the future of pastoral peoples
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the future of pastoral peoples

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contents

foreword 7

participants 11

research priorities and pastoralist development: what is to be done? 15

opening addresses 27
the future of pastoral peoples R.S. Musangi 30
some remarks on the roles of advisers and advocates Philip Carl Salzman 32

the role of anthropology in pastoral development 39
development for nomadic pastoralists: who benefits? Dan R. Aronson 42
an anthropological approach to economic development Walter Goldschmidt 52
research priorities in pastoral studies: an agenda for the 1980s Michael M. Horowitz 61
livestock and livelihood: a handbook for the 1980s Daniel G. Bates and Francis Paine Conant 89
the failure of pastoral economic development programs in africa Walter Goldschmidt 101
the anthropologist as mediator Emanuel Marx 119

the political economy of pastoralism 127
political factors in the future of pastoral peoples Philip Carl Salzman 130
herds, trade, and grain: pastoralism in a regional perspective Anders Hjort 135
evolution of policy toward the development of pastoral areas in kenya S.E. Migot-Adholla and Peter D. Little 144
theoretical implications of pastoral development strategies in east africa Peter Rigby 157
pasture in the malian gourma: habitation by humans and animals André Bourgeot 165
education for nomadic pastoralists: development planning by trial and error John A. Nkinyangi 183

the economics of pastoralism 197
production in pastoral societies Gudrun Dahl 200
livestock as food and money H.K. Schneider 210
economic institutions and pastoral resources management: considerations for a development strategy Peter N. Hopcraft 224
consumption and marketing of pastoral products among the kal tamacheq in the niger bend, mali Ag Hama 244
women and pastoral development: some research priorities for the social sciences Vigdis Broch-Due, Elsie Garfield, and Patti Langton 251
recent changes in bedouin systems of livestock production in the syrian steppe Faik A. Bahhady 258
the role of government in pastoral development 267
organizing government’s role in the pastoral sector Stephen Sandford 270
organizations for pastoral development: contexts of causality, change, and assessment John G. Galaty 284
bedouin settlement: organizational, legal, and administrative structure in jordan Kamel S. Abu Jaber and Fawzi A. Gharaibeh 294
sedentarization of the nomads: sudan Mustafa Mohamed Khogali 302
sedentarization of nomadic pastoralists and “pastoralization” of cultivators in mali Salmane Cissé 318
livestock development and range use in nigeria Moses O. Awogbade 325
planning policy and bedouin society in oman Mohsin Jum’a Mohammed 334
the research process: strategies, goals, and methods 337
a methodology for the inventory and monitoring of pastoral ecosystem processes H.J. Croze and M.D. Gwynne 340
indigenous models of time and space as a key to ecological and anthropological monitoring Rada Dyson-Hudson 353
the collection and interpretation of quantitative data on pastoral societies: reflections on case studies from ethiopia Ayele Gebre Mariam 359
relevance of the past in projections about pastoral peoples Daniel Stiles 370
references 379
livestock and livelihood: a handbook for the 1980s

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Pastoral peoples seem inescapably caught up in the drive for development of food productivity in arid and semi-arid regions. Although, in the past, anthropologists and social scientists have been involved in some development efforts affecting pastoralists, it is now clear that they must be even more directly concerned. Those with experience in development-related research have been hampered, we feel, by a difficulty not only in communicating with each other but in letting the rest of the scientific community know the significance of their work.

One result, it seems to us, is that development-related research has acquired a noncumulative character in the sense that neither research results nor the recruitment of new researchers into the field seems to be building in any particular direction. Despite the existence of journals specializing in applied anthropology and of journals concerned with regional and national development problems, much of what one reads, although often of high quality, is episodic and, more often than not, an account of failure. The involvement of social scientists in development efforts now impinging on pastoralists has been not only noncumulative and episodic but also ineffective, or, at any rate, less effective than we would wish.

