

PROPERTY RIGHTS AS A CAUSE OF THE TRAGEDY OF THE COMMONS: INSTITUTIONAL CHANGE AND THE PASTORAL MAASAI OF KENYA

Robert A. Blewett
St. Lawrence University

INTRODUCTION

More than forty years have passed since the publication of H. Scott Gordon's seminal work on common property resources [Gordon, 1954]. Gordon explained the simple economics of the "tragedy of the commons," a term popularized by Hardin [1968] and offered the institution of private property as one possible solution. Unspecified property rights now are considered by most as *prima facie* evidence of market failure. Many cases of a common property resource (CPR) that operate reasonably well with neither private property rights nor state intervention, however, have been documented. Often these cases are historical or from less developed countries, where informal community institutions effectively manage a local commons [Bromley, 1992; Ostrom, 1990; Dennen, 1976; Ostrom, 1992a; Ostrom and Gardner, 1993; Tang, 1992; Umbeck, 1977]. Economists should now realize that commons problems are necessarily associated with only CPR's with no restrictions in access. Not all CPR's are open access: some CPRs are managed by other institutions, like the case presented in this article.¹ While economists have often analyzed how property rights can eliminate the overuse of the common property, much recent research concerns the conditions under which the commons problem can be overcome without resorting to property rights or the state [Bardhan, 1993a; Bromley, 1992; Ellickson, 1991; Larson and Bromley, 1990; Oakerson, 1992; Ostrom, 1992b; Quiggin, 1993; Runge, 1992; Seabright, 1993].

This article offers a case, the pastoral commons of the Maasai in Kenya, where common ownership proved superior to private property. The creation of property rights by colonial and even post-colonial governments diminished the long-run viability of the commons by disrupting the complex institutional structure of the Maasai.² With pastoralism, the tragedy of the commons is often thought to be the result of overgrazing; too many cattle devouring too much grass so that the commons is not sustainable. The Maasai case differs from the usual pastoral example: the land was used for both grazing and farming. The individual decisions by farmers to substitute the grass areas with farming is analogous to herders deciding to allow more cattle to graze the grass. In both instances, individuals have little incentive to take into account the benefits of the grass for others.

This counterintuitive result that property rights can cause a commons problem may seem critical of property-rights literature. On the contrary, this case is a non-

Western application of the literature. Long ago Coase [1937] showed that the transactions costs of cooperation may be reduced by avoiding the market and using alternative institutions, in his case firms. Although unlike a hierarchical firm in structure, Maasai social organization like a Coasian firm did provide an alternative institution that efficiently solved complex problems of economic coordination and cooperation. Also like the Coasian firm, the Maasai commons avoided the prohibitively high transactions costs associated with a system of private contractual arrangements.

In the next section, I outline the pre-colonial institutional structure of the Maasai for "making the commons work," to borrow from the title of Bromley [1992]. While offering evidence for the contention that transactions costs may be lower with cooperative behavior than with explicit property rights [Seabright, 1993, 124-25], I take exception to the idea that cooperative behavior is only appropriate for resources with low economic value [Cordell and McKean, 1992; Runge, 1992] or when more egalitarian distributional outcomes are desired [Bardhan, 1993b; Oakerson, 1992]. I also examine how rent seeking and a clash of ideologies with the Maasai led British colonial powers to weaken the commons. Finally, I outline how later policies led to a further decline of the pastoral economy by encouraging the creation of individual land holdings. The diminished long-run viability of the commons caused by these policies served only to confirm Western ideology that private property rights were necessary.

