48.98	30.59	8	0	0	0
Traditional area ^a	5,055	38.63	99.34	195.86	6,692	183.36	124.30	30.98
African farmsteads ^a	183	5.21	2.06	2.05	771	14.50	18.09	4.32
Communal grazing ^a	4,872	33.42	97.28	193.81	5,291	168.86	106.21	26.66
Tchilongos	55	1	1	1	118	1	1	1
Farmsteads	5,292	114	74	100	13,409	199	306	100
Rural families	8,856	241	159	204	21,879	329	465	152
Rural population	30,783	753	492	886	116,025	2,113	2,173	831
Head of cattle	197,862	6,699	6,075	7,772	326,074	6,693	9,038	2,870
Cattle seasonally moved out	0	5,096	3,955	3,746	75,834	281	6,402	2,575

Source: See table 1.

^aIn square miles.

TABLE 4
SIGNIFICANT RATIOS FOR THE CUNENE AND CUANHAMA REGIONS
AND SELECTED TCHILONGOS

	CUNENE				CUANHAMA				
	Region	Selected Tchilongos			Region	Selected Tchilongos			
		Kamba	Xango	Tchipa		Ombala	Okaku	Mukua	Dandema
Farmsteads/sq. mile ^a	1.05	2.95	0.74	0.51	2.00	3.07	1.08	2.46	3.23
Acres/farmstead	21.88	28.96	17.59	13.00	36.42	37.39	46.09	37.38	27.35
Families/farmstead	1.67	2.11	2.14	2.04	1.63	1.76	1.65	1.52	1.52
Population/farmstead	5.80	6.60	6.70	8.90	8.70	7.70	10.60	7.10	8.30
Population/sq. mile ^a	6.09	19.49	4.95	4.52	17.34	23.64	11.52	17.48	26.82
Cattle/farmstead	37.40	58.80	82.10	77.70	24.30	20.60	33.60	29.50	28.70
Cattle/habitant	6.40	8.90	6.30	8.80	2.80	2.70	3.20	4.20	3.50
Acres/head ^b	15.63	3.16	10.13	15.77	11.52	8.20	15.96	7.43	5.87
Percentage of cattle seasonally moved out	0.00	76.30	65.10	48.20	23.30	0.00	4.20	70.80	89.70
Percentage of farmstead area with respect to grazing lands	3.60	13.50	2.10	1.00	11.50	18.10	7.90	14.60	13.90
Percentage of ranching area	15.80	48.50	33.00	13.50	.....^c	0.00	0.00	0.00	0.00

SOURCE: See table 1.

- ^aTraditional area.
- ^bCommunal grazing land.
- ^cLess than 0.01.

tion, or from wider areas in years of poorer pasturage, to the borders of Tchimporo. Some of these cattle return in July to the settlements to feed on the stover and weeds in the harvested fields. However, the steers often do not return and thus form the *ohambo-yo-kove*, waiting for the arrival of the major transhumance.

This brief description of cattle raising in the Cunene and Cuanhama regions has shown both similarities and differences in the traditional system, but it has not revealed minor variations within each region. Some of these variations are shown in tables 3 and 4 which present data on land utilization and human and cattle population and density for both regions and selected tchilongos in each.

A General Evaluation of Traditional Cattle Raising

Limited as they are for an article format, the general descriptions and the statistical data in the previous section do illustrate the flexibility of the traditional system. In two different ecological situations, the system maintains its basic features: (1) high intensity of resource use, (2) interdependence of cattle and farming, and (3) equitable distribution of animal products.