The suggestion we have to make — creating a handbook or guide for development-related research — is certainly no cure-all, but if it achieved only a few results, we feel the effort would be worthwhile. One possible result would be a systematic review of development-related research. If presented in the context of a functional framework that captures the major kinds of problems with which pastoralists must cope, such a review might well lead to a more coherent and cumulative series of research involvements in the 1980s and beyond. Furthermore, a handbook could be of great use in recruiting students to development-related research and in aiding officials of funding agencies to set their priorities for support. Our suggestion is partly stimulated by the usefulness of Reining's handbook on desertification (1978).

We propose a handbook based on the sources of change and uncertainty to which pastoralists must respond. One source is pasture — its nature, quality, and productivity. A second source is the herds as well as the quantity, quality, and variety of livestock produce. A third is water-related; a fourth is available transport. Other sources are economic and political, including households, the organization of labour, the rights to stock and pasture, and the organization of exchange relations.
All the sources of change are closely related to the regional context within which pastoralists operate. Too often, pastoralists have been studied as isolates, only tangentially related to other pastoral groups or nearby complementary or competing groups of farmers, peasants, villagers, or city dwellers.

Although in the past — and not so long ago at that — there was some merit in perceiving pastoralists as being an ideal type at the opposite end of a spectrum from cultivators, recently a more fruitful emphasis has been to trace the pastoral group's interconnections with others — other pastoralists, farmers, villagers, and the like. Other than environmental parameters, such as terrain and seasonal rainfall, these interconnections are possibly the best delimiters distinguishing one region from another.

Delimiting a region is important because, in our experience, most development schemes attempt to effect regional or areal upgrading. For example, a scheme to promote a cash crop among farmers is likely to make it more difficult for pastoralists to secure the grains they need for food, and this disturbance must be coped with; the solution is likely to be regional in scale.

**technoenvironmental sources of change**

Conventional wisdom is that pastoralists only stay long enough in an area to ruin it. Even among planners and experts in rangeland management, few question the assumption that indigenous livestock management techniques are inherently inefficient if not actually destructive (Baker 1975b; Pratt and Gwynne 1977). Although many social scientists have demonstrated that the assumption is not well founded, further research on pastoral–habitat interaction is of paramount importance (Conant 1980).

There are several reasons for urgency. First, planners, technical experts, and national decision-makers do not appreciate that in arid and semi-arid areas a benign environment is largely a human creation and much is to be learned from those who have exploited it for long periods. Second, until now no system has demonstrated better energetic efficiency than extensive pastoralism in these areas (Little and Morren 1976; Moran 1977; Western and Dunne 1979). Third, if the continuing, and increasing, food shortage in many countries is to be ameliorated, development planners must begin working within proven systems of food production. Strategies that involve heavy investments in capital and infrastructure or that entail locally untried solutions are inherently dangerous (Holling and Goldberg 1971). Planners and others must learn to work with herders rather than around them, recognizing that habitat maintenance, levels of productivity, and livestock management are directly affected by the available technology. The first step is to understand the sources of change.

**pasture-originated sources of change**

Too often in the literature, it has been assumed that local plant cover is an environmental given — a natural and distinctive feature of a particular habitat. Whereas spatial and temporal variability in the quality and abundance of pasture is widely recognized, much less common is the realization that the nature and the variety of the plant cover are stringently conditioned by human activities. In arid zones, an agricultural oasis stands
out as an obvious human artifact, a true creation. But few people appreciate that the vast areas occupied by pastoralists are also largely a creation, an artifact of pastoral exploiters, who, in the context of a highly unstable environment, have maintained a changing but usable plant cover.

The energetic basis for pastoral production is the plant cover, and changes in it are immediately reflected in the pastoral economy. The pathways through which the changes are effected are not the sole province of the rangeland or veterinary scientist; they are the immediate concern of the social scientist as well (Western and Dunne 1979; Dyson-Hudson and Dyson-Hudson 1969; Gulliver 1955). The particular mix of plant species and their tolerances establish the range of livestock options open to local populations. A detailed understanding of these options, as they have evolved, is critical to rational development planning in arid and semi-arid zones.

