



Open access and the sovereign commons: A political ecology of pastoral land tenure



Roy Behnke

University College London, United Kingdom

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ABSTRACT

Conventional common property theory does not accurately depict the institutional arrangements that characterize many indigenous pastoral tenure systems in Africa and Asia, nor does it explain why these systems break down when exposed to markets and centralized government control. These theoretical anomalies are caused in large measure by the distinctive ways pastoralists regulate access to resources. The erratic and extensive nature of rangeland resources favours free movement to exploit fluctuations in resource availability and this promotes a degree of open access. In ungoverned or weakly governed areas, access is also regulated by political competition between sovereign territorial groups. External government control renders redundant the internal solidarity of these groups, which fragment rather than becoming officially sanctioned common property regimes. Market exposure exacerbates this process. The development of class interests and private property marks the emergence in these societies of the economy as a distinct sphere of social organization. Grounded in classical economic theory that presumes the prior existence of the economy, common property theory is ill equipped to comprehend this transition.

It is precisely their manifold marginality that enables rangelands to defy and disrupt social forces that elsewhere seem so powerful, and thereby to illuminate core tendencies, contradictions, and limitations in modern ways of knowing, using, and governing land and people

Nathan Sayre, 2017:2

1. Introduction

The concept of 'property' is one of the intellectual and ideological mainstays of capitalism, which makes it difficult to critically examine the idea (Verdery and Humphrey, 2004; Hann, 1998). What is needed is the sociological equivalent of an Archimedean point, a position independent of current thinking (Turton, 1992). Indigenous pastoral land tenure systems, which engage in property relationships that are distinct from those prevalent in most other contemporary societies, provide such an opportunity, but only if these systems are not forced into theoretical frameworks that obscure their significance.

According to conventional common property theory, common property is exclusive property for a group and is consistent with restrained rates of resource exploitation (Ciriacy-Wantrup and Bishop, 1975; Bromley, 1989; Ostrom, 2009; Eggertsson, 2003). In contrast, open access is the absence of property and promotes resource

overexploitation. Ecological theories provide a counterweight to these assumptions. A degree of open access is a recurrent feature of many indigenous pastoral land tenure systems (Behnke et al., 2016; Fernandez-Gimenez 2002; Turner, 1999, 2011; Moritz et al., 2014). If this empirical observation sits uneasily with economic concepts of property, it makes sense in terms of ecological models of animal population distributions relative to scarce resources. These models predict that the freedom of movement implicit in open access will result in the optimal distribution of resource consumers (such as livestock and the humans who depend on them) relative to available resources (such as food and water) and thereby support larger populations than would otherwise be possible (Fretwell and Lucas 1970).

The ecological perspective is useful because it helps us to understand property relations in areas where resource consumers value the size of the communities that a site supports, in preference to the surpluses that can be extracted from it. While these attitudes may be of limited utility in a commercial setting, they can be expected to exist and remain intact in rural areas where communities must defend their resources from their neighbours, or where environmental risks and the uncertainties of daily life induce individuals to temper immediate gain in the interests of longer term security based on kinship and community. An appreciation of the cultural values and demographic consequences of these inclusive property systems is fundamental to an understanding of the diverse ways that people occupy, possess and use

E-mail address: roy_behnke@msn.com.

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Table 1
Common property versus sovereign pastoral property.

	Common property	Sovereign pastoral commons
External political conditions	Administered and condoned by the state	State antagonistic, ineffectual, or absent
Resources	Small size, well-defined boundaries and stably productive	Extensive area, contested boundaries, erratically productive
Ownership groups	Small size, clearly defined membership	Secondary users, networks of relationships, contested membership
Internal organization	Rule-based internal regulation	Access by negotiation, coercion, competition and strategic preemption

natural resources.

Table 1 presents the analytical challenge posed by pastoral tenure systems. Although indigenous pastoral tenure systems in Africa and Asia are routinely characterized as common property regimes, theories of common property do not in fact depict the institutional arrangements that characterize many of these systems.

Following Agrawal (2001) Ostrom (1990), Wade (1989) and Baland and Platteau (1996), the second column in Table 1 – labelled ‘common property’ – summarizes the case study literature on the ‘design principles’ that facilitate the operation of effective common property regimes. The third column in Table 1 – labelled ‘sovereign pastoral commons’ – summarizes the institutional arrangements exhibited by a large number of pastoral tenure and territorial systems that are described in the ethnographic literature and will be reviewed in this paper.

According to Table 1, indigenous pastoral tenure systems are not common property regimes or, at the very least, are unlikely to be effective ones.

In many respects, the pastoral systems of land holding depicted in Table 1 are mirror images of the version of collective ownership envisioned in mainstream common property theory and documented in numerous case studies of enduring common property systems. Rows 1 and 2 of the table characterize the external political and natural environmental conditions that sustain sovereign pastoral property systems. The bottom two rows in the table depict the institutional arrangements that typify these tenure systems.

- As depicted in row 1 of the table, differences begin with the role of the state in regulating property ownership. Within the common property paradigm ‘As the ultimate guarantor of property rights arrangements, the role of the state ... is central to the functioning of common property institutions’ (Agrawal, 2003: 250); or more simply, property rights are ‘a claim to a benefit stream that the state will agree to protect’ (Bromley, 1991: 2). In contrast, the defining feature of sovereign pastoral territorial and tenure systems is their marginality from or explicit antagonism to external authority. These are collective property systems that exist or try to exist outside the ambit of state power. In these property systems, community viability is paramount because it is the sovereign community that secures the property rights of its members, not some outside administrative or legal authority, and without a viable community there are no individual rights.
- The distinctive nature of these tenure systems is also related to the kinds of natural environments in which they are found (row 2, Table 1). Extensive pastoral production systems typically emerge where natural resources are low in value per unit area and erratically productive – at extreme latitudes, high altitudes or in semi-arid regions. In their attempt to match feed demand to feed supplies, migratory herds physically track ephemeral resource concentrations. The environmental characteristics of pastoral natural resources therefore militate against the ownership of the small, clearly demarcated territories that are characteristic of stable common property regimes (Agrawal, 2001)
- In conjunction with environmental instability, the autonomous status of land-owning groups promotes territorial ambiguity by exposing geographical boundaries to external challenges, or by eroding social boundaries as allies are recruited from outside to

bolster a group’s strength. Boundaries and identities are often vague, insecure or simply ‘on the move’, calling into question a basic premise underpinning common property theory – the existence of clearly defined property-owning groups and property rights (row 3, Table 1).