On a socioeconomic level, there is a striking balance maintained by the division of animal products which results from the traditional contractual system (the owner/holder relationship). This contract is a kind of economic leveling mechanism which divides cattle yields so that each family is provided with reasonably good living conditions and an entrepreneurial dignity. The ratio between cattle held and people in a holder's family is not only quite satisfactory (even in the Cuanhama region) but also relatively constant in each region.⁴²

On an ecological level, one finds an agrarian system in which man is integrated in a sufficiently stable ecological balance with his natural habitat. Apparently, it does not cause great pressure on the ecosystem because (1) consumption is diversified (cattle, farming, gathering, and fishing in many regions); (2) the transhumances are adapted to the seasonal cycle, each type of grazing area being used in turn when most profitable while still assuring its regeneration; and (3) coexistence is allowed with many other communities, especially the game which has different eating habits from those of cattle, thereby avoiding the problems of selective grazing, namely bush encroachment and/or the intensification of woody elements which decrease the carrying capacity of grazing lands.

In strictly economic terms, the MIAA studies published to date do not allow one to judge fully the returns of the areas under this traditional system. Nevertheless, the low ratio of land/animal with which the system is capable of maintaining a relative ecological balance justifies the classification of the system as intensive; not because of the amount of investment/area but because it allows a high density of both people and cattle through the interrelationship of cattle raising, milk utilization, and farming.⁴³ It

⁴² For example, in the Cunene region 39 percent of the holdings have herds of 20-50 head; 42 percent have 50-100 head. Only 8 percent have more than 100, and no holding registers more than 150 head.

⁴³ The very poor soils of these regions can only support the crops after being heavily fertilized by the kraaling of cattle. The area annually manured by this method represents about 50 percent of the agricultural plots in the Cunene region and 20 percent

is intensive in terms of its integration with or adaptation to the ecological environment, not in terms of transforming that environment.⁴⁴ It is also labor intensive because of the close supervision and continual contact between the man and the cattle he holds and tends.

An analysis of the structure of the African-owned herds (table 2) reasonably clarifies some aspects of the system's productivity and also of its integration within the commercial network. The high percentage of adult female animals demonstrates the productive role of the cattle held by the Angolan pastoralists and agropastoralists. In general the high ratio of heifers-in-calf/adult cows (around 1/4) and the low percentage of old cows underscore both the above role and the high renewal rate of cows due to the slaughter or sale of those which are aging—which negates the idea that "for the African it is the amount of cattle he owns (or holds) which is important" and not their quality or productivity.⁴⁵ In most regions for every 100 cows there are 40-50 calves, a high figure for herds in which the cow's primary economic function is dairy production—not steers. The integration of African cattle raising in the market is seen by the youth of the herds. In all 9 regions, approximately 40 percent of the total herd are not yet fully mature (table 2). An analysis of the male animals by age reveals the trading of many young steers. These go either to European farms to be raised for slaughter, or to African holdings of the Central Highlands. A similar analysis of female animals also reveals the trading of young heifers which are largely used to build the stock of new ranches.

Further interesting conclusions can be drawn from an analysis of the structure of the African herds presented in table 2. However, those already pointed out seem sufficient to dispel the currently accepted notion that the African-owned cattle in southwestern Angola represent merely potential wealth which has not been integrated into the commercial network.⁴⁶ It would be easy to point out deficiencies in the traditional system, however, these are deficiencies for which it is generally not responsible—and to a

in the Cuanhama region. *RAA*, vols. 15 and 20. The cattle depend heavily on the stover of the agricultural fields during the dry season. Herd, family, and crops form an ecological trilogy.

⁴⁴ "Intensive" is used here to mean a high level of resource use by an almost perfect integration of the system into the environment. This type of integration is also noted by Talal Asad, "Seasonal Movements of the Kababish Arabs of Northern Kordofan," *Sudan Notes and Records*, 45 (1964): 57.

⁴⁵ This idea is also negated by Evans-Pritchard. "Nuer value their cows according to the amount of milk they give and they know the merits of each in this respect. The calves of a good milch cow are more highly prized than the calves of a cow that gives little milk." Evans-Pritchard, *Nuer*, p. 22. See also Stenning's description of good husbandry for a Fulani herd owner which "involves maintaining a milk yield sufficient to support his dependents at all seasons. Lactation must be not only adequate, it must be continuous. Since lactation is dependent on the birth of calves, the main interest of the herd owner is in a steady yearly increase in his herd." Stenning, *Savannah Nomads*, p. 102.