The part played by wild herds in the creation and maintenance of evolving plant communities is only beginning to be understood (McNaughton 1976; Pratt and Gwynne 1976). The role of domesticated herds as managed and directed by pastoralists is somewhat better known, but grasslands are still perceived by many as being natural phenomena rather than largely a human maintained resource (Langdale-Brown et al. 1964; Baker 1975a,b). A basic query is whether these areas are being maintained at optimum levels of productivity. The answer cannot be drawn from superficial impressions and simplified assumptions. Pastoral subsistence systems are not simple. The complex interactions they involve are as intricate as those involving agriculture. In fact, the maintenance of a usable plant cover may be in some instances every bit as much a feat of environmental manipulation as, say, shifting cultivation. For example, the Pokot of Kenya, from 1974 through 1978, were unable to herd their livestock in Simbol, a grazing area used for many generations. Before intensified raiding forced them to abandon the area, they managed mixed herds of cattle, goats, and some sheep so as to maintain a grassy cover and restrain the spread of Acacia misera and A. mellifera. Goats, as the major browsing component of Pokot herds, are voracious predators of Acacia. Another factor is the seasonal fires set by the Pokot. The intense but transient levels of heat created by the flames sweeping over the area have complex effects, one of which is to keep in check Acacia pioneers. For 5 years — now going on 6 — the Simbol area has been unoccupied, and analysis of the Landsat data for the period shows that Simbol has become a sea of thorns, the grass has retreated, and in all likelihood the area is lost permanently as a pastoral resource area (Conant 1980). The Landsat data provide information on the extent — beyond Simbol — that the Acacia species have taken over. Locally, a minimum 8000 ha are involved; as the Landsat data analysis is extended regionally, it may show an increase (by a factor of 10 or more) in the area newly dominated by Acacia.

A. Endre Nyerges (1979), in a study of traditional animal management techniques in an arid region of northern Iran, views pastoralism as an intrinsic feature of rangeland ecology. Nyerges finds a close relationship between the distribution of annual grasses and sheep and goat foraging activities, and a less obvious relationship between shrubs and animal behaviour. Although he is cautious about drawing conclusions for planning from this preliminary research, he does demonstrate effectively that research should be directed at
formulating development strategies that are not disruptive of established relationships.

In the Turan of Iran, he finds that even the distribution of shrubs that are only lightly grazed by animals is related to the germination and spread of more usable annual grasses. Certain shrubs provide around their base a sheltered environment from which annual grasses can spread. The introduction of new species of animals as well as alterations in patterns of management can have, he suggests, deleterious, or at least unexpected, side effects.

livestock-originated sources for change

Pastoralists must contend not only with herd size and age-sex structure but also with the mix of species being herded and their differential deployment. Rather belatedly, students of pastoralism have come to look closely at the demographic characteristics of the animals utilized (Dyson-Hudson 1972). Although some pioneering work has been done (Dahl and Hjort 1976), much more research is called for. One obvious area of inquiry is the manner in which different species are managed and the ways in which the ratio of browsers: grazers is manipulated. Almost everywhere, traditional livestock management systems are characterized by a mix of species. Today, under strong pressure from a variety of sources, some pastoralists are tending toward monospecies management. This may diminish the traditional system's potential, especially in the context of habitat maintenance. In many areas of the Middle East, the last decade has seen a dramatic shift in sheep production at the expense of the mix of species. In relatively fewer areas, there have been parallel shifts in cattle-raising to the exclusion of other stock. The ecological effects of these shifts are pronounced in some areas but, thus far, little studied.