- Under these conditions, rule-based management of natural resources by the commoners who own them – seen by common property theorists as the *sine qua non* of sustainable resource use – gives way to calculations of expediency. Networks of social relations, negotiated access, and political or military competition replace administrative regulation as the mechanism controlling rates of resource exploitation (row 4).

Ethnographers have described the anomalous aspects of pastoral resource control and territoriality for individual societies, but the fact that these anomalies recur so commonly suggests that we are witnessing a widespread phenomenon and that we should seek some general explanations for it. In this analysis I will argue that sovereign pastoral tenure systems are sustained both by their political autonomy and by the volatile natural environments in which they operate. These conditions support the creation of tenure systems that regulate and promote a degree of open access. This open access is not indicative of the absence of property, but of distinctive kinds of property relationships that are not predicated on exclusion. Sovereign pastoral tenure thereby questions the universality of classical economic concepts of ownership and resource stewardship that rest on the ability of owners to exclude non-owners. Initially formulated by Ricardo (1821), these concepts still underpin common property theory and limit the capacity of these theories to comprehend a wide range of indigenous and historically important systems of land management.

2. Environments that encourage open access

In areas where resources are heterogeneous and asynchronous in the timing of their productivity, there exist biological incentives for livestock managers to match livestock populations to resource abundance. Under these conditions, environmental modelling, experimentation, and field studies confirm that free access to resources supports larger animal populations and can improve the health, reproduction and survival of both wild and domesticated ungulates. These results are summarized below.

2.1. Modelling and experimentation

Environmental modelling provides evidence of the impact of constrained movement on animal performance. In these experiments, a realistically modelled grazing environment provided a constant backdrop for alternative scenarios in which livestock moved freely to access temporary sources of forage, or, alternatively, were confined to smaller areas with fewer foraging options. At a South African study site, a 300 km² parcel was conceptually subdivided into fenced 10 km² parcels, which produced an estimated 19% decline in cattle numbers (Boone and Hobbs, 2004). At a second study site in Kenya, researchers examined the impact of conceptually subdividing three Maasai group ranches into 1 km² or 10 km² parcels. In one group ranch, fragmentation led to the ranch area supporting 25% fewer cattle when divided

into 1 km² parcels, while division into 10 km² units led to a predicted 20% decline in livestock numbers on the second ranch. Both of these ranches were in areas of low and spatially variable forage production, and livestock carrying capacity declined because subdivision confined animals to areas where resources were either permanently or intermittently insufficient (Boone et al., 2005).

Results from controlled experimentation elaborate upon these findings. In an experiment where herbivores were given access to feed resources that peaked at different times, those in a severely fragmented experimental environment gained significantly less weight than those in either a moderately fragmented or intact landscape (Searle et al., 2010). These results were contingent, however, on the spatial scale or 'grain' of resource heterogeneity. When a wide variety of resources were available in a small area, animals gained more weight in severely fragmented landscapes than in more open alternatives. Researchers attributed this result to the release of enclosed herbivores from competition for space and resources. These findings suggest that the advantages of free movement are not absolute but depend on certain configurations of resource availability over time and in space.

2.2. Field studies

Large-scale field studies of migratory ungulates provide an indication of the kinds of environments that are conducive to free movement. Like pastoralists, migratory ungulates typically occupy extensive areas of low productivity and extreme seasonality in which periods of hardship alternate with periods of resource abundance. In such environments, environmental gradients are essential to the maintenance of large animal populations. From the coast to the interior (in the Arctic), from low to high altitudes (in mountain temperate systems), from south to north (the latitudinal migratory routes of the Sahel and Inner or Central Asia), or from areas of low to high precipitation (characteristic of the arid and semi-arid zones), by moving along environmental gradients as conditions change, both domestic and wild ungulates prolong the period of time they are exposed to favourable conditions (Behnke et al., 2011). In these environments the aggregate access to forage by migrants is not restricted by the availability of food in one place, but is the sum of their access to ephemeral 'pulses' of production along the entire gradient (Behnke and Scoones, 1993).

The nutritional advantages of a migratory strategy were documented empirically in a study of an elk population, some of which were resident year-round in one part of their range and others that migrated seasonally from lower to higher pastures in the Canadian Rocky Mountains (Hebblewhite et al., 2008). Because they had access to high quality forage as it emerged sequentially along their migratory route, the diet quality for migratory elk was 6.5% better than for resident animals, a difference that was large enough to lead to significant improvements in body weight, reproduction and survival of migrant animals (Cook et al., 2004). Consistent with this finding, Wang et al. (2006) demonstrated that – all else equal – spatially heterogeneous landscapes have higher carrying capacities than homogeneous ones for large herbivores.

On a much-reduced spatial scale, fenced domestic livestock have been shown to benefit from the same strategy that favoured migratory elk – free access to resource heterogeneity. In a review of livestock grazing trials across North America, Africa and Australia, Ash and Smith (1996) showed that large enclosures of heterogeneous rangeland vegetation consistently supported more livestock than homogeneous, sown pastures of comparable forage productivity, a tribute to the ability of livestock to selectively graze in the more complex and varied rangeland sites.

At a larger spatial scale in open-range pastoral situations, we have accounts of how individual herd managers seek out the best available resources for their livestock and how they respond to the crowding and competition that can emerge at the best sites (Butt, 2010; Butt et al., 2009; Turner et al., 2005; Gulliver, 1975; Schareika et al., 2000;

Bassett, 1986). These accounts provide evidence of free movement by individual herds, but tell us little about the aggregate distribution of whole populations relative to their resources. Research at a scale sufficient to examine this issue requires spatially explicit data on entire populations relative to resource concentrations over a wide area – data that are not commonly available on mobile pastoral populations. There are, however, at least three open rangeland environments – in Cameroon, Turkmenistan and Kazakhstan – where pastoral livestock distributions have been examined quantitatively at the population level.

On the Longone floodplain in northern Cameroon, pastoralists and their livestock moved freely, resulting in livestock distributions that closely mirrored variations in forage availability: Areas with more forage attracted more livestock (Moritz et al., 2014). In the Karakum desert of Turkmenistan, pastoralists moved in order to obtain different kinds of resources – water and forage – that tended to vary inversely to one another in their availability and quality: Where forage was abundant and nutritious, stock water tended to be absent or of poor quality, and vice versa. Despite these complexities, there were no significant differences in the weight of livestock irrespective of location or different levels of mobility, suggesting that livestock feed intake was equal and livestock distributions matched resource distributions across the study site (Behnke et al., 2016).

