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RETHINKING INTERDISCIPLINARY PARADIGMS AND THE POLITICAL ECOLOGY OF PASTORALISM IN EAST AFRICA

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Introduction

Interdisciplinary research programs on land use and environmental change in Sub-Saharan Africa increased considerably during the 1980s and 1990s. Research was conducted throughout Eastern and Southern Africa and many of these efforts focused on savanna areas inhabited by pastoral and agropastoral populations (see Abel and Blaikie 1990; Ellis and Swift 1988; Leach and Mearns 1996; Scoones 1996; Homewood and Rogers 1991). Empirical findings from this body of work challenged orthodox assumptions about the relationship between pastoral population growth and environmental change; the resiliency and 'patchiness' of savanna ecologies (Scoones 1989); and the capacity of local institutions to regulate resource use. They also pointed to concerns about the fundamental politics of pastoral resource use, an issue that had emerged in the early 1980s (Hjort 1982; Little 1985; Little and Horowitz 1987). In terms of theory, two broad bodies of work became especially appealing to social scientists and to a small number of range ecologists: the 'rangelands at disequilibrium'[1] and the 'political ecology' approaches. A growing number of scholars (including some in this volume) are familiar with both schools; and both have implications for what factors are privileged in interdisciplinary research programs.

In this chapter I wish to revisit some of my own and others' work in these different theoretical genres and to reassess some of the tradeoffs that social scientists, including anthropologists, accept when working within interdisciplinary research programs on environmental change. It is not meant to reach definitive conclusions, but to raise issues that remain theoretically and empirically unresolved despite the wealth of increased knowledge about the politics and ecology of local resource systems. The chapter questions whether we are asking too much of current interdisciplinary models and social scientists in particular. It goes full circle to query whether or not the 'political ecology' approach, as reflected in some recent work (Escobar 1999), has departed so much from addressing the ecology side of the equation that one is left only with political economy, or at best a revisionist cultural ecology. The proliferation of work under the rubric of political ecology' calls for a reevaluation of what this concept means, especially if it is to be invoked in interdisciplinary studies of environmental change (see Bryant and Bailey 1997). In contrast to recent castigations of political ecology (see Vayda and Walters 1999), I suggest a simplified approach to political ecology that offers a way of tying the political and ecological as was originally envisioned in the 1970s and 1980s. Case studies of pastoral resource use and ecological change in Marsabit, Kenya and the Lower Jubba region, southern Somalia are presented to demonstrate why a return to Eric Wolf's (1972) basic issue of resource distribution must remain central to a political ecology approach. And why recent work in other interdisciplinary paradigms might prove helpful in meeting the challenge of its critics.

Theories and Models

Recent theoretical advances in the "ecology of disequilibrium" school are relevant to understandings of the complex relationships between politics, human agency, and savanna habitats. They also serve as wonderful entry points for interdisciplinary studies. For example, dryland parts of the African continent, including savannas, are subject to large rainfall fluctuations and sustained droughts, from one year to the next, and have seen major political changes in resource access for many groups, especially pastoralists. Climatic data collected over the last decade reveal that most grassland zones of Africa are inherently unstable and, therefore, attempts to adjust conditions to some notion of "stability" violate the natural order and in themselves are destabilizing (Behnke et al. 1993). These findings particularly confront the "carrying capacity" concept for its failure to recognize the variability and patchiness of savanna ecologies (Scoones 1989) and for its requirement of quantifying a process as dynamic as the feeding habits of different animal species (Bartles et al. 1991; de Leeuw and Tothill 1990). Moreover, contrary to conventional wisdom, dry savanna regions "are intrinsically 'resilient' compared with more 'stable' ecosystems" (Abel and Blaikie 1990:20), because they must deal with such climatic perturbations and instability. They are not the inherently 'fragile' ecologies that much of the literature portrays (Hare 1977; United Nations Environment Programme [UNEP] 1991), although as with any ecosystem they can be made fragile through inappropriate development and land use practices. The latter would include settlement projects that encourage excessive population densities and cultivation in zones better suited to extensive livestock systems.

Because of the high variability of climate and unpredictable drought events in dry savanna ecosystems, many of the concepts developed in the temperate zones fail to explain the dynamics of these highly variable ecologies. Many of the primary indicators, including carrying capacity and "climax" vegetation stages, which have been used to measure the productivity of different ecosystems are of limited use in these dynamic ecosystems (Little 1994). Ecologists in Africa and Australia have designated these highly variable environments as disequilibrium ecosystems to distinguish them from ecosystems where climate patterns are generally reliable enough for resident plant and animals populations to reach some sort of equilibrium (Westoby et al. 1989; Behnke et al. 1993). The ‘state and transition’ model of Westoby et al (1989), where transition and randomness rather than equilibrium are norms, is helpful in describing such environments. Yet, most plans for conserving biodiversity and rangelands (for example, national parks and biosphere reserves) are still based on equilibrium theory and invoke notions of carrying capacity and average stocking rates to preserve an "undisturbed wilderness", or to reverse perceived problems of land degradation. In both cases, African herders frequently resist politically, either subtly or forcefully, these efforts to restrict their access to key grazing and water resources.