In fact throughout the Middle East and Africa it appears that management strategies regarding sheep and goats are woefully understudied as compared with those in the raising of larger stock. The literature on East Africa often implies that goats and sheep manage themselves, or, in some insights, the goats are said to manage the sheep (Pratt and Gwynne 1977; Rigby 1969a; Tanaka 1980). There are good indications, however, that the management of goats is a critical aspect of pastoral ecology and household economy, and some evidence among Pokot points to the important role of women in the management of these small stock. Quite apart from its ecological implications, small animal husbandry makes good economic sense. Small stock mature quickly, compared with larger animals; reproduction rates are higher; and risks of loss per unit of biomass may be minimized. Also, in terms of nutritional inputs, small stock often provide the more regular source of animal protein. Furthermore, whereas the literature often emphasizes the exchange value of camels and cattle, recurring household needs are often met by the sale or exchange of a goat or sheep.

water-originated sources of change

Because of the obvious environmental and social implications, modern water-delivery systems have been relatively well-studied as they affect pastoral people, but much more research is called for on pastoralists' response to deep-well technology, earthen-catchment basins, and other technologically innovative changes in the supply, storage, and delivery of
water. Few studies in the Middle East or Africa can match the detailed level of analysis reached by Downs in his study of the social consequences of a dry well among the Navaho.

Insofar as pastoralists are concerned, a central feature of innovative water technology is the sedentarization often required for the use of new facilities. Another aspect is the relatively impersonal supervision of the facilities by government employees who may not even be from the local area.

The study of indigenous systems of water discovery and delivery has been seriously neglected. In East Africa such systems are rarely permanent in pastoral areas; each dry season many wells are redug. One effect is to avoid some of the complications arising from modern, permanently located boreholes. Although we would not argue for replication of the risky and labour-intensive hand digging of deep step wells, there is much to be learned about the ecological benefits deriving from impermanent wells of limited yield. One benefit is avoidance of a permanently trampled area around the well head and intense grazing of surrounding vegetation. Moreover, indigenous well technology is usually associated with complex institutional arrangements that themselves deserve close study, especially in the context of water failure.

livestock products

In all pastoral areas there is a near revolution in terms of the use and demand for animal products. Some products, such as camel and goat hair, have fallen from favour; other demands have increased enormously, especially for milk and dairy products as well as the general demand for animal protein. The increasing demands largely coincide with population increases and urbanization. Further, the modern technology in meat processing, preservation, and transportation means that a local herd may supply the protein needs of distant populations. At the same time, one result is that entire regions formerly self-sufficient in terms of protein, such as Saudi Arabia, and some other states of the peninsula, now rely on distant sources of supply.

Although specialized ranches in Australia, New Zealand, and Argentina represent the extreme where local strategies of production are dictated by the demands of distant markets, a similar trend is discernible in parts of Africa and everywhere in the Middle East. In the Middle East, virtually all livestock production is market-directed and governed more by the demands of distant populations than by the long-term interests of the livestock managers. From the perspective of habitat maintenance, a particular mix of browse and graze animals may be essential. However, the demands of the marketplace as well as distant bureaucratic decisions and changing urban tastes combine to promote changes in livestock management: stocking densities may outweigh carrying capacity; one species may be favoured over a mix of species and the pattern of grazing on local vegetation is modified; the age-sex composition of the herd may be altered; or nutritional levels may decline because livestock produce previously destined for household consumption is rerouted to the marketplace. The Yoruk of Turkey, for example, sell most of their butterfat production and purchase vegetable oils on the market; further, they sell their wool and stuff their bedding with synthetic products or cotton (Bates 1973). Changing demands and tastes are inevitable and often present opportunities to which pastoralists respond. However, much remains to be
discovered about the impact on local environments of changing demands. To date, among pastoralists, there have been no studies comparable with those on the nutritional effects of changing patterns of diet and labour carried out among agriculturalists.

The changes induced by a market orientation are concomitant to revolution in transportation. In traditional systems of pastoralism, available transport — pack animals — sets many restrictions on the range of distribution of livestock and livestock produce exchange. In some areas, however, live animals are moved by truck and rail to distant pastures; this is especially true in the Middle East. Today flocks of sheep are trucked from diverse regions of Turkey to the summer pastures of the Taurus and Zagros that were formerly the exclusive domain of local villagers and herders. In Syria, Jordan, and Saudi Arabia, sheep are trucked deep into areas formerly utilized exclusively by camels. In some cases the effect on plant cover is devastating.

economic and political sources of change

A second and equally important source of change — proposed as an emphasis in the handbook — is the sociopolitical correlates, causes, and consequences. This is the natural habitat for most social scientists, and, as a consequence, is the area in which most research has been carried out. There are, it strikes us, a number of areas for further research of an urgent nature. These include the organization of pastoral labour, responses to changing markets, and shifting internal patterns of political organization.