⁴⁶ Interestingly, in a 1970 session of the Angolan Legislative Council where the problem of African cattle raising was debated, the director of the largest Angolan slaughter and meat exporting enterprise (SOFRIO) confirmed that 95 percent of the exported meat came from African herds and could be considered of "first class" quality—a significant amount from herds utilized mainly for milk production. See *Actas das Sessões do Conselho Legislativo de Angola* (Luanda, 1970), Act 191.

great extent they could be corrected without disrupting what is valid in the present structure.⁴⁷

An Analysis of the Modernization of the Traditional System

European commercial occupation of southwestern Angola began approximately a century ago and became appreciably intensified after the First World War. The principal item of trade has always been cattle. Many of these traders gradually formed their own herds and were transformed from temporary cattle owners to cattle breeders.⁴⁸

In the 1930s there were more European-owned cattle in the Cunene region than there are today, yet the problem of competition for grazing lands and watering points, now so evident in many areas, did not exist. The explanation appears simple: European cattle owners in the 1930s usually integrated within the traditional system. As other cattle owners, they distributed their animals to various African holders. The Europeans called them "shepherds," but the Africans considered themselves holders within the traditional contractual situation and generally enjoyed the rights and sharing of the animal products inherent therein.⁴⁹

However, the officials neither understood nor accepted the traditional system. They either classified the periodic transhumances as "incoherent wanderings" or explained them as the result of a "lack of watering points." This lack of water was said to be the only obstacle to the establishment of "rational" and "progressive" cattle ranches, into which it was necessary to transform the existing patterns.⁵⁰

This idea was reinforced by the generally accepted affirmation that the African herds could not assure the meat supply to the urban centers, much less the desired meat exports. It was further argued that the African herds represented potential wealth but they almost never entered the marketing network since, for the Africans, cattle merely implied prestige and were not viewed as a productive factor.

In the latter part of the 1950s, the official services began to improve many traditional watering points and to establish new ones. As a result of this program and with official encouragement, the rate of land claims by Europeans increased notably. This rate accelerated in the 1960s, especially in the two regions considered the most favorable for the raising of

⁴⁷ The deficiencies of the traditional system are largely those bottlenecks which impede its development: marketing conditions, poor distribution of watering points, lack of prophylactic measures such as vaccinations and dipping, etc.

⁴⁸ Information obtained in 1965 by interviews with traders who had been in the region for as long as 40 years. This change from cattle trader through cattle holder without land to cattle rancher still occurs, and some ranchers still function as the local general traders. See RAA, vol. 34, table 0.4.

⁴⁹ Information obtained in the 1965 trader interviews and confirmed by interviews with African holders during the census fieldwork.

⁵⁰ All planning of range utilization was initially based on the assumption that the herd movements could be stopped by establishing permanent watering points throughout the vast hinterland. Despacho 84, *Boletim Oficial*, no. 49, 1963; Port. no. 13906, *Boletim Oficial*, no. 36, 1965. Similar misconceptions are discussed in *The Problems of the Arid Zones* (Paris: UNESCO, 1962) and William Allan, *The African Husbandman* (Edinburgh and London: Oliver and Boyd, 1965).

cattle—the Cunene region and the Moçamedes-Benguela coastal region.⁵¹ In many areas the African cattle keepers found themselves in difficult situations, losing the watering points and/or grazing lands which they normally utilized during certain periods of the year. The annual use cycle of different types of grazing land and of traditional watering points customarily claimed by specific communities was disturbed in many areas.⁵²

The complaints of the African cattle keepers were not understood by the officials who advised them to participate in the new ranching scheme, to ask for land concessions, and to settle on those concessions. Nor could the officials understand their refusal to do so, especially when it came from owners of hundreds or even thousands of head of cattle.

The Africans' refusal is not difficult to understand, however, especially if one considers the contractual situation between cattle owners and cattle holders, a situation which has allowed the present population density in the agropastoral regions. The spirit of reciprocity or mutual aid is an important factor of their culture. It would not be simple for owners to take their cattle from the present holders in order to establish "modern" ranches. Moreover, they could not appear before their community (*mukunda*) as individual owners of the communal lands and watering points.