The ‘new range ecology’ (disequilibrium) is more consistent with African models of environmental change, which have never excluded anthropogenic disturbances nor pursued ecological equilibrium as an objective. It also is appealing to those social scientists who study the complexity of herder decision-making. For example, herd management strategies of East African pastoralists--which have always been the bane of conservationists--assume drought, some degree of range degradation, and fire (burning) as norms, and have never tried to pursue ideas of carrying capacity or equilibrium. The ecology of disequilibrium perspective also adds considerably to our understandings of the "overgrazing" or desertification debate, another global issue that is centered on African pastoralism and savanna landscapes (see Little 1994). It suggests that we know far less about what a degraded or overgrazed rangeland looks like--in terms of plant cover--than earlier work had led us to believe. According to this new line of thinking, a degraded or desertified parcel of land may have little to do with many of the standard vegetation indicators that had been previously used.

The political ecology approach, in turn, is relevant to this discussion; indeed, often the same scholars have an intellectual stake in both schools (for example, Bassett, Behnke, Horowitz, Leach, Scoones, and Swift). Political ecology can be a useful framework for weaving together different disciplines and has contributed considerably toward understandings of the social and political processes underlying resource use in savanna areas. Particular areas of politico-ecological research in savanna zones include: (1) herder and farmer conflicts; (2) the emergence of absentee herd ownership and waged herders; and (3) the effects of state policies on local institutions. Notwithstanding the proliferation of literature on political ecology in the 1990s, its popularity has led to a certain dilution in focus and theory. A perusal of the literature reveals ideas and concepts borrowed from theories as diverse as Marxism, neoclassical economics, critical theory, and feminism, and topics ranging from social movements and environmental discourse to land degradation and environmental values. Some scholars now claim that it marries cultural ecology with political economy (the latter a concept that is increasingly devoid of theory), while others say it includes any phenomenon where the state--even world systems--incorporate or impinge on local ecological and social systems (see Greenberg and Park 1994). More recent uses of the concept invoke a constructivist approach that examines how beliefs and ideology construct what we see as environment (see Escobar 1996). Finally, while some social scientists clearly prefer the open-ended nature of the concept (Bryant 1992), others prefer a theoretical tightening and a more radical interpretation (Peet and Watts 1993).

There, of course, are some benefits to maintaining a broad interpretation of political ecology, and there is little doubt that this has resulted in important research and insights. What I propose here, however, is that in the context of interdisciplinary studies of ecological change, political ecology should revisit its original premises that helped to define what it is; orient field research; and selectively integrate concepts from different disciplines. In my opinion, there are three elements that define political ecology and that need to be reemphasized: access, allocation (or management), ecological impacts and processes (see Figure 1). It starts with the political question of access, but each of the three elements in Figure 1 are both causative and affected by each other. Relationships involving land (including the resources on it, such as water) are enmeshed in the political question of access, but in some pastoral areas one can gain access to lands through ownership of livestock, which as recent work has shown is increasingly skewed and controlled by non-herders. The latter also raises a political issue since many non-herders are civil servants, merchants, and others who may benefit from favorable policies of the state. Increased disparities in the distribution of wealth, in turn, have strong implications for how resources are conserved or abused in these areas. In short, while one can debate about how to define 'access' and 'resources,' there is little question that a political ecology approach--as Wolf implied more than 25 years ago—should first query about access to resources. Among the three elements in Figure 1 the social science disciplines have probably devoted the most energy to addressing the 'access' question (see Ribot 1998).

Figure 1. The Basic Elements of a Political Ecology Approach

Political	Social and Economic	Ecological
1. Access to Resources	2. Allocation and Management of resources	3. The Physical Impacts and the feedback to 1. and 2.

The resource allocation (or management) dimension of the model also has received considerable attention from social scientists. Culture and social structure are obvious components of resource management; for instance, culture-specific divisions of labor (e.g., based on gender or age), community-based institutions, and social norms all play key roles in how resources are allocated and managed. Economists also devote considerable efforts to quantifying and modeling this aspect of political ecology and increasingly acknowledge that certain segments of producers or classes have differential access to resources which, in turn, affect the economics of resource allocation (see Ellis 1998).

The final element of the political ecology approach in Figure 1 is the physical environment itself. Particular attention is given to the ecological or physical impacts of elements (1) and (2) in the model, and the ways in which ecological processes, both short and long term, interact with and affect (1) and (2). It is here where interdisciplinary collaboration with the natural sciences is most needed, but where collaboration has been particularly spotty. Because of this shortcoming many social science findings about the effects of 'access' and 'allocation' on the environment remain hypotheses to be empirically tested. While research may result in important social science insights and findings, a political ecology that does not address the physical environment falls short of the paradigm that many of us were so excited about in the 1980s (see Little and Horowitz 1987). In short, the politics of access may drive environmental change, but without ecological data and interdisciplinary collaboration the promise of a political ecology remains unfulfilled.[2] For this reason, I feel it is timely to seek interdisciplinary collaboration; and the 'ecology of disequilibrium' model holds the potential of this in the context of African pastoralism.