People develop their social organization in response to problems of livelihood, defence, environment, and the like. What is sometimes lost sight of is that the social responses have costs and consequences and may in turn generate further changes and sometimes unacceptable costs. In many of the projects reviewed by members of this conference all too commonly the social organization of the affected population is treated as a simple dependent variable — that is, one that simply passively responds to new situations without in turn affecting them. There often appears, for example, to be little understanding of the way in which pasture rights are integrated into a system of household organization and political structure.

households and the organization of labour

The organization of domestic labour is of particular importance because productive decisions in most instances are made in the household. This is true in market and nonmarket contexts alike and is not diagnostic of a particular economic level. Division of labour by sex and age is often critical to effective livestock management given that most households must orchestrate a variety of tasks being carried out at different places and different times. A division of labour underlies the way in which households utilize available resources (Irons 1975).

Throughout the Middle East and Africa, we can see radical shifts in the tasks that are organized by pastoralist households and concomitant shifts in the division of labour and the composition of local groups. In the mountains of the Sinai, women and children tend flocks while adult males work in agricultural projects. In Turkey, by contrast, many high pastures have tents inhabited only by male shepherds, with women remaining in towns and
villages. In one lowland area among the Pokot of Kenya, more than 40% of the households have women as heads; men are absent on a variety of tasks.

The current trend in the Middle East is for wage labour to be increasingly incorporated into the activities of a household. Younger men are frequently not found in many encampments (Cole 1975). The social costs of such shifts in social organization are as yet relatively unstudied, although the consequences are likely to be significant.

Flexibility in the division of labour, however, can be limited by considerations of security. In Turkey, as mentioned, some highland areas have been largely abandoned by family units, the herding being left to armed males. Much the same is happening on the Pokot lowlands.

Even in populations described as having a domestic mode of production extrahousehold sources of labour are often critical. This is true for virtually all pastoral groups described for the Middle East. Nonhousehold sources of labour include hired shepherds, shepherding contracts, labour exchange, herd pooling. It is not at all unusual for labour to be contracted from outside one's own natal group.

In Africa, the organization of labour within pastoral populations is often more complex than it appears. One of the functions of age grades among African pastoralists is to provide an organizational basis for extrahousehold sources of labour, as in the management of dry-season camps (Peristiany 1951). The description of the organization of extrahousehold labour is largely lacking in the literature despite its significance for change, both traditional and development-related. An important exception is a recent work by Almagor (1978).

A critical problem in the Middle East for many pastoralist groups is a shortage of skilled labour. Expert herders are in short supply. The problem is exacerbated by the rapid shift due to labour-intensive sheep production at the same time that many seek wage-paying jobs away from home. Some tasks used to be done at home, but now pastoralist production is increasingly segmented. Wool processing and dairy goods production are increasingly removed from the household.

organization of stock and pasture rights

The social regulation of access to resources is closely related to levels and forms of productivity. It is also of clear relevance to planning and development. The regulation of access to resources has an obvious technological dimension. Tank trucks bring water to flocks in remote desert pastures in Arabia, thereby removing one constraint on utilization. Mechanized transport of the herds and flocks has already been noted. Of equal importance to the technological component is the institutional framework for governing access to resources. The literature on the Sahel is rife with reference to the "tragedy of the commons" phenomenon, often singled out as the cause of overgrazing and pasture collapse (Hardin 1968).