Finally, from the deserts and steppes of Kazakhstan comes a pastoral case study that demonstrates the effects of constrained movement in a heterogeneous open-range environment. In this instance, the costs of tracking optimal foraging conditions were prohibitive for smaller herds relative to the benefits of movement. Because of economies of scale, larger herds could nonetheless afford to move seasonally, and the livestock in these migratory herds were heavier, lost less weight over winter when food was scarce, matured more quickly, and fetched higher prices at market than sedentary animals – strong circumstantial evidence that they were better fed. In sum, when resource matching was constrained, there was a price to pay in terms of diminished herd performance for those that could not distribute freely (Kerven et al., 2008, 2016a,b; Robinson et al., 2016).

These results are consistent with the theoretical predictions of the dominant biological model of the spatial distribution of animal populations relative to their feed resources – the ideal free distribution (IFD) or density dependent habitat selection (Fretwell and Lucas, 1970). We can grasp the essentials of this theory if we imagine a pond containing hungry fish, and ask people to throw food into the pond, one piece at a time so that the food is consumed almost as soon as it hits the water. Ideal free distribution predicts (and experiments confirm) that the number of fish that will be attracted to a feeding site will be proportional to the amount of food provided at that site. This process of 'input matching' is one of the main predictions of IFD theory: The distribution of resource consumers is proportional to or 'matches' the distribution of resources. If the amount of food at one site is higher than in others, then additional consumers (fish in this case) will move to the better site, and will continue to do so until the increasing number of consumers and increased levels of consumption offset the original discrepancy in feed abundance. At this point the higher density of fish at the better sites has removed the incentive to move between sites, the feeding rate is uniform for the entire population, and while individuals may continue to move around, the population as a whole has achieved a stable or equilibrium distribution (Sutherland, 1983). As the above parable makes clear, IFD provides an explanation of how animal population distributions are generated by the simultaneous response of individual animals to spatially variable resource concentrations and to the shifting habitat choices of other animals.

The version of IFD presented in the preceding paragraph makes several artificial assumptions. In the world of our imaginary fish pond, there are no predators, the fish pursue only one kind of resource, all fish are equally capable of competing for food, and the future abundance of food is unaffected by the rate at which the fish consume it. The experimental pond is also small enough that the fish are perfectly

knowledgeable about the relative amounts of food at different sites (the 'ideal' element in 'ideal free') and are perfectly free to move with minimal effort to those sites (the 'free' in 'ideal free'). By compromising these simplifying assumptions when necessary, more realistic and complex versions of IFD have been used to predict the distributions of numerous animal species, including wild ungulates (Coppock et al., 1983; Wilmhurst et al., 1999; Fryxell, 1991; McNaughton, 1990) and free ranging domestic livestock (Senft et al., 1987; Bailey et al., 1996, 1998; Ganskopp and Bohnert, 2009; Hunter, 1962; Pinchak et al., 1991).

2.3. Free movement is open access

From the perspective of the biological sciences, increased output can result from freely matching resource consumers to resource distributions, but this conclusion is not necessarily shared by other disciplines. Open access, the label that economists give to free movement, is commonly portrayed as an invitation to uncontrolled resource exploitation, resulting in poverty and environmental degradation. These contradictory assessments are revealing because open access and the ideal free distribution are essentially identical theories. Both make similar simplifying assumptions about the atomized, self-interested and utility maximizing behaviour of resource consumers, and the logical structure of the resulting analyses are virtually identical. This is immediately apparent if we compare the IFD fish pond parable with Scott Gordon's classic analysis of open access fishing (1954). In both scenarios, the sequencing of site occupation and resource depletion are identical (Fig. 1). Aside from their disparate disciplinary origins and the fact that one routinely refers to animal and the other to human behaviour, open access and the free distribution are similar theories that support opposed conclusions.

These contradictions arise not because the two theories anticipate different outcomes, but because they ascribe different values to these outcomes. Relative to more restricted forms of resource use, open access and free distribution both predict elevated rates of resource consumption and large consumer populations. With respect to wild animals, biologists are comfortable with this result because they recognize that populations must reproduce if they are to persist over time, and view the consumption of resources as a predictable concomitant. For economists, the overriding measure of success is the generation of an economic surplus, which requires institutions that restrain rates of resource exploitation. The metric of success for one discipline is demographic persistence while for the other it is economic gain – reproduction versus

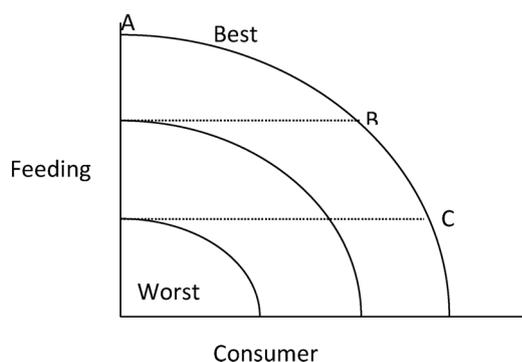


Fig. 1. The sequence of site occupation at different levels of consumer density. When the number of consumers is low, they should feed only in the best site because feeding rate is highest there (A). As consumer numbers increase, competition will reduce the feeding rate in the best site until it is equal to that in the intermediate site with no competition (B). Consumers should then feed at both sites because the feeding rates are the same. If more consumers arrive, then the feeding rate of both sites will be reduced to that of the poorest site with no competition (C), and they should then feed in all three sites (Sutherland, 1983: 823). Sutherland's model refers to animals. Substituting 'harvest' for 'feed', Gordon employs economic terminology to make a parallel case for the depletion of open access marine fishing grounds and the sequential expansion by fishermen to less productive grounds (Gordon, 1954).

profit. Pastoral systems throw these different standards of evaluation into sharp focus. Livestock are animal populations and the production systems that they support can be assessed according to biological criteria, but as human property, livestock are also economic assets subject to economic standards of appraisal. In variable rangeland environments, this dual nature – animals that are also property – raises fundamental questions about how pastoralists value the natural resources upon which both they and their livestock depend.