This appraisal has been an overly simplistic discussion of interdisciplinary research and theory. Yet as those who have worked on interdisciplinary studies know so well, simple conceptual frameworks and basic research questions--where some agreement across disciplines can be reached--is where most collaboration begins. Another advantage for interdisciplinary research is that the model suggests where the social science (elements [1] and [2]) and natural science disciplines (element [3]) should concentrate their efforts. Recent research in South Africa explores the relationship among access, local management institutions, and grassland ecosytems and points to the kind of political ecology that integrates both social science and ecological data (Kepe and Scoones 1999). In this case the research program draws on concepts from both the disequilibrium ('new range ecology') and political ecology schools and shows empirically how local vegetation cover over the past 60 years has been affected by social and political pressures which have resulted in "intensive land pressure and stocking rates (ibid: 40)."[3]

Case Studies from East Africa

In this section of the chapter, two different case studies of pastoral resource use are analyzed. It begins with a research and development project in Marsabit, Kenya, which is then followed by a study that the author conducted in southern Somalia. The application of a political ecology framework--as elaborated in the previous section--is attempted to point both to its complexities, as well as the difficulties that arise when researchers are not working on the basis of common concepts and problems.

The Integrated Project in Arid Lands (IPAL), Marsabit, Kenya

The IPAL research in Marsabit is one of the most detailed, long-term studies of land degradation in a dry region of eastern Africa (see IPAL 1984; Fratkin 1991). Initiated in 1977 under the direction of Hugh Lamprey, an avid believer in "desertification" (see Lamprey 1975), the IPAL study of Marsabit District, Kenya was a multidisciplinary effort by anthropologists, geologists, historians, ecologists, range management specialists, and hydrologists. It generated masses of biophysical and socioeconomic data and resulted in numerous reports and publications (see, for example, the bibliographic list in IPAL 1984). Even in this interdisciplinary project, however, a synthesis of the social and biological was difficult to achieve, often resulting in conflicting positions by members of the same research team. Reasons for this were that the social science research was never treated equally with the work of the natural sciences (see O'Leary 1984, 1985; IPAL 1984; and Lamprey and Yussuf 1981); and the study did not elaborate a common conceptual framework. The study spanned a period of approximately eight years and was strongly motivated by the twofold premise that desertification was measurable and that it was occurring in northern Kenya. The project, which was part of UNESCO's "Man and the Biosphere Program", received substantial amounts of funding from UNEP and often reported its findings in UNEP's *Desertification Control Bulletin* (see O'Leary 1984).[4]

The social science research carried out by IPAL was competent and resulted in several important publications on social change and land management that had important implications for a political ecology of pastoralism (see O'Leary 1985; 1990). They clearly address issues of access and resource management and provide detailed data on land, labor, and income relationships, including information on tenure institutions, local resource practices and knowledge, labor organization and migration, and herder and gender differentiation. The work of O'Leary (1984; 1989; 1990) and Sobania (1980), both of them social scientists who worked for IPAL, place Rendille and Gabbra pastoralism in its larger political, economic, and historical contexts, showing how colonial grazing policies restricted population movements and how the Rendille and Gabbra have recently entered wage labor markets to supplement their incomes. While the natural science research of IPAL often claimed that desertification was widespread in northern Kenya and caused by local management practices (Lamprey and Yussuf 1981; IPAL 1984), the project's own social scientists cautioned against such sweeping generalizations. Thus, while O'Leary (1984) admits to the strong presence of degradation around large settlements, he does not attribute it to herder practice.[5] Instead, he argues that these problems are the result of faulty policies that encourage sedentarization, impoverish large segments of herders, and restrict access to distant ranges (O'Leary 1984, 1989). In short, there was a strong ‘disconnect’ between the social science and ecological research that left the social scientists with only a partial picture of the area’s political ecology.