Communal ownership and rights are not inherently destructive, nor is individual access or ownership a panacea. It is not so much communal or individual rights that matter but the way in which responsibilities are seen as being associated with rights of access. People who perceive themselves, or are perceived by others, as having long-term interests in pastoral resources are likely to develop and accept constraints on their use that maintain and preserve them. A good example is the reinstitution of the hema system of
pasture rights associated with specific clans among the Bedouin of Syria, Jordan, and Saudi Arabia.

The use of an area for both agricultural and pastoral purposes is often regulated through a system of tenure or access rights. In the Middle East, for example, many areas of pastoral land use and control are legally state, crown, or "waste" lands. Where specific pastoral title is not recognized, it is difficult for pastoralists to resist agricultural expansion or for those in search of firewood to resist incursion even though they destroy the browse. Gleaning for fuel has bared substantial areas in both the Middle East and Africa.

Another example of the effects of a lack of local control over an area is that of the Yomut Turkmen in northern Iran. Before the 1920s, pastoral Turkmen maintained effective control over the pastures they utilized. Following their "pacification" by the forces of Reza Shah, most of their pastures became state-owned, crown lands. At first this distinction meant little in terms of use. But by the 1970s entrepreneurs residing elsewhere had begun to bring tractors and crews of labourers putting these lands to the plow in a form of high-risk mechanized agriculture. As a consequence, much pasture has been lost through wind erosion. Agricultural productivity is highly variable and probably profitable only because the cost of crown land is so minimal (Bates 1979).

A positive example from West Africa demonstrates the effectiveness of local control over an area used by both agriculturalists and herders: the Fulani gain access to fields that have been harvested and feed their stock on the remaining stubble (Stenning 1959). Mutual arrangements of this sort in the Middle East have largely disappeared because of shortened fallow periods, the use of artificial fertilizer, and irrigation.

the organization of exchange relations

Since Barth's (1964a) pioneering study of capital and investment, the organization of exchange relations has occasioned considerable research and discussion. What is needed, it seems to us, is specific attention to the effects of changing markets and other conditions of formal exchange on the raisers of livestock. How do people change their productive strategies in the face of shifts in prices, production costs, and demands? The stock raisers are in fact responding to changing exchange relationships (Swift 1979a). In the Middle East, it is obvious that any notion of a sufficiency-oriented mode of pastoral production is of little value. Opportunism and entrepreneurship carry the day in the Middle East, where dairy and other commercial ventures are regularly developed by local entrepreneurs. Little research has been carried out to our knowledge on venture capitalism and entrepreneurship among pastoral peoples.

In market-integrated societies, research is needed on the actual processes and procedures by which exchanges are effected. Local systems of credit, sources of cash loans, credit against production (or futures) are all fundamental to the pastoral system of production and must be accounted for if one is to make suggestions for planned change. In many respects, stock raisers in the Middle East increasingly resemble their counterparts in the United States, Australia, New Zealand, and Argentina. They are becoming mobile ranchers.
Informal or nonmonetary exchange relations may paradoxically be increasing in significance among market-oriented producers. The requirements of security often depend on strengthened ties of family and friendship. In West Africa, also, such ties have been of great individual significance in the conduct of long-distance trade and sale in remote markets.

sources of inequality and social segmentation

One of the costs of development, planned or otherwise, is a near universal tendency for internal differentiation and growing disparity in standards of living. In its simplest terms, this process reflects the fact that in circumstances of rapid change some people are better able to cope than are others. One of the not so hidden costs of economic development is the social cost of inequality. Households unable to sustain themselves within pastoral systems too often become squatters on the periphery of other productive systems and settlements.

Intelligent planning should be based on the realization that the costs and benefits from change are differentially experienced. The disenfranchised and poor among some pastoral populations may not be as evident as among farmers and urban dwellers because the desitute — unless engaged as herders — cannot simply hang on; they must leave the system. This is particularly true, we hypothesize, among commercially oriented herders.