Besides these socioeconomic reasons for their refusal to participate in the "modern" system, there are other important technical and economic reasons. The pastoral populations are extraordinarily knowledgeable about the natural environment in which they live, about the capacity of that environment, and about the best way to utilize what it has to offer for their cattle. They have gained this knowledge over centuries of practical experience and close relationship between man and cattle, between the shepherd and the animals for which he is responsible. This knowledge leads them to be skeptical about the viability of raising cattle in their environment by confining grazing to permanent fenced areas which could not often include the varied types of grazing land that must be utilized during the annual cycle. They also believe that the range will deteriorate under the ranching system, and their skepticism appears justified. While most ranches are quite recent, clear signs of deterioration can already be seen in the older ones.⁵³

The slaughter of game, considered indispensable for the implementation of the ranching scheme, has resulted in increased bush encroachment and/or intensification of woody elements because of the lack of browsing.

⁵¹ The area under commercial ranching, according to the census results, is 2,350,000 acres in the Moçamedes-Benguela region (representing 61 percent of the total area of European ranches in southwestern Angola) and 600,000 acres in the Cunene region. See Cruz de Carvalho "Ocupação Empresarial."

⁵² Similar disturbances have occurred in other African countries, for example, in Northern Nigeria. See Stenning, *Savannah Nomads*, p. 237. The serious nature of some of these situations led the Angolan administration in 1960 to modify the boundaries of some of the commercial ranching concessions, reducing the area in many cases. Francisco M. Sá Pereira, "Esquema Proposto para o Reordenamento da Pastorícia na Area do Mucupe," mimeographed (Luanda: MIAA, 1970).

⁵³ In the few instances where the ranching system of grazing has been used for the past 30 years, bush encroachment is so acute that only with very expensive and frequent mechanical clearing can the grassland be regenerated.

Another means of controlling such deterioration of grazing land—which in the past was by the considerable cutting of thorn bushes by the traditional communities for the annual repairing of their ongubo enclosures—is also eliminated by the ranching system. Furthermore, in many ranches with limited types of grazing land, if the cattle are not moved during certain seasons and are not provided with supplementary feeds or forage acquired in other regions, they lose condition and become emaciated.

A further important factor which influences the Africans' resistance to integration into the ranching system is the investment required at the individual level, an investment which the African cattle keeper can ill afford. Even if he owns a large number of cattle—indicating to some a justification for "modernizing" his cattle-raising system—the investment costs would generally be higher than the value of his animals. In addition, resorting to the use of credit, even if that were possible, would only postpone the financial burden.

The idea that the productivity of modern ranching exceeds that of the traditional system remains the principal argument justifying "modernization."⁵⁴ A statistical analysis of the herd composition of Rhodesia's well-established modern ranches and that of the southwestern Angolan family herds is highly relevant in comparing the productivity of these systems. The number of cattle on Rhodesian (European) ranches and farms (1,552,097 head) approximates the African herds in southwestern Angola (1,613,142), and table 5 shows the structure of both herds in absolute numbers and in percentages.⁵⁵

TABLE 5
HERD STRUCTURES
IN RHODESIA AND SOUTHWESTERN ANGOLA

	TOTAL	COWS	HEIFERS	CALVES	BULLS	OXEN AND STEERS
Rhodesia (European)						
Number of head	1,552,097	586,022	241,482	257,114	25,866	441,613
Percent of total herd	100.00	37.76	15.56	16.56	1.67	28.45
S. W. Angola (African)						
Number of head	1,613,142	681,544	172,866	292,388	34,893	431,451
Percent of total herd	100.00	42.25	10.72	18.12	2.16	26.75

Sources for Rhodesia, see *Report on the 1960 World Census of Agriculture*, vol. 1, pt. A, *Census Results by Countries* (Rome: FAO, 1966); for Angola, see table 2.