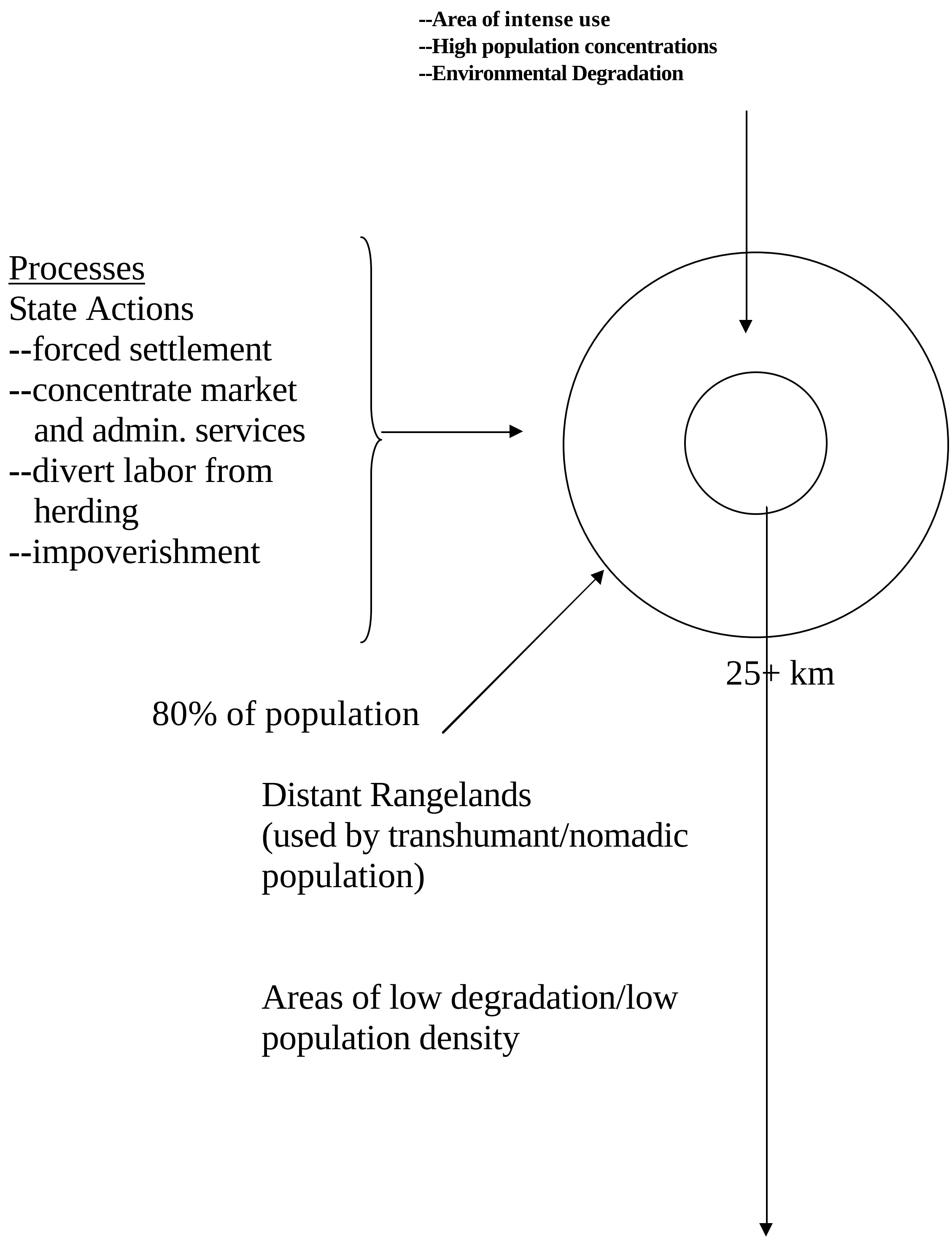
However, there are certain social and political processes in the area that had clear environmental affects. For example, herders in Marsabit increasingly pursue a sedentary form of pastoralism that overuses areas around settlements but leaves large parts of the range underutilized (IPAL 1984).[6] It is estimated that about 45 percent of herders in the district reside around four major population settlements, and that large parts of the surrounding range areas are underutilized, including 11 percent of usable rangeland that for more than three years contained no domestic livestock at all (O'Leary 1984:17). While not explicitly addressed in the study, at least part of the problem is due to insecurity (a political problem) that makes some distant range areas inaccessible. Nonetheless, the settlements around which a large number of herders dwell are pockets of economic and ecological impoverishment, marked by increased economic differentiation, dependence on food aid, and fragmented domestic units headed by widows and divorced women (see Figure 2). What seems clear in this case is that environmental problems are not caused by customary land use that relies on mobility, but by social, political, and economic processes that restrict movement and lead to the overutilization of certain zones. In the case of the IPAL project area, this is further aggravated by the recent tendency of wealthy and well-connected ranchers, who often are residents of local towns, to acquire private land titles in the more favorable range zones and to fence "immense areas" of communal grazing grounds (Schlee 1991:154).

In spite of the relatively lengthy period of data collection on environmental processes (1977-1985), the ecological arguments of IPAL are far from convincing. None of the ecologists subscribed to models based on disequilibrium, but instead were systems ecologists that relied on equilibrium-based, functionalist models. While IPAL's environmental studies rate much of Marsabit District as degraded or under threat of degradation, the project's own data show that most degradation has been in the vicinity of a few large settlements and water points, an observation that is hardly novel. Even in the case of settlements, IPAL admits that much of the damage is probably reversible:

> The present situation is a complete absence of vegetation around the settlements in an ever-increasing circle, which, at Korr, is estimated as having a 9 km radius....Some degree of regeneration has proved possible by the IPAL enclosures in Korr and Kargi. The successional trend appears to be from annual grasses and herbs, which are the first colonizers, to dwarf shrubs

Figure 2.

Spatial Model of Sedentarization and Unequal Distribution of Population: Case of Marsabit, Kenya



with, hopefully, after long periods of protection, a return to the original vegetation (IPAL 1984:227). The IPAL scientists, surprisingly, rely heavily on subjective indicators of range condition: "The range condition for the range sites contained here is a *subjective judgement* [my emphasis] based on the following attributes: soil stability, composition of desirable and non-desirable plants, bare ground and litter cover and the state of erosion. It is based on four categories: excellent, good, fair and poor" (IPAL 1984:106). With such general categories and with their own perceptions of "desirable" plants and erosion, it is not surprising that the IPAL ecologists found much of the area to be degraded: "With the exception of one mountain range type, none of the range types had a condition better than 'fair', indicating the seriousness of the degradation of the grazing resource condition in the study area" (ibid.). The range specialists see a lack of sound management strategies by the herders (which is not a problem, according to IPAL's social science work: see O'Leary 1985) as the major cause of land degradation.

In sum, although IPAL's work provides important information on range ecology and pastoral practice, the socioeconomic and biophysical components of the study are not well integrated, which results in contradictory statements about the causes of land degradation. The project involved different disciplines but was **not interdisciplinary**. Because their program was funded in part by organizations (e.g., UNEP) with a vested interest in the reality of "desertification,"[7] and because they did not work with a consistent definition of what degradation entailed, IPAL seemed willing to assume degradation in cases where its own data and analysis indicated otherwise.

More recent ecological research in the same region, sponsored by Kenya/UNEP, reveals similar inconsistencies and contradictions regarding the extent of degradation. Compare, for example, these two quotations from the same document:

> The general picture for Marsabit is that no significant degradation occurred during the 16 years [1956-1972] except for Logologo and a little for Illaut....Because the degradation was apparent only at Illaut and Logologo, it would not be fair to derive a rate and generalize it to the whole study area (Odingo 1990:152).