As commercialization proceeds, one of us (Bates 1972) has shown a corresponding increase in differential access to critical resources such as monetary credit and pastures. Absentee ownership of the flocks, furthermore, isolates the active herders from much of the decision-making. Politically, as well as economically, decision-making is increasingly centralized. The way this relates to political change in pastoral areas has only recently been studied, and much remains to be discovered (Glatzer 1977).

pastoralism and development in regional perspective

One of the striking lessons of research in the 1970s is that the most productive efforts have focused on behavioural issues rather than definitional approaches or problems arising from ideal types. Instead of attempting to define what a region is or suggest a scale appropriate to all studies, we emphasize the reasons for regional approaches.

Perhaps the most basic reason is biological. The study of demographic processes and population dynamics requires the delineation of a breeding population, and in most herding groups this will include people involved in pursuits other than pastoralism; it will require defining a regional population. Furthermore, the discovery of demographic processes among pastoralists requires comparison with other populations. Rational development planning must be based on an understanding of demographic processes. Changes in birth rates, longevity, mortality among children all have important social and economic correlates. Moreover there is reason to expect that changes in distribution of wealth, labour demands, and the like will be reflected in the vital rates of the population. So far there has been surprisingly little demographic research on pastoral populations (Irons 1979a, 1977; Henin 1969).

Likewise, planning for development cannot proceed without an understanding of the background beyond that of a local group. All pastoralists, as
far as we know, have histories of regularly dealing with other peoples and of choosing among productive strategies. A diachronic study of adaptation requires a scale large enough to account for group interactions, changes in land use, and settlement. Moreover, it is the specific political history of a region that, as much as any set of physical environmental constraints, shapes a complex set of land uses. This is evident throughout the Middle East where the significance of political relations for an understanding of local productive systems is evident (Hutteroth and Abdulfattan 1977).

Rational economic planning, be it to increase food production or to raise per-capita income levels, has to comprehend supracommunity patterns of capital accumulation and deployment. Urban centres are more than market sites to be visited by pastoralists. Trading and administrative centres structure much of the land use in the hinterlands. This of course is one way of defining a region. Although nomadic groups may be removed from the centres with which they trade, they are nonetheless integrated within the economic system. They are specialists in livestock for consumption by other groups, and their integration is immediate and direct. Market articulation in some parts of East Africa may not be as close as in the Middle East or West Africa, but nonetheless surplus livestock produce is exchanged over a wide area, and these exchanges are another kind of regional integration.

Changing technology and capital deployment go hand in hand. Innovation in technology never happens every place at once. Technological innovation in contemporary society involves great expenditures, whether of private capital, bank credits, or government funds. Usually the source of such funds is centralized; however, the technology that such central funds deploy affects a much wider area. Technological change affecting one sector of an economy almost inevitably affects other sectors. Thus, the development of cash cropping can seriously interrupt pastoral exchanges with farmers for food, interdict migratory routes, or adversely affect access to water.

Almost everywhere there has been deterioration or breakdown of traditional partnerships between pastoralists and other producers. The breakdown takes many different local forms. In the Middle East, for example, most pastoralists today conduct their trading and marketing themselves or through entrepreneurs from their own group. The relationship is increasingly that of straightforward commerce. The marketplace itself has a new significance for many herders who come to do more than sell a few animals against next year’s supply of grain. They come to engage in active, entrepreneurial trading going beyond animals and animal produce.

In East Africa, it is a real question to what extent pastoralists are similarly caught up in entrepreneurial speculation (Schneider 1974). To the extent that traditional exchange relations with farmers have been disrupted, pastoralists are forced to deal directly with unrelated suppliers — for example, remote trading posts with supplies of grain, salt, cloth, and other needed goods. Previously, such items became available through kin, very often affines, spread over a wide area. What is happening now is the centralization of exchange relations increasingly mediated over the counter of the trading station.

Research relevant to planning must be cognizant of the way in which the organization of exchange relations is being modified. No longer is it possible to sustain for analytic purposes the fiction of pastoral societies as distinct from others (Bates and Lees 1977; Salzman 1978; Sandford 1977a,b; Swift 1977). At the same time, development planning must build on an awareness
of these changes. In the ecology of integrated systems, it is commonly recognized that increases in productivity in one segment of the system are accompanied by decreases in productivity of other segments of the system. This is not a prediction of failure but a reminder that increases in productivity entail costs, and if these are to be shared, then a considered and even-handed approach is called for.