⁵⁴ A discussion of this argument in ecological terms (with energy-flow diagrams) is given in Cruz de Carvalho and Vieira da Silva, "Cunene Region."

⁵⁵ The figures for Rhodesia are taken from the *Report on the 1960 World Census of Agriculture*, vol. 1, part A, *Census Results by Countries* (Rome: FAO, 1966). It is important to note that the European-owned Rhodesian herds include not only animals under the ranching system but also the mixed farming herds, which are in general under better management and more intensive care. It is rational, then, to assume that the comparison presented would be even more favorable for the African traditional system if only the ranch herds were considered.

A strong parallel exists between both herds, although the percentage of productive females in the African herd is higher. The ratio of calves/100 cows is approximately the same for both systems, 44 in Rhodesia and 43 in Angola. The ratio of bulls/100 cows is slightly higher in Angola (5.12 versus 4.41 in Rhodesia), which is understandable given the smaller size of the African family herds.

The Angolan ratio of heifer/calf, which is much lower than Rhodesia's (0.59 versus 0.94), reflects the sale of heifers by the Africans for stocking ranches, as described earlier. Some might argue that this difference is rather the result of losses among the African-held cattle, said to be very high. Unfortunately no Angolan data has yet been published to prove or disprove this argument.⁵⁶ However, official South African statistics provide an interesting comparison.⁵⁷ For the year 1959/60, European cattle raisers in South Africa lost 7.15 percent (537,360 head) of all cattle. Of those losses, 204,701 were animals under 1 year of age, which represents about 18 percent of the cattle in that age group. For the same period, 230,762 losses were registered in the Bantu reserves, which is 6.52 percent of the total herd. Since conditions are very difficult for animals in many reserves, this low percentage can only be attributed to the previously mentioned intimate relationship between the animals and the Africans who hold and tend them.⁵⁸

Ranching should be considered an *extensive* system of cattle management not because of the larger land area it requires but because of the low ratio of man/animal which it allows; in contrast the traditional system could be classified as *intensive*. Yet extensive ranching undoubtedly exerts greater pressure on the natural environment and therefore requires considerable external inputs to maintain the ecological balance.⁵⁹ While some of these inputs are obvious (such as fencing, supplementary feeding, bush control, more watering points, etc.), even additional inputs may be necessary to maintain that balance. The more arid the area, the greater will be the inputs, making ranching even more costly.

The comparative analysis of the herd structure of the Rhodesian ranches and Angolan African holdings does not show that the productivity of the modern system is much greater.⁶⁰ Thus, it could be hypothesized that in many areas the modern system is functioning only because official policies have facilitated a tremendous input of services and subsidies whose cor-

⁵⁶ Data on sales and mortality are included in the MIAA cattle census presently being conducted in southwestern Angola. See "Esquema e Metodologia dos Inquéritos, 1970/1974," (Nova Lisboa: Missão de Inquéritos Agrícolas de Angola, 1972).

⁵⁷ Republic of South Africa, Bureau of Statistics, *Report on Agriculture and Pastoral Production, 1959-60, South Africa and South West Africa*, no. 3, *Livestock and Poultry, Livestock Losses, Hunting, Trapping, and Fishing*, Agricultural Census 34 (Pretoria: Government Printer, 1964).

⁵⁸ This relationship is well described in Evans-Pritchard's discussion of the "very slight mortality among calves" who receive "every attention," p. 34.

⁵⁹ See energy-flow diagrams for commercial ranching and for family herds in Cruz de Carvalho and Vieira da Silva, "Cunene Region."

⁶⁰ *Ibid.* This seems to reinforce the conclusions drawn from the comparative analysis.

responding output does not appear to concern anyone. Present results already show that the cattle-carrying capacity on ranches is much less than that in the traditional system.⁶¹

Going beyond these economic aspects to a socioeconomic evaluation of the two systems, one sees that the distribution of income in the traditional system is much more equitable and reaches a greater number of people; whereas the modern system concentrates the income among a few large enterprises. Closely linked to the income distribution is an important demographic consideration. In effect, the traditional system has allowed the population of southwestern Angola to exist in its present density and distribution. The proposed modernization would end the dairy and farming aspects of traditional rural life and force an appreciable depopulating of the area.