> The results of this study show that desertification is a major problem in the study areas [also including Baringo, Kenya]. The main forms of desertification identified were soil and vegetation degradation. The soils are being degraded through water and wind erosion, while vegetation is through tree and shrub cutting and overgrazing (ibid:157).

As in the IPAL study, this research raises doubts but, again, when the environmental data are inconclusive desertification is assumed.

An even more recent study contradicts both the IPAL and the Kenya/UNEP findings, by suggesting that land degradation in Marsabit is not a problem: "Most of the district's rangelands are in good condition....This primarily means that the rangelands are not degraded....less than 1% of the district's rangelands are in poor condition" (Herlocker and Walther 1991:52). Regarding this last assessment, conducted by the Government of Kenya with support from German technical assistance (GTZ), Herlocker and Walther are not willing to claim "desertification" when serious questions remain. Considered together, the three studies raise troubling questions about the measurement and interpretation of degradation even when "hard" evidence is offered (see Table 1).

Table 1. Comparison of Rangeland Classification, Marsabit District, Kenya

Study	Classification		
	Poor	Fair	Good
IPAL/UNEP	>70%	20%	<5%
GTZ/KREMU	<1%	<<<99%>>>	

Based on: IPAL 1984; Herlocker and Walther 1991.

Case Study: Herder Response to Drought and Conflict in Southern Somalia

The data for this case study were collected under two different research projects: a study of herder households and marketing in 1986 to 1988 in the Lower Jubba Region (prior to the recent civil war) and a study of regional and cross-border livestock trade between southern Somalia and Kenya in the summers of 1995 and 1996.[8] The analysis is only suggestive of environmental processes but available data show that there are differences with the Marsabit case. In comparison to Marsabit, Somali herders of the Lower Jubba region generally have fared better during recent droughts and avoided the kind of sedentarization and social and ecological impoverishment discussed earlier. With few exceptions there is little localized environmental degradation and human population and livestock are relatively evenly distributed in the region (see ARD 1989; Watson 1987). Even the civil strife of the 1990s has not had a major disastrous impact on the region's livestock sector (see Loew 1995 and EC/FAO 1995), an outcome that many organizations and practitioners might challenge.[9] The reasons for the resiliency of Somali pastoralism--especially in comparison to similar systems of northern Kenya--are the flexibility/mobility of the system and the relatively favorable access to key grazing and water resources that herders maintain. By contrast, on the Kenyan side access to vital resources is eroding because of the encroachment of alternative land uses (settlements, irrigated agriculture, game parks and reserves, and hydropower projects) into dry season reserves.

The Lower Jubba Region is a particularly patchy environment of wetlands and localized water points which borders Kenya (see Figure 2). Key grazing resources tend to be around seasonally flooded pans (the Lag areas of Jira and Dera and the coastal plains), swamps (the Lorian swamp of northeastern Kenya), and river valleys (the Tana and Jubba River valleys). Rangeland vegetation in the area includes such trees and shrubs as Salvadora persica, Acacia nilotica, A. tortilis, and A. zanzibarica, and such grasses as Sporobolus helvolus, Cenchrus cilaris, and Echinochloa hapoclada. In seasonally flooded zones of the basin, grasses "form tall dense swards" with annual fodder production in excess of 10 metric tons per hectare (Deshmukh 1989:A-38). The most productive of these patchy zones is the Descheeg Waamo, which supports cattle densities in excess of 150 per square kilometer during the long dry season (Watson 1987). It is the productivity of these areas--which on the Kenya side are already increasingly cut off to herding populations--that determines whether or not herders can survive harsh dry seasons and droughts without massive livestock losses. Local groups of elders regulate the use of these pastures during the dry seasons.

INSERT FIGURE 3 (Map)

Localized droughts are very common in the Lower Jubba Region, forcing herders to adjust their normal grazing patterns every 3 to 4 years. During the past 20 years full-blown regional and/or national droughts have occurred about every eight years, while localized droughts occur more frequently. A localized drought means that at least some parts of the region or nearby accessible locations have experienced at least some rainfall while other sites have not. A regional drought, in turn, means that the long rains (*gu* season) have completely failed in the entire region; while a national drought means that the long rains have failed throughout the country. During April to July 1996 the long rains of central and northern Garissa District on the Kenyan side almost completely failed, with areas receiving about 30 percent of normal rainfall. Fortunately, the early rains in April were quite favorable across the border in Somalia and were above average in the southern portion of Garissa District during the later part of the season (May-June). Thus, herders in the locally affected zones were able to move their animals across the border into Somalia or southward toward the coast (the latter area being in the tsetse fly zone). During June 1996 several Kenyan herders moved their cattle as far as the Kismayo coast, where rainfall was good but conflict endemic. That herders moved their animals to the Kismayo coastal zone, a tense area of conflict between the region's two major clans (the Ogadeen and Harti), is indicative of the flexibility of grazing strategies and reciprocal grazing rights even in times of hostility.