3. Sovereignty and the politics of open access

How pastoralists reconcile the conflicting demands of biological and economic performance will reflect the property system in force – be it legalized open access (Moritz et al., 2014), state ownership (Behnke et al., 2016) or private tenure (McAllister et al., 2006). The following analysis focuses on a form of collective resource ownership of considerable historical and, at the very least, lingering contemporary significance for indigenous pastoral societies in Africa and Asia. A defining feature of these territorial and tenure systems is their marginality from or explicit antagonism to external authority. These are collective property systems that exist or try to exist outside the ambit of state power (Table 1). This political independence, I will argue, favours institutional arrangements that prioritize the size and persistence of populations at the expense of resource conservation and economic profitability. In these territorial systems, distinctive forms of social organization reinforce environmental incentives for open access. The result is not, contrary to economic theory, the absence of property, but rather a distinctive kind of property.

Three case studies from northern and eastern Africa depict these arrangements. The first two – from Libya and Ethiopia – illustrate property regimes that operate with a minimum of outside administrative interference. The final case from Kenya represents an increasingly common development in which indigenous political entities are encapsulated within the nation state but retain a significant degree of independence.

3.1. Libya

The camel-herding Bedouin of Cyrenaica, Eastern Libya, provide an initial illustration of the way in which political considerations mediate the matching of populations to resource abundance and scarcity. In the 1950s Libya became an independent nation state, but the Bedouin continued to manage their own affairs with minimal outside interference. Central to Bedouin notions of land ownership at that time was a distinction between 'noble' land-owning tribes or tribal segments and 'tied' or client descent groups that used natural resources at the sufferance of their 'noble' hosts. The client tribes owned their own herds but negotiated annually for access to natural resources, in return providing political and military support for their patrons. Noble, land-owning descent groups manipulated these patron-client relationships in order to readjust livestock and human populations to fluctuations in local carrying capacities:

Where the climate is so marginal that it produces super-abundance or nothing, where the extremes may alternate for a few years, or where near drought conditions may occur over a number of years, agricultural production fluctuates markedly and animal husbandry varies between success and failure. To meet this, and in order to exploit the environment to its maximum, there clearly must be the means for shifting people and their animals from place to place so that pressure can be relieved here and a surplus mopped up there. The pressure on resources cannot be met by protracted discussion about who should leave. Decisive action must be taken, and therefore the power to command movement must be vested in part of the population to the exclusion of the remainder. Clients can be told to go; and although all the client clusters do not have to move

annually...a certain number move each year (Peters, 1968: 186).

The ecological imperatives that forced clients to leave were clear: ‘Contraction of resources means the shedding of clients’ (Peters, 1968: 179). Of greater interest to the present analysis, however, was the opposite process: ‘Expansion of resources through falling numbers [within the land owning group] or more available land, makes the retention or increase of clients a matter of urgency’ (Peters, 1968: 186). Clients were actively sought by land-owning groups because they strengthened the competitive position of their patrons vis-à-vis other land-owning groups. Territorial incursions between neighbouring territorial groups were a continual process, and culturally sanctioned physical coercion – reciprocal homicides, feuding, raiding and all-out war – was the final arbiter of territorial rights. By acquiring clients and utilizing their natural resources at full capacity, land-owning groups augmented their military strength and effectively occupied ‘surplus’ land that might otherwise have attracted the attention of covetous neighbours. In making these adjustments, any interest in what might pass for an economically optimal stocking rate – restrained resource consumption from a pastoral perspective – was subordinate to tactical considerations of territorial integrity and group survival. Since their land rights were inherently insecure, ‘noble’ land owners accepted clients and stocked their territories at densities that sought to maximize aggregate herd size and human numbers, but potentially compromised the performance of individual herds and the immediate economic interests of individual owners.

Libyan history emphasizes the existential importance of these tactical calculations. Across the centuries, the occupation of Bedouin Cyrenaica was a periodically violent process of territorial displacement and political extinction. In 1800 the tribes that were to gain undisputed control of Cyrenaica occupied only part of the country:

The wars by which they drove out their rivals were long and savagely fought....As a result of these tribal wars the descendants of the ... invaders of Cyrenaica...began to return eastwards ... about the end of the seventeenth century and pushed out the tribes they found dwelling in the Western desert of Egypt and pressed them into the Delta, where they were absorbed by the *fellahin* [the peasant farming population of the Nile valley]. The first intruders from the west were pushed to the Nile by stronger tribes coming behind them and these by yet stronger. They pushed one another like trucks on a siding (Evans-Pritchard, 1949: 50).

3.2. Ethiopia

The Omo river valley of Ethiopia in the second half of the 20th century provides a setting in which we can observe in greater detail the kinds of large-scale territorial adjustments that occurred in Cyrenaica but are now obscured by time. Evidence from the Omo suggests that the Cyrenaican boxcar metaphor – which alludes to enduring tribal entities that shift their positions over time – may obscure a more complicated process in which both political entities and their associated territories are transient phenomena.

As in Cyrenaica, the drift of territory-owning political units along the Omo valley was in one direction, from southern areas of low to northern areas of high ecological productivity. Beginning in the south along the shores of Lake Turkana, the Dassanetch were moving against their northern neighbours the Nyangatom, who were in turn encroaching upon their northern neighbours, the Mursi, who were acquiring territory to their north at the expense of the Bodi, who were invading the Dime agriculturalists living to their north and east on the Ethiopian escarpment (Turton, 1991).

Environmental stress and demographic pressure drove this process of territorial realignment as individuals moved into the Omo valley from adjacent areas, a process mediated by intertribal marriage and the peaceful assimilation of immigrant kinsmen and women. Along the

Omo river itself, the population pressure resulting from this immigration was relieved by each territorial group colonizing the southern fringes of its northern neighbour until the most northerly agro-pastoral group, the Bodi, were pushed out of the rangelands altogether and into the Ethiopian highlands. Infiltration was peaceful with incomers and residents living together for long periods, punctuated by episodes of inter-tribal warfare when environmental conditions deteriorated. As a consequence of this cycle of war and peace, territorial groups tended to grow on their northern fringes, acquiring people, land and internal divisions as they defined themselves against their neighbours and lost touch with the parental group that had spawned them. At some point, the growing edge of an old political unit came to perceive itself and be perceived as a new, sovereign entity. The Mursi and the other people of the Lower Omo River did not have ‘exclusive, historically permanent and clearly bounded territories’. Instead ‘they had a place. And they did not have a boundary; they had a frontier’ (Turton, 2005: 264–5). These frontiers were, moreover, effectively managed by massing human populations and coercive force along them, making it a virtual certainty that at some point local resources would be insufficient and hostilities would break out (Turton, 1979a, 1979b). As new political units emerged from this process, territory-owning groups along the Omo did not simply expand; they were created by expansion (Turton, 1979a: 122). To borrow Evans-Pritchard’s Cyrenaican analogy, in the Lower Omo, as trucks were shunted along the siding, they segmented as they moved.