Concluding Comments

Pastoralism and ranching are two radically different systems of cattle management for arid and semiarid areas. Pastoralism is also the traditional African way of life in these areas. Ranching is generally assumed to be a better system, capable of improving the livestock quality and productivity mainly in terms of meat production. Thus, for these economic reasons, pastoralism would appear to be condemned in the long run as a system of cattle management and, consequently, as a way of life. Within this context, then, the change from pastoralism to ranching is generally considered to be an improvement or modernization. I have attempted to provide a critical evaluation of that change which is taking place at a more or less increasing rate in southwestern Angola and in other African areas.

From the analysis it can be seen that this change implies a completely different spatial organization, requiring plentiful inputs—some known but others still to be ascertained—to maintain an ecological balance. Based on statistical data from southwestern Angola and from other analogous natural areas, one can conclude that the resulting increased output will not be as substantial as generally assumed. This conclusion must be confirmed or rejected by a thorough comparative economic study of the two systems, including all of the herd yields and not simply meat production. This study is fundamental for an accurate economic evaluation but unfortunately and inexplicably does not yet appear to have been made anywhere in Africa.

The pastoralist way of life seems the only system capable of maintaining present population densities in the arid and semiarid areas where it exists.⁶² The “modernization” of the system tentatively implemented in southwestern

⁶¹ The average rainfall in the Cunene and Cuanhama regions would correspond to a carrying capacity of 15-50 acres/head under the commercial ranching system for U.S. grazing lands, which are generally better than the African. In more favorable and less generalized conditions, it corresponds to 12-35 acres/head. See W. R. Chapline and C. K. Cooperrider, “Climate and Grazing,” in *Climate and Man*, Yearbook of Agriculture (Washington, D.C.: U.S. Government Printing Office, 1941), p. 459. However, the actual cattle biomass under the traditional system in both regions reveals a much higher carrying capacity and, in general, no overgrazing is evident. In the Mucupe area the extant ranching system, if generalized, would only support two-thirds of the present African-owned cattle population in the area, and it is not yet certain if the grazing is not degrading. Sá Pereira, “Reordenamento da Pastorícia.”

⁶² Obviously, if irrigation were possible, this statement would not be valid.

Angola, disrupting the African family's cultural and economic bond with the small herd and the kraal/farming plot relationship, will cause a disintegration of the socioeconomic structure and will force vast migrations from the area. These serious sociological ramifications should be given even greater consideration since positive economic results from modernization seem doubtful.

A general program for improving the traditional system does emerge from the knowledge which presently exists. It would have to be adjusted as more information is gained, but the improvements could follow these general lines: (1) official acknowledgement of the African customary rights to grazing lands and watering points, (2) inexpensive improvement of the latter with the aim of improving rather than suppressing the annual herd movements, (3) intensive prophylactic campaigns (vaccinations and dipping), (4) improving the existing commercial channels for animal products (including milk and dairy products) and developing new ones, and (5) stimulating the sale of young male animals to the agricultural regions of central Angola where they would be raised for slaughter.

Thus, the widely held theory that the present areas of African pastoralism can and should be transformed into large and direct meat producers must be reevaluated for ecological, economic, and sociocultural reasons. There is no doubt that these areas allow a pastoralist way of life, maintaining the ecosystem in a relative equilibrium. Nevertheless, that way of life and the productivity of the areas are susceptible to an appreciable improvement. Rather than resorting to the large investments implied by the presently accepted form of modernization, which interferes with the present human agro-ecosystem in order to establish an alien one, we must carefully study and more fully understand the ecosystem and its trophic chains in order to determine where the human element might better be integrated with minimal disruptions and disequilibrium. In other words, for the sake of development, attempts should be made to improve the present system—which is already functioning well in many respects—rather than replace it with another.