PRE-COLONIAL INSTITUTIONS OF THE MAASAI: MAKING THE COMMONS WORK

The Maasai are probably the most "picturesque" of all African peoples. I doubt if there is a coffee-table book concerning Africa without prominent pictures portraying the romantic figure of a Maasai warrior or of a colorfully and extensively beaded Maasai maiden. Much as Frederick Remington's lithographs capture our romantic and nostalgic visions of the "Old West," the Maasai seem to exemplify an image of a "Vanishing Africa" lost due to colonialism and modernization. This may explain why the Maasai have been studied so extensively. Romanticism and economics, however, do not seem to mix very well, at least not the economics of refereed journal articles. This section attempts to undertake a decidedly unromantic view of the Maasai and some of their institutions. Their economy and social framework are examined to provide some explanation of why and how they were able not only to avoid the tragedy of the commons but to make the commons work.

The Maasai are a semi-nomadic group of subsistence pastoralists located in the Rift Valley of Kenya and Tanzania.³ While various pastoral peoples have populated this and other areas of East Africa, the Maasai dominated the plains of the central Rift Valley by the beginning of the nineteenth century and reached the height of their power in the late 1870s. Their military dominance was achieved without the development of a central state in the modern sense. Instead, the social structure was composed of loose sets of related individuals and groups. The most significant economic units of Maasai society were households, camps, neighborhoods, and sections. The family or household was the group that owned and managed individual herds. Sev-

eral households congregated into camps and coordinated the herding of the cattle and the sharing of labor. Neighborhoods consisted of several camps in one area, had a council of elders, cooperated in both allocating grazing lands and access to watering points, and provided local defense. Sections were collections of neighborhoods that controlled the territory containing resources these groups customarily used.

The complexity of the pastoral economy of the Maasai extended well beyond the simple maximization of sustainable yield of cattle on a certain tract of land. One important reason for this complexity was the variable and uncertain rainfall in semi-arid climates. Not only must access to the commons be controlled, but the inherent risks of uncertain rainfall and drought must also be managed to ensure the long-run viability of the commons. Insurance against environmental uncertainties was a very important benefit of common property regimes in pastoral situations.⁴

Water — not land with sufficient supplies of grasses — was the binding constraint in East African pastoralism. Maasailand had generally two dry seasons and two wet seasons annually. Maximum use of the entire commons could be achieved by moving cattle during the dry seasons to the well-watered, dry-season pastures and then back to the far more abundant wet-season pastures when water was available in all ranges. Without these dry-season areas, other range land was essentially worthless. To prevent the tragedy of the commons, access to only certain parts of the commons needed to be controlled. The success of the Maasai lay in their ability to control and exclude rival groups from the well-watered, dry-season grazing lands, and watering points and salt licks [Sutton, 1993, 41].

A System of Cooperation: Land Use and Herds

Routine seasonal cattle movements generally were within the territory of sections; collectively pastoralists were able to solve complex coordination problems with these sections. For example, coordinating access to watering points might involve scheduling thousands of animals managed by hundreds of people. Yet among pastoralists, reaching a cooperative solution to such daunting problems was not uncommon [Livingstone, 1986, 10]. Relationships promoting cooperation among herders was a form of insurance in case of low rainfall or drought. They allowed individual herders to disperse their cattle to alternative pastures and watering points in other sections during times of drought [Spear, 1993, 11].

Keeping large cattle herds was another way to provide insurance against the potentially devastating effects of drought or disease. Not only were at least some cattle within a larger herd more likely to survive a severe drought, but wealthy Maasai with many cattle also provided benefits to others with more limited herds. The larger holdings provided a potential source of cattle to replenish depleted stocks, as well as an option for future employment for herders whose own livestock had been destroyed by drought or disease. The importance of this was not lost upon the pastoralists themselves. For example, owners of the more limited herds were reportedly quite hostile to the promotion by government officials of ceilings on individual cattle holdings among Kenya's pastoral Pokot despite a realization by the owners of possible overgrazing. The ceilings had been suggested because it appeared that the owners of

large herds were obtaining more than proportionate shares of the pasture available [Livingstone, 1986, 9].