In southern Somalia the prolonged dry season of 1987 turned into a regional drought affecting most of the Lower Jubba region. Yet, because of accessibility and mobility herders were able to move animals to neighboring regions in the Shebelli river basin (Somalia) and/or to parts of northeastern Kenya. Herd migrations in the *haga* season (June to August) of that year exceeded 200 kilometers in many cases, a distance that is very uncommon for pastoralists in Marsabit, Kenya. Because of their inaccessibility to former dry season grazing areas in river basins and highland zones, Kenyan herders are constrained during droughts. Once again, herd movements in southern Somalia were into areas under the control of different clans but reciprocal grazing rights were respected.

In terms of livestock distribution, the ownership of both camels and cattle in the region are highly skewed and influence how herders acquire access to resources. Among a sample of 88 herders the richest 12.5 percent of camel herders own 70 percent of the camels in the region, while almost half the herders own no camels at all. Inequities are further demonstrated by the fact that one household alone controls more than 25 percent of total camels in the sample. The ownership of cattle in the lower Jubba is not as skewed as noted above, but considerable discrepancies do exist. For example, 12.5 percent of households in the sample own 39 percent of total cattle, with the bottom 50 percent of cattle herders owning approximately 15 percent of the herd. The inequities displayed in cattle ownership in the region are not unusual for pastoral economies (Sutter 1987; Little 1985).

Analysis of grazing patterns by livestock specie and season reveal several important trends about access, allocation, and ecology (see Table 2). First, it is revealed that on average the distances of seasonal herd movements vary considerably according to livestock type, but generally movements are greatest for camels and cattle, followed by small stock. For Afmadow herders movements of camel herds are greater for cattle only during the long wet season (*gu* season), when camels move well away from the seasonally flooded pastures around the Jubba river and Lags Dera and Jira (see Figure 2). When critical grazing zones are flooded access is cut off for all herders, rich and poor. During the long dry season camels are not moved nearly as far as cattle, since they are able to use browse species away from the rivers and main water points.

At that time small stock and cattle herds are moved an average distance of 70.22 and 61.18 km, while camels are moved only about 34.50 kilometers. In short, camels tend to avoid the normal seasonal grazing areas of cattle and small stock, which in the case of Afmadow tend to center around the Jubba valley and the seasonally flooded plains near the Somalia/Kenya border. Seasonal distances of small ruminant movements approximate seasonal cattle migrations for part of the year, except that they tend to remain with the main family residence whenever they move.

Table 2. Distance of Grazing Migrations of Livestock by Season: Afmadow Herders

MOVEMENT (KM)

SEASON	CATTLE	CAMEL	SHEEP/GOATS	ALL
LONG DRY SEASON	70.22	34.50	61.18	67.32
LONG WET SEASON	60.29	135.00	49.89	61.34
SHORT DRY SEASON	44.00	19.00	40.22	42.38
SHORT WET SEASON	37.64	14.50	29.56	35.40
AVERAGE ALL SEASONS	53.49	50.75	46.05	52.09

The data illustrate how distances of cattle and small stock movements are greatest in the long dry season, followed in importance by the long wet season. In the case of Afmadow, the distances of cattle migrations during the long dry and wet seasons are 70.22 and 60.29 km, respectively, while they are only 44 and 37.64 km during the other two seasons of the year. While the distances are smaller, the timing and rhythm of small ruminant movements generally follow this same model of seasonal variation. It should be noted, however, that except during extreme droughts certain grazing zones became restricted to members of certain clans.

What effect does access to livestock and labor have on herd management strategies? Why do certain herders remain in the Jubba Valley area despite the presence of tsetse flies and other hazzards, especially during the long wet season? By differentiating herd movements according to a wealth indicator

Table 3: Average Cattle Owned by Afmadow Herders at Different Grazing Zones, Long Wet Season

GRAZING LOCATION	AVERAGE CATTLE OWNED
Afmadow	47.14
Boji	75.00
Boka, Jubba Valley (JV)	6.00
Borsanga, JV	39.00
Buale, JV	41.50
Descheeg Waamo, JV	44.50
Diif	70.00
Fafadum	165.00
Gomese	50.00
Hagar	172.00
Jira	67.20
Bilas Qooqani	95.67
Tingadud, JV	48.50
Tortora	133.50
Wareers	362.00
ALL	74.74

like cattle ownership, it is possible to show how access to seasonal pastures differs for relatively poor, labor-constrained families. Table 3 indicates that the average size of cattle herds in Afmadow is 74.74 head per herding unit, but that those herders who mainly remain in the Jubba Valley during the long rains own considerably less. If we look at cattle ownership among those herders who use the Jubba Valley during the long rains, most of them own between 6 and 48 cattle. For example, among herders who use three of the most heavily utilized Jubba locations--Boka, Descheeg Wamo, and Tingadud[10]--in the wet season, average cattle herds are 6, 44, and 48.50, respectively. By contrast, those herders who use areas at Fafudun, Jira, Boji[11], and Hagar--all wet season grazing areas located more than 80+ kilometers from the Jubba Valley and well outside the tsetse fly belt--average cattle herds are 165, 67, 75, and 172, respectively. In short, those herders who remain in the Jubba area during the wet season own cattle herds that are below the general average.

Those herders with less livestock wealth also have smaller households. With fewer members of the household to draw on for herding tasks, they are more constrained by labor than wealthier households. While the average household size in the region is 9.07 household members, it is less than 7.5 members for domestic units with herds of less than 50 cattle. Thus, households who control smaller numbers of cattle usually do not move as far as other herding units. Average number of cattle owned was 63.07 head for households with migrations of less than 100 km, while it was 103 cattle for units who migrated an average of more than 100 km per dry season. Clearly those households with large herds and additional family members have a greater capacity than other families to utilize distant, more productive pastures.