In pre-colonial East Africa, expansive pastoral or agro-pastoral societies included the Nuer of Sudan (Evans-Pritchard, 1956), the Maasai of the Rift Valley (Galaty, 1991), and the Somali of the Horn of Africa (Lewis, 1966), the Orma (Ensminger, 1996), and Boran (Baxter, 1979). The people of the Lower Omo were unusual only in their ability to escape state control long enough to present social scientists in the late 20th century with working versions of a kind of political and territorial organization that had once been commonplace, ‘a community which regarded itself more as “an expansion” than as “the centre” ’ (Lamphear, 1994: 88, referring to the Turkana).

Colonial rule did not immediately replace established patterns of territorial fluidity and ‘ethnic shifting’ (Waller, 1985: 357). A newly imposed ‘colonial ethnicity’ involved the identification or invention by the authorities of stable African social units – tribes – that corresponded to bureaucratically defined territories – administrative districts. As a result, the ‘lines of ethnic demarcation’ hardened ‘along administrative boundaries’ (Waller, 1984: 281). Even in this newly administered environment, however, East Africans continued to manipulate group size, competing to adopt alien settlers to increase their population and raise their collective status in the struggle for official recognition and administrative dominance (Waller, 1984).

3.3. Kenya

Our third case study brings the story of East African territoriality and group formation up to the present. In independent Africa, national sovereignty is an established fact, or at least an ambitious competitor among multiple, local, communal sovereignties and insurrections. This has, yet again, altered the nature of collective pastoral land ownership. In a survey of the literature on African rural land ownership, Peters documented a widespread pattern of competition and intensifying conflict over land driven by population pressure and by the transformation of land from a subsistence resource to a commodity susceptible to accumulation. These escalating struggles over land, she argued, deepened social differentiation and inequality and promoted ‘a process of narrowing in the definition of belonging. Social conflict over land takes the form of stricter definitions of those who have legitimate claims to resources, or, in other words, group boundaries are more exclusively defined’ (Peters, 2004: 302).

The ‘apparent self-imposed isolation’ of the Pokot of western Kenya provides a meticulously documented example of this process (Bollig,

2006). The Pokot value large human and livestock populations as an end in themselves, using violent territorial expansion to accommodate expanding populations. Despite their adherence to traditional values, important aspects of Pokot society are recent creations. Marriages to non-Pokot were once common, as in the Lower Omo in times of peace, but they are now in decline; neighbouring pastoral groups with whom the Pokot were once at peace are now enemies; Pokot institutions that previously enforced sanctions on individual behaviour have broken down, and open access to all Pokot pastures has replaced the managed access of common pastures. Bollig interprets these developments as responses to increasing population pressure, but they can also be seen as an adaptation to increasing levels of interethnic violence associated with the spread of automatic weapons and the effective criminalization of the Kenya state in the 1980s (Galaty, 2005). Operating in this violent and uncertain environment, Pokot society was remarkably successful by its own demographic and military criteria: people did not starve in droughts, outmigration was uncommon, human and livestock populations were extraordinarily high relative to available resources, and by 2000 the Pokot were poised to take possession of contested pastures that had once belonged to other pastoral groups. Despite these successes, or possibly because of them, the Pokot were incapable of ‘responsibly’ managing their natural resources. The delineation of this ‘failure’ was anticipated in Table 1 comparing the contradictions between common property theory and the organization of sovereign pastoral commons:

In this analysis, the efficiency of common-property-resource-management institutions has been highlighted as the major foundation of sustainable pasture management. The transaction costs of such institutions of resource protection can be reduced if (a) the group responsible for protection is limited and easily identifiable, (b) the resource to be protected is clearly defined and (c) if rules and procedures for quantifying and sanctioning free-riding are specified The Pokot have problems on all three counts. While ideas about range protection exist, concepts of responsibility are vague. Basically all Pokot are entitled to graze everywhere in Pokot land.... Sanctions for free-riding are lenient and enforcement is difficult (Bollig, 2006: 387).

NGO and donor-backed attempts to encourage community-based rangeland management met with no success and were eventually abandoned (Bollig, 2006). It would appear that the Pokot valued solidarity and security at the expense of resource conservation.

Despite its primordial trappings, contemporary Pokot ‘sovereignty’ was not a stateless condition. It was a compromised form of local autonomy encapsulated within a modern political system that aggravated ethnic animosities for political and personal gain (Moritz, 2015; Galaty, 2005) and a national political culture that encouraged the maintenance of group size, the capacity for aggression, and the retreat into communal particularism. In this ethnically charged environment, pastoral societies were particularly targeted because they retained the capacity to extend or to oppose the power of governing elites (Galaty, 2005).

4. A demographic measure of institutional wellbeing

The preceding review reaffirms the significance of environmental variability as a stimulus for population redistribution and resource matching. Moving forward, the discussion in this section focuses on a particular institutional setting, the sovereign territorial group, in which these environmental adjustments can take place. A recurrent theme in the preceding case studies was a concern by territorial groups to maintain the size of their population. The emphasis on group size reflects the insecurities that accompany political self-sufficiency in a violent environment. By raising the number of resource users, an inclusive approach to ownership expands the number of interested parties with a stake in defending a resource, cuts the cost of defending low-value or geographically extensive resources, and consumes resources,

thereby diminishing the incentives for outsiders to covet any surplus. Larger populations also tend to impress outsiders, including government administrators and politicians, who may have the capacity to hinder or assist. Tactical considerations of this kind are particularly relevant when centralized administrative control is weak or susceptible to manipulation (Ilahiane, 1999).