Maasai Ideology

The ability of the Maasai to engender extensive cooperation was based on the Maasai concepts of *osutua* (bond friendship) and *enaashe* (thanks). While marriage and other family or clan relationships obligated people to one another, *osutua* implied that "...preferential exchanges between two partners created a kind of kinship transcending social boundaries" [Waller, 1993a, 228]. Thus trade could be a method of building social networks. In times of need, a Maasai could go to others with whom he had existing ties of marriage, clan, or *osutua*. These ties of *enaashe* (thanks) added another layer of obligation among groups and essentially involved the accumulation of implicit debts that may be called in later [*ibid.*, 230].

Maasai ideology which embraced a Maasai ideal of selflessness and generosity helped maintain these implicit obligations and the Maasai women enforced the ideal. To adhere to the ideal, elders tried to portray themselves in public as being extremely generous and therefore worthy of respect. They made concerted efforts to distance themselves from anything that would indicate an interest in personal gain at the expense of others [Spencer, 1993, 152]. Men who fell short of the Maasai ideal by ignoring their obligations might find themselves publicly humiliated by their mocking wives. "While they submit ultimately to the power of the elders within the family and in the community, it is the women who make very public the selfishness and duplicity of the elders in the loud gossip of their songs and dances..." [*ibid.*, 154]. Of course women in such a male-dominated society had very real incentives to expose the failures of men in meeting their obligations; the material welfare of women depended upon the men fulfilling their responsibilities to their wives and daughters. The possible public humiliation of one's own husband thus conferred both public and private benefits. To the proud Maasai male, it was a very effective sanction.

A Vagueness of Ethnicity and Territory

Relations with other ethnic groups provided another form of insurance for the Maasai. Pure pastoralism could not survive in the long run without access to vegetables and grains to supplement the diet when dairy production fell short of the group's need. In times of severe hardship, Maasai could seek refuge with agriculturalist groups, such as the Kikuyu, situated on the borders of their territories. The concepts of *osutua* and *enaashe* also applied to people of other ethnic groups. Actually, a great deal of mutually beneficial social and economic interaction occurred across the "frontiers" of Maasailand [Waller, 1993a, 228]. Without this interaction, the pastoral commons lacked long-run sustainability.

The frontiers of Maasai territories were relatively flexible, if not ambiguous, in pre-colonial times. Grazing lands between sections overlapped. Territories also expanded and contracted depending upon the number of cattle. Given the relatively constant cattle/labor ratio, as cattle numbers rose, more labor was needed. This was

obtained by sharing herds with others, hiring other Maasai or Kikuyu, or adopting outsiders and assimilating them into Maasai society and culture. Increased cattle numbers could also necessitate expansion at the expense of other pastoralists.⁵ If cattle numbers fell, then some Maasai might have to take refuge with farmers either as workers, slaves, or adoptees. While the expansion of Kikuyu and Maasai territories should be seen as primarily complementary, land use could change at the margin (as did the flow of people into and out of Maasai society) as the relative fortunes of the Maasai and Kikuyu changed.

Uncertain property rights and entitlements are usually associated with inefficient resource allocation. In the Maasai context, however, the seemingly ambiguous *tacit* rights to land, as well as membership in the group, appears to have generated a flexibility that enhanced the long-run dynamic efficiency of resource use. The “vagueness” of both territory and ethnicity were additional ways of coping with the uncertainties of the pastoral economy.

Cooperative Behavior and Economic Surplus

Runge [1992, 20] maintains that commons property regimes are associated with low surplus resources or low economic rents. Bardhan [1993b] and Oakerson [1992] maintain that these regimes appear when egalitarian outcomes are desired. The Maasai were certainly an exception to both. Maasai hegemony in the Rift Valley was largely the result of their superior military organization [Sutton, 1993, 42], and the Maasai’s ability to support this military structure attests to the efficiency of Maasai economic organization. Maasai society was organized into age sets. Males roughly between the ages of 15 and 30 were warriors, or *murrān*; after about 30 they became elders. As *murrān*, they were not allowed to marry, nor did they have any other responsibilities except to provide for defense and other military needs. Only the efficient use of a highly productive commons could generate the substantial economic surplus needed to maintain such a large, “unproductive” proportion of the population [Galaty, 1993, 84-85].