Contingency planning is a necessity because unexpected problems or costs are inevitable. Too often, development planning utilizes ecosystem equilibrium models, whereas stochastic models are more appropriate. As we have noted, both rangelands and the strategies of the people who utilize them are subject to sudden and discontinuous change. They are not in equilibrium except on a short term. Great care has to be taken that gains in productivity are real rather than simply apparent. Often the benefits of development are calculated without respect to other sectors of the economy. We argue that if the development of agriculture, for example, involves irrigation of lands formerly used for herding, then the loss of the pastoral productivity must be subtracted from the anticipated gains in the farming sector. At the same time, the conversion of extensive pastoralism to intensive feedlot husbandry involves costs to the larger system as well.

Two points are involved. One is that planned change may marginalize groups of people or segments of a population by simply excluding them from the advantage being extended to others. Health development and education efforts frequently take this form, with some benefiting directly from clinics and schools while others are largely unaffected. Thus, some people remain in the shadow of development, so to speak. This is benign neglect in contrast to our second point, which is change benefiting some at the expense of others. In the agricultural sector, individual households or entire villages may benefit from new technology at the expense of their neighbours. In the Middle Eastern pastoral sector, similarly, intensification has created a new class of motorized ranchers. At the same time, a fairly constant animal population is being managed by fewer and fewer households. For some, and these are often pastoralists, the consequence of development is poverty. This is so in the camp group and even within the household. In Iran, hired shepherds are emerging as distinct social classes without their traditional ability to increase their own flocks and establish themselves independently.

Within the household, men and women can be differentially engaged in the development process. In East Africa, among Jie and Pokot, for example, the traditional role of women in managing and inheriting farm plots has been disrupted by the extension of credit to men for the acquisition of farm equipment. Differential educational exposure as well as involvement in development can exacerbate inequities or create new ones in the sexual division of labour, especially where the application of new technologies and hardware is involved.

concluding observations

Our concluding observations return to the idea of a handbook and what it might help accomplish for research on pastoralists in the 1980s and beyond. Our first point is that neither a cookbook nor a catalogue is needed. Instead, a handbook should act to direct attention to urgent areas of research on herders in the contemporary setting. We see this as a period of intense
development of arid and semi-arid areas. Throughout these lands, pastoral peoples are becoming increasingly marginal.

A major contribution of this handbook might be to encourage research such that the knowledge and the experience of pastoralists in managing fragile environments become available to developers of these areas. Another contribution might be to encourage students coming into anthropology to see the enormous impact development is having on the people anthropologists and others traditionally study. A new focus is required. Among professionals we hope the handbook would help further communication and help pull together research being conducted in many parts of the world.

In this respect, we as authors fully realize our own limited perceptions, largely confined to East Africa and the Middle East. A fully developed handbook would have to encompass other parts of the world where development is in full swing. Throughout, we have urged a regional perspective on pastoralists and the problems they face in the context of development and changing economies. A regional approach is not a search for typicality or homogeneity. Rather, it is a focus on the organization and integration of functional diversity — a framework singularly appropriate to the understanding of such a specialized endeavour as livestock management.

**discussion**

**Hopcraft:** You have talked of the maintenance of usable plant cover. I argue in my paper that in communal grazing each herder aims almost exclusively to get the maximum benefit from existing pasture. Pasture maintenance and improvement are not rewarding, because the individual can’t protect the improved grazing from others. The mix of grazers and browsers is chosen to exploit what plants are available. This would result in an appropriate balance between stock and plant populations were it not that overgrazing by all species selects for inedible plants or those with inaccessible leaves. Thus the result is a thorny, impenetrable thicket. In the case of firewood trees, selective cutting reduces the most useful plants. The result, again, is the expansion of the thicket species.