In these territorial systems, the scale of free movement is a function of collective security, and fluctuates accordingly. Among the Bedouin, client populations were shed when drought and resource scarcity posed an immediate threat to collective welfare, and again recruited when resources were plentiful and aggressive neighbours were the greater worry. In the Lower Omo, immigrants were welcomed and territorial groups tolerated intrusions and colonization by neighbouring groups, until drought and famine provoked a violent response. Under increasing land pressure, contemporary Pokot adopted open access within their territory to buttress internal solidarity and, ultimately, to expand their territory. They were operating in what they perceived to be a dangerous environment, which was true since it contained other groups like themselves.

The effects of environmental variability and territorial sovereignty are, in sum, mutually reinforcing; both encourage a degree of open access, resulting in a distinctive pastoral approach to the independent control and management of resources. We are now in a position to specify the recurrent features of this social formation.

The uncertain boundaries that are a consequence of political autonomy are a foundational characteristic. Sometimes the uncertainty pertains to geographical boundaries while group identity remains stable, as in ‘colonial ethnicity’ and modern versions of the communal exclusivity exemplified by the Pokot. At other times, as among the peoples of the Lower Omo, social identities are themselves ‘on the move’ (Schlee, 1989) and group identities are as fluid as their geographical location. When boundaries are vague and insecure, political and military competition replaces rule-bound administrative regulation. Calculations of risk and advantage, opposing tendencies towards exclusion and inclusion, replace the enforcement of rules as the social mechanism that regulates the intensity of resource exploitation. In these property systems, community viability is paramount because it is the community that legitimates the property rights of its members, not some outside administrative or legal authority. Without a viable community there are no individual rights.

From the perspective of neoclassical economics, we may be dealing here with utility maximizing decision-makers, but the utilities they have prioritized – the biological and social reproduction of human communities and political identities – are radically different from those routinely invoked by economists. This inversion of normal economizing expectations can, nonetheless, be expressed using the conventional language of economics. To this end, Gordon’s classic analysis of over-fishing can be read on at least three different levels, two of which deploy economic reasoning and a third that subverts it. An initial, conventional reading supports Gordon’s original conclusion regarding the ‘pathologies of inefficiency’ to which open access is prone (Field, 1985: 364): When they exploit scarce open access resources, excessive numbers of fishermen (or pastoralists) dissipate the natural productivity inherent in the resource itself, what economists call resource rents. A second interpretation is based on the observation that small numbers of consumers will capture more rent than numerous ones, even if (as is often the case with pastoralists) they cannot agree to limit the size of individual herds. Resource consumers therefore benefit if they can work together to bar additional entrants, but exclusion also carries risks since those who are prevented from peacefully using a resource may combine to violently challenge those who occupy it (Cheung, 1970). All else equal, large groups are more secure but less productive for their individual members. Exacerbated by environmental variability, tactical calculations of this kind explain the intermediate and fluctuating levels of exclusivity characteristic of many pastoral tenure and territorial systems (Behnke, 1994).

A final and more radical reading challenges the relevance of the assumptions that underpin Gordon's conclusions. Gordon argued that open access was destructive because it undermined the material benefits that could be derived from a resource and degraded the economic value of that resource. This conclusion presumes that economic efficiency is the most relevant measure of the success of collective property systems. From this perspective, if additional users undermine efficiency, they are an unnecessary and unproductive liability. But these users may also be members of a population that considers its collective identity to be the ultimate reason why they work, fight, reproduce and make use of natural resources. To the extent that open access multiplies the number of resource users, it multiplies human life and increases the chances for communal survival, goods that may also provide a legitimate metric of institutional success. In systems predicated on these essentially demographic values, deteriorating economic conditions no longer have the paramount importance that they assumed in Gordon's original analysis. In these systems, economic values have been subjugated to demographic and political ends, transforming the economically dysfunctional accumulation of consumers into an important objective of resource control.

There is cultural evidence that indigenous pastoral societies do indeed place a high priority on the persistence of their communities through time. In East Africa, life cycle initiation rituals socialize the process of biological maturation to coordinate the society-wide passage of generations. In southern Africa, ancestors and their graves express a custodial attachment to place that links the living to the dead (Bollig, 2006). In Morocco (Gellner, 1969) and Mongolia, ceremonies held at sacred spots are used to embody 'the relations between human and superhuman forces associated with the land' and to plead for favourable conditions (Sneath, 2004: 168). Finally, the preservation of collective identities over time is expressed in what may be the most common idiom of pastoral social organization – concepts of kinship, clanship and descent that envisage living communities as the social and territorial embodiments of biological continuity. For cultural as well as political and environmental reasons, many pastoral societies denominate the value of their natural resources in terms of the capacity of those resources to sustain robust human populations with an independent political identity. It is pointless and prejudicial to judge these societies according to a preconceived notion of economic efficiency to which they do not subscribe.

A final reassessment of Gordon's reasoning is now possible. An axiomatic agent inhabits Gordon's model and drives the destructive processes associated with open access – the possessive individualist, the proverbial 'economic man' in pursuit of material rewards (Brox, 1990; Macpherson, 1962). Having no economic men to control, the pastoral societies depicted thus far do not need systems of bounded, exclusive and rule-bound common property to manage a problem that for them does not exist. This is not because pastoral natural resources are so abundant that open access is irrelevant. The calculus of pastoral solidarity is predicated on scarcity and the need to maintain a collective capacity to respond aggressively to it. As noted previously, in the 1970s a severe drought and famine provoked widespread warfare in the Lower Omo; contemporary Pokot live with high levels of land pressure; Libyan Bedouin expelled their clients when times were hard. As I.M. Lewis observed with respect to the pastoral Somali, 'Fighting potential in a society based on self help is all-important and is coordinate with size.... male strength represents the fighting power of a group and also its ability to ... act collectively as a corporate political unit' (1961: 151). Political survival in these societies is predicated on the size and cohesion of Lewis' 'corporate political unit', and this obstructs the treatment of land as a purely economic resource.

An account of the settlement of a blood feud among the Humr Baggara, nomads of western Sudan provides a final illustration of the subordination of economic objectives to political considerations. As reported by Cunnison (1966), a longstanding feud existed between rival segments vying for leadership of their common descent group. The feud

was resolved – or at least deferred – only when the aggrieved party to the dispute threatened to secede and 'go off and make alliance elsewhere' (Cunnison, 1966: 186). Emigration would have relieved pressure on local resources and should have benefitted and pleased those left behind, had they been in a position to view their common land simply as an economic good. Instead they reached an agreement with their discontented compatriots whose threatened departure would have reduced the size of the group that remained behind, and put at risk their political status and long-term material interests.