Likewise, the fact that some herdsmen kept more cattle than others and that this unequal distribution of herd size was seen as beneficial to the group as a whole, is proof which contradicts the contention that cooperative behavior is appropriate only when egalitarian outcomes are desired.

Lower Transactions Costs with Cooperative Behavior

Seabright [1993, 124-25] has noted that introducing private property rights can reduce efficiency. He argues that private contractual arrangements cannot always provide effective incentives for all economic activities necessary for a well-functioning commons. Like a Coasian firm, Maasai institutions efficiently reduced the transactions costs of cooperation. It would appear that the complexity of pastoral coordination and risk management problems in East Africa provides a case study in which the high transactions costs of a system of private contractual arrangements would be prohibitive. In a sense, the Maasai pastoral commons with seemingly vaguely speci-

fied rights can have the same virtues as a Coasian firm. Flexible, *tacit* social institutions encompassing group rights are sometimes more efficient than *explicit* contracts among individuals. The Maasai developed institutions that enabled them not only to make the commons work but to make the commons highly productive. The tragedy of the commons was avoided by denying outsiders access to critical dry-season pastures and watering points. Collective cooperation within Maasai sections and neighborhoods coordinated the allocation of resources. Insurance against environmental uncertainties was provided by various social institutions within Maasai society. Insurance necessary for the long-run survival of the pastoral economy was also provided by agriculturists of neighboring ethnic groups. Finally, the flexibility and ambiguity of both territory and ethnicity gave additional protection and helped insure the sustainability of Maasai pastoralism.

ENCOUNTERS WITH COLONIALISM AND INSTITUTIONAL CHANGE

The reputation of the Maasai as a fierce tribe of warriors kept nineteenth-century European travelers and adventurers from exploring their land. However, during the 1890s a series of droughts had taken an accumulated toll on livestock while rinderpest and bovine pleuro-pneumonia further devastated herds. The resultant economic hardship accompanied by the spread of smallpox and cholera, and further compounded by intersectional warfare, led to the relative depopulation of Maasailand. By the late 1890s, British and German troops in East Africa had little difficulty in pacifying the once-feared Maasai.⁶

Douglass North maintains that enhancement of efficiency by institutional change is usually accidental [Ensminger, 1992, 22]. If this is so, then Lady Luck did not smile upon the Maasai when it came to British colonial policy. The early encounters between British authorities and the Maasai are tales of colonial land grabs and rent seeking, of clashes of cultures and ideologies, and of almost comic endeavors to induce this part of the world to conform to Western concepts of modernity. The institutional changes wrought by colonialism weakened the ability of the Maasai to make the commons work, even though many of these changes might seem reasonable to modern economists. This section outlines the origin and some consequences of British colonial encounters.

British Ideology and British Views of the Maasai

Early reports from European travelers viewed a land that was almost empty and certainly underutilized by the "primitive" Maasai [Waller, 1993b, 5]. Later, in more prosperous times, the colonialists believed desires of pastoralists to demonstrate wealth through larger cattle herds to be irrational, backward, and led to overgrazing and soil erosion [Campbell, 1993, 260]. Others viewed the Maasai more favorably but believed pastoralism to be an anachronism, unable to be incorporated into the modern world with its cash economy. They believed the economic development of the Maasai was possible only if the Maasai would adapt to modern concepts and move up the ladder of social evolution by becoming agriculturists [Waller, 1993a, 239]. The com-

mon implication of these contradictory views was that Western control was necessary for economic efficiency, if not for the good of the Maasai themselves.