In 1987 the long rains in the Lower Jubba area had consisted of only a few showers early in the wet season, with a combined amount of about 20 mm. Confronted with dim prospects for improvement, several Afmadow herders considered grazing options outside of the Lower Jubba Region. The pastures of the Jubba Valley had been exhausted and movement to Kenya was difficult because of the lack of surface water. Although Afmadow herders are from a different clan than residents of the lower Shebelli region (a distance of about 200 Km.), they nonetheless sent a group of young men and elders to the region to negotiate a grazing agreement. The long rains had been adequate there and water and pastures were plentiful. Despite a certain degree of tension between the different clans, permission was granted for several Jubba families to graze their animals in the lower Shebelli. When I reinterviewed herders who had gone on the long trek at the end of 1987—the wealthier had hired trucks for the move-- very few reported unusual levels of cattle mortality, although there had been virtually no rain for about 9 months. Movements of 150+ km during prolonged dry seasons or droughts are not unusual in the Lower Jubba region, but are highly atypical of Kenyan herders. The mobility of herders of the Lower Jubba and their access to distant pastures outside of their home regions are key reasons why they are more successful than Kenyan herders during droughts.

In contrast to the Marsabit study, ecological data collection for the Lower Jubba area was not collected on a large-scale basis. Elsewhere I have presented some of the data on pastures and water resources that exist for the area (Little 1992); these were collected as part of a large inventory that was done in the late 1980s (see ARD 1989). With the continued conflict in the area such research is currently impossible, and thus while I can hypothesize about some of the impacts of access and resource management on the environment they remain speculative. The key resource 'patches' in the zone seem to have undergone little change in recent years, as evident by the fact that grazing patterns remain similar and livestock weights and conditions are very good (see Little 1996).

Conclusion

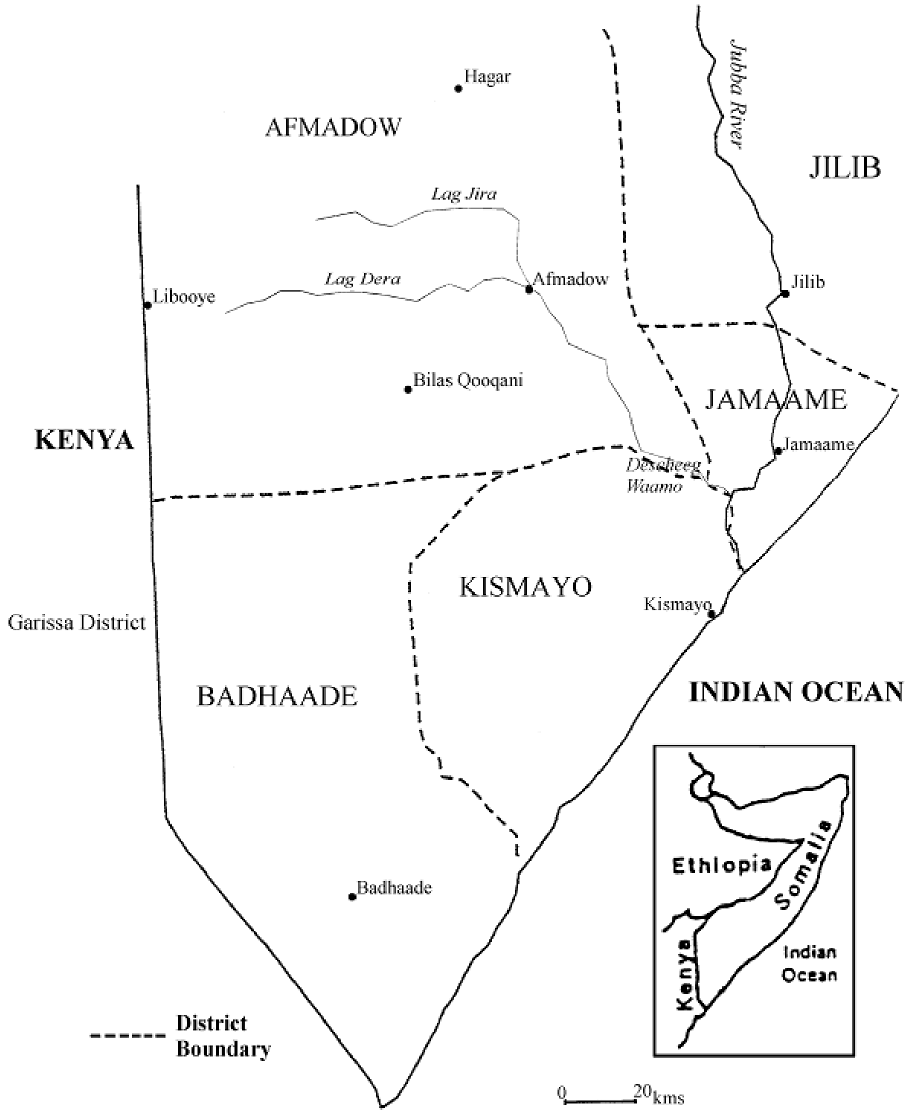
Both the Kenyan and Somali studies highlight the importance of understanding what is meant by access and the ways in which power and wealth determine who can graze 'where' and 'when.' These processes have important ecological impacts, as evident in the Marsabit case where impoverished herders are restricted to degraded grazing zones around settlements; and in the Somalia case where labor-constrained herders have less mobility and opportunity to graze both wet and dry season zones. In the Marsabit case, the role that the state plays in facilitating changes in access to land and other resources requires examination; in stateless Somalia the issue is irrelevant. In the Kenyan example, the actions of the state and development agencies give rise to environmental problems, because they encourage unfavorable land/people ratios and excessive use of restricted lands. On the other hand, conflict-ridden southern Somalia suffers less from localized degradation since herder mobility and access remain favorable.