For the sovereign pastoral societies discussed thus far, politico-demographic concerns informed strategic decision-making about property rights in land and other natural resources. In large measure, tenure systems that reflect the pursuit of modern economic objectives have replaced sovereign territorial systems. In the following section we discuss the mechanics and implications of this displacement.

5. Market and state incorporation

If there is one secure generalization about communal tenure, it is the observation that collective forms of land ownership have retreated with the advance of agrarian capitalism and the power of the nation state (Berkes, 1996). Indigenous pastoral tenure systems in Africa and Asia are no exception to this rule (Behnke, 2008).

In the anarchic environment in which it evolved, the sovereign pastoral commons was both a widespread and durable form of social organization, as attested by numerous ethnographic accounts from the 20th century. The common property literature is similarly replete with examples from industrial countries of stable common property regimes that – unlike the sovereign pastoral commons – do conform to the common property design principles and have no apparent problem coexisting with state authority and market economies (Kellert et al., 2000). Both ends of the collective continuum seem to be adapted to in their respective political and economic environments. The puzzle is why pastoralists experience such difficulty moving from one form of collective tenure to another.

The answer to this puzzle lies in an interlocking process of political, economic and ideological change. Prior to imposed pacification, horizontal tensions between structurally similar political entities – competition between sovereign territorial groups – preserved 'vertical' solidarity within these groups, i.e., alliances between rich and poor, between political leaders and their followers, patrons and clients, prosperous kinsmen and impoverished relatives. In the Maasai idiom, the rich were 'giving shade' to their poorer compatriots (Waller, 1985: 360). As a consequence, large wealth differences could persist across generations within pastoral societies without being recognized in 'social interaction, symbolism or ideology' (Borgerhoff Mulder et al., 2010: 46).

With the growth of central government control, however, property rights were no longer predicated on the solidarity of the territorial group. With the state as guarantor of an individual's property rights, it became possible for elites to detach themselves from systems of local patronage that had been the basis of their power but placed demands upon their wealth, and for subordinates to free themselves from political and economic subservience. Markets accelerated this process. By providing a vent for productive surpluses and a source of newly perceived consumer needs, markets redirected outwards the surpluses that had previously circulated within redistributive economies, and in so doing reconfigured the implications of pre-existing wealth differences. Even if absolute levels of inequality remained unchanged, which was unlikely, they now meant something new and provided a basis for new kinds of conflict that reflected incipient class interests (Ensminger, 1990).

With respect to the value ascribed to land, pastoral communities also faced an ideological dichotomy in the transition from a sovereign to a state-administered property regime. Communities had previously valued natural resources as the material basis for social and biological

reproduction – resources were good to the extent that they sustained life and political identities, and the more life the better. These communities now confronted an economic definition of the value of land as a commodity and source of profit, with the essence of profitable ownership lying in the ability to exclude others. Implicit in this transition is a period of heightened tenure insecurity as communities move from self-interested demographic inclusiveness to self-interested economic exclusivity.

Three exceptionally well-documented case studies from Kenya – the Maasai, Samburu and Orma (Galla) – illustrate the processes summarized in the preceding paragraphs. Since independence, Kenyan national policy has favoured individual freehold title to agricultural land, with the proviso that pastoral communities also had the option of owning land collectively as a ‘group ranch’. Although they predated the development of common property theory, these group ranches were essentially common property systems – state-sponsored and legally incorporated, territorially bounded, with a clearly defined membership, and a formal, committee-based management. Kenyan pastoralists were therefore presented with a choice between individual and common property, and each of the herding societies examined here adopted a different combination of freehold and communal tenure.

Recent research on Maasailand (Mwangi, 2007a,b, 2010) documents the complete subdivision of entire group ranches to create a patchwork of individual holdings, a process of fragmentation that began in some areas of Maasailand almost as soon as the ranches were created. The Samburu, as described in a series of papers by Lesorogol (2005, 2003, 2010), have opted for a combination of collective and private tenure, resulting in a mixed pattern of landholding. Areas with lower levels of rainfall and productivity were used for grazing, and were owned and managed in common, while areas of higher rainfall with a potential for crop farming were subdivided and owned individually. Finally, the Orma adopted a two-tiered system of collective grazing. Peripheral grazing areas were open to all Orma while access to pastures around settlements was restricted to herds owned by village-based pastoralists. By the mid-1990s the Orma had taken an additional step towards formalizing this system and petitioned the Kenyan government to declare the restricted grazing areas a collective ranch, open only to village herds on a fee-paying basis (Ensminger and Knight, 1997).

Newly emerging economic interests created pressure for the creation of the new tenure arrangements. Among the Maasai, the manipulation of national land administration for personal economic gain came predominantly from those traditionally entrusted with leading the Maasai community – elders, large herd owners, wealthy and politically connected individuals (Mwangi and Dohrn, 2008; Kituyi, 1990). At every stage in the reform process – prior to the creation of group ranches (White and Meadows, 1981; Rutten, 1992), when ranch boundaries were being adjudicated (Bekure et al., 1990), when serving on the committees that managed the ranches (Mwangi, 2007b), and in subdividing the ranches after they failed – Maasai economic and political elites used their influence and official connections to obtain titles to private properties that contained the most productive land and a disproportionate share of the tribal commonage. Among the Orma, a settled, commercially-oriented pastoral elite used government-backed restrictions on common land to pursue novel forms of market-oriented live animal production, to the detriment of nomadic fellow tribesmen engaged in subsistence-oriented dairy production. Among the Samburu, a group of modernizing but cattle-poor individuals made a bid to privatize and expel fellow pastoralists from the most productive common land in order to take up commercial wheat farming.

In all three cases, state support allowed individuals from one segment of a pastoral community – either elites (among the Maasai and Orma) or their newly restive subordinates (among the Samburu) – to pursue their own economic interests in opposition to the wider community. Previously, within the sovereign commons, individual interests had of necessity been collectively defended. Once they were secured by

the legal and coercive power of the state, individual economic interests could be pursued in defiance of the collectivity. As a consequence, land, which had once been an inalienable resource with use value, could now be treated as a ‘valuable commodity and an investment opportunity’ (Lesorogol, 2005). In Maasailand and among Samburu on freehold land, this transformation was complete; among the Orma land still could not be sold or rented, but its utility was now assessed in terms of its capacity to produce a saleable commodity – cattle for market.

Under sovereign conditions, robust populations were needed to sustain the independent commonwealths that secured individual property rights. They were a strategic necessity endorsed by all segments of the community. When property rights were subsequently secured by the state, individuals became free to pursue their private economic interests. Resource sharing may still have made functional sense in terms of productively using a rangeland environment, but it was no longer a strategic necessity.¹ In purely economic terms, co-owners were an encumbrance, and shedding them became more attractive than retaining them. Pastoral realities and economic theory had at last converged.

6. From patrimony to commodity: the demographic-economic transition

Indigenous pastoral tenure systems satisfy the biological imperative for free movement in unstable rangeland environments, and they frequently do this through institutions based on territorial sovereignty. When the superordinate role of the state is either absent or weak, land rights cannot be fixed with reference to a codified set of legal rules guaranteed by an external authority. Territory must, instead, be defended and land rights are one of the benefits of successful political action. In this natural and social environment, sovereign pastoral tenure systems are collective and non-exclusive, but they are not common property systems as these are usually defined.

Part of the problem is the distinctive way sovereign pastoral systems regulate the intensity of resource consumption. Explicit rules that constrain consumption rates within a delimited territory are not the primary means of regulation. In an ungoverned environment, territorial claims can be adjusted to accommodate a group’s expanding resource requirements. Conversely, the intensity of resource use can be regulated by the politically sensitive recalibration of who is entitled to use resources. Political competition and tactical calculations regarding territorial and social boundaries have replaced administrative, rule-bound regulation.

A degree of open access is one consequence of the negotiated and fluid nature of both social and territorial boundaries. Group size contributes to collective security, but undermines collective welfare when demands for resources outstrip supply. In an erratic and unpredictable natural environment, people and their livestock come and go with fluctuations in resource availability. This movement does not occur, however, in a naturalistic void in which isolated individuals pursue private interests unrestrained by social convention. Apocalyptic predictions regarding the ills of open access may indeed apply when the assumptions that underpin economic modelling are met and individuals with unlimited material wants compete to satisfy those wants. In a capitalistic economy, open access can be catastrophic. But the subsistence-oriented production systems and self-sufficient polities discussed in the opening sections of this review are not conducive to this kind of individual aggrandizement. In these systems, collective survival is anterior to an individual’s property and profit. Resource sharing may be deemed morally correct, but it is also strategically prudent.

¹ After the adoption of formal private tenure, both the Maasai (Mwangi, 2007b) and the Samburu (Lesorogol, 2010) developed informal resource sharing arrangements that they needed to effectively manage their livestock despite the fragmentation introduced by individual holdings.

The primacy of the collectivity is reflected in the ideologies these sovereign communities use to organize and conceptualize themselves. With remarkable consistency, these ideologies stress biological continuity (often fictive) through clan, kinship and descent, and the association of enduring social groups to particular places. To the extent that a robust population promotes group persistence, these pastoralists employ an implicitly biological metric of institutional adequacy. Resources are appropriately used to the extent that they sustain life, not economic gain. These values dissipate surplus resources and are at odds with the economizing concepts that underpin the theory of common property – the notion that efficient levels of utilization maximize resource rents and profit.

Ever since Ricardo (1817), economists have equated land ownership with the power to capture economic rents by excluding others. Ricardo's contemporary, Thomas Malthus (1789), provided the demographic corollary to an economic concept of land ownership predicated on exclusion – the observation that people could be surplus to economic requirements and a source of poverty rather than wealth. Ricardo and Malthus laid the foundations for a modern conception of land use in which resources were valuable not in proportion to the size of the population they supported but to the extent that they were 'efficiently' exploited. The anxieties behind the debate about common property and open access would be immediately familiar to Ricardo and Malthus – Gordon's rejection of rent dissipation (1954) and Hardin's fear of overpopulation (Hardin, 2009) – a world governed by the profitable management of scarcity, a world in which nature is a commodity called land and humans are a commodity called labour (Polanyi, 1944). In much of pastoral Africa and Asia, rangelands and pastoral labour were not but are now becoming commodities. Operating within the assumptions of classical economics, common property theory is ill equipped to explain this transformation.

The closing section of this paper describes the impact of market and state penetration on what were once sovereign systems of property management. In this process land that was once a collective patrimony secured by an independent polity is transformed into a commodity governed by a centralized state. Common property rights are one of the routine causalities of this transformation, which marks the emergence of economic values as a separate sphere of social organization, distinct from religious or political activity.

Pastoral societies are not alone in making this transition, and this is their broader significance for land use studies. Probably the largest mass extinction of communal property that ever occurred took place in late medieval and early modern Europe with the spread of agrarian capitalism and the growing power of the nation state. Political, economic, and environmental marginality long shielded many African and Asian pastoralists from these developments, but that time is passing. The dislocation these societies are currently experiencing is little more than the delayed conclusion of a prolonged, global process, one that is now concentrated in the developing world. Pastoral territorial practices challenge us to see this transformation from the point of view of those who are undergoing it, or are about to do so, something that conventional common property theory systematically obscures.

Common property theory expanded the reach of neoclassical economics by reconciling economic individualism with collective property. In one of the founding contributions to the theory, Runge demonstrated that the isolated, scared and self-regarding prisoners in the parable of the prisoners' dilemma could work together to save themselves and preserve their common resources. What was required for a positive outcome was some means of coordinating activity and achieving reasonable 'assurance' as to the pattern and reliability of other people's behaviour (Runge, 1981). There now exist in many rangeland areas commercially oriented pastoralists who correspond to the stereotyped decision-makers of neoclassical economic theory or game-based modelling. The emergence of these new economic actors has, however, come at a cost to the old social order and to the shared expectations upon which it was based; everything is now up for grabs. To borrow

Runge's terminology, there is now little ground for mutual assurance.

Much of the enthusiasm for common property resource management comes from its promise to facilitate economic development in underdeveloped areas (Platteau, 1996). Many developing areas are experiencing what Agrawal and Gibson have called the 'double pronged intrusion of the state and market' (1999: 631; see also Woodhouse, 2003; Campbell et al., 2001; Southgate and Hulme 2000). If, like pastoralists, these people are also experiencing a demographic-economic transition, how relevant is the common property model to their future?

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