The paper has called for a return to the basic elements of a political ecology approach that highlights resource access and allocation, on the one hand, and ecology, on the other. Access is shown to be a political issue, while ecology requires an appreciation of biological processes. Both sides of the equation need to be addressed, and environmental data should be as carefully scrutinized as social and political data. This was shown to be the case in the Marsabit example, where environmental data and interpretations were highly suspect. This means making the physical scientist accountable to the same standards of data analysis and quality and logic of argument by which any scholar (social scientist or other) should be assessed.

Advantages of the political ecology approach elaborated in this chapter are that it suggests a division of labor among disciplines, as well as incorporates insights from new thinking in ecological theory, such as the 'disequilibrium' school. It narrows political ecology to a framework that integrates three fundamental aspects: access, allocation, and ecology. Studies can weigh certain of these factors more than others, but political ecology should incorporate elements of each. This framework is evaluated in the context of two East African case studies involving pastoralists. The mobility and favorable access that Somali pastoralists maintain allow them to adjust to unstable physical and political environments without serious ecological consequences. The environments of the Lower Jubba and Marsabit both are highly variable but unlike the Somali herders, mobility and access are more constrained among Marsabit pastoralists, where localized degradation takes place.

The pendulum in political ecology has probably swung too much toward the political and, in turn, has downplayed the importance of ecology. In this sense, Vayda and Walters (1999) are correct in their assessment that much of what is called political ecology has very little to do with ecology. This does not mean, however, an abandonment of the concept with a retreat to a naive 'isolationism' that removes external political processes from studies of environmental change. As analytically convenient as this might be, it would strongly contradict current political and social realities around the world, even in relatively isolated areas of East Africa. Instead, what is called for here is a renewal of a political ecology that integrates social, political, and ecological processes, and which recognizes the latter has to be a part of the approach. When one looks at some of the excellent current research on environmental change in Africa (Behnke et al. 1993; Scoones 1996; Leach and Mearns 1996), there are grounds for optimism that an integrated political ecology is possible.

Figure 2.1 Lower Jubba Region: Southern Somali Borderlands



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Endnotes:

[1] This school also has been referred to as the "New Range Ecology (Roe et al. 1998:387)."

[2] In my own case, understandings of element (3) (ecology) in the context of dryland ecosytems have gone about as far as possible without additional training as a range ecologist or agronomist.

[3] The Kepe and Scoones' study (1999) is a wonderful example of political ecology that is interdisciplinary and balances the social and ecological dimensions of environmental change. Ironically, it appears in the same issue of ***Human Ecology*** that includes Vayda and Walters' (1999) condemning critique of political ecology.

[4] Few intellectual debates about the environment are marked with more ambiguity, scientific "self-righteousness," and ideology than the debate about land degradation in dry regions or, what is more commonly called, "desertification." First noted as a problem in Africa in the 1930s (see Stebbing 1935;1938), desertification emerged as a major environmental issue in the 1970s with the publicity surrounding the prolonged Sahelian drought and the speculation regarding its causes and ecological effects (Glantz 1977; Eckholm and Brown 1977). The convening of a major UN conference on desertification in the mid-1970s (UNCOD 1977), the establishment during the same period of a research and policy unit at the United Nations Environment Programme (the "Desertification Branch"), and the increased availability of funding for research and projects on desertification heightened awareness of it among the general and scientific communities and propelled it into the center of the environmental dialogue.

[5] Rendille herders recognize the existence of overgrazing, but note that it is a reversible process, and they can identify several overgrazed areas that have recovered after being left fallow (O'Leary 1985:81).

[6] Insecurity is another reason why herders of Marsabit now prefer to reside in large settlements. For a recent analysis of the relationship between political insecurity and environmental degradation (including desertification), see Hjort af Ornas and Salih (1989).

[7] For a good discussion of the "institutionalization" of the desertification debate in development bureaucracies, see Warren and Agnew (1988) and Spooner (1989).

[8] Research for this case study has been supported during the past 12 years by the 'Settlement and Resource Systems Analysis" (SARSA) grant, Institute for Development Anthropology, the Office of Foreign Disasters Assistance, USAID, and the Social Science Research Council, USA. Opinions expressed in the chapter are those of the author and should not be attributed to any of the above funding agencies.

[9] For example, one local NGO, the United Somali Sahil Professional's Association (UNISOPA), estimated that the Lower Jubba area lost about 2/3 of its cattle since 1991 as a result of drought, war, and disease (UNISOPA 1993:2). I would strongly question these figures, as would others (see Loew 1995). My assessment here does not include the effects of the recent (1997-1998) floods and outbreaks of livestock disease in the region.

[10] It should be noted that Boka and Tingadud are located alongside of the Descheeg Wamo, although herders often distinguish them from the latter.

[11] Boji actually is located in Lag Jira, although it is distinguished by herders as a separate grazing area.