This ideology, coupled with Maasai military impotence, led to the British imposition on the Maasai of the Treaties of 1904 and 1912. Well-watered, dry-season grazing areas were appropriated for European farmers, and the Maasai were forced to relocate during "the Moves" to the designated Maasai Reserve further south in what are today the Kajiado and Narok Districts of Kenya. Later, the colonial government also tried to encourage the sales of "superfluous" livestock and the development of agriculture by the "new Maasai" [Campbell, 1993, 260; Waller, 1993a, 243-44].

A clash of cultures and ideologies was evident during the negotiation of the treaties and the Moves. Waller [1993b] outlines how Western and Maasai concepts of "land" differed and how this led to many problems and heated arguments. The British assumed that property rights were essential to economically efficient land use. They also observed the wanderings of the Maasai and their lack of permanent settlements and concluded that the Maasai had no "sense of place." They concluded that pastoralists could be moved anywhere that had range land. The Moves were thus viewed as beneficial to both sides since the white settlers would obtain productive land currently tied up in uneconomical uses, while the Maasai would secure their own land with the creation of guaranteed property rights.

Maasai Ideology and Maasai Views of the British

The Maasai, however, did not see the benefits of this manifestation of *Pax Britannia*. Their objections to the Moves were considered by the British to be vague. They were certainly incomprehensible to the British. Maasai elders admitted there was nothing particularly wrong about some proposed parcel or expanse of land, but rejected the land because they did not "know" it and therefore it could not be "theirs." Colonial authorities dismissed such objections as "grousing" or as being merely obstructionist [*ibid.*, 6].

The Maasai viewed land as a set of social relationships. Possession of the land was defined by being used and using the land required a complex series of social institutions. It was inconceivable that land could be property, like cattle or wives. Just as people in the West (other than economists, that is) have trouble in thinking of the air we breathe as being property, land to the Maasai was something everyone used, but could not be owned. Therefore, when the British, who did not understand the institutional structure of the pastoral economy, offered land without these social institutions in place, the Maasai rejected it. In a Western context this would be tantamount to a developer making an offer to a land owner to swap one parcel of land for another. How could the owner object if the new parcel was of equal or better acreage, slope, or soil quality? The owner might object if the parcel currently occupied had utility connections, an access road, and other improvements and infrastructure while the proffered one did not. The Maasai realized that the new land did not include the social infrastructure and improvements necessary for pastoralism; the British were oblivious to this. To the Maasai, land had to be made [*ibid.*], or at least be developed in a social sense. Legal institutions like property rights that allow ownership and

tion into the cash economy thereby allowing the British more control over this market.⁸

British Imposed Reserves and the Deterioration of Maasai Social Structure

The British creation and enforcement of Maasai land rights led to the hardening of ethnic boundaries which in turn contributed to the atrophying of social institutions essential to making pastoral commons work. The Masai Reserve was created as a "closed" reserve, meaning it was exclusively for members of the Maasai. This restricted access was believed by the British to be an essential element to the success of communally-held grazing land. With the loss of Kikuyu agricultural lands to white settlers, however, Kikuyu farmers entered the Masai Reserve and used some of the best dry-season range. Without such range, the pastoral commons were at risk. By the late 1920s Kikuyu encroachment was recognized as a problem by the colonial authorities. The solution preferred by the British was to evict the Kikuyu and other "squatters," thereby preserving the Masai Reserve exclusively for the Maasai.

The question of who belonged in Maasailand, at least to the British, was the same as who was Maasai. Who were the Maasai and who belonged in Maasailand, for the Maasai, however, were two separate questions; neither was answerable within the inflexible, categorical manner preferred by colonial bureaucrats and their administrative courts. As noted above, ethnicity was negotiable and ambiguous in pre-colonial times as was the "border" between groups. Before colonialization, Kikuyu farming enclaves were in Maasai territories, a necessary part of the pastoral economy's safety net. As a Maasai elder once said, "There was no Maasai camp without its Kikuyu" [Waller, 1993a, 241]. Some Kikuyu farmers even participated in the Moves to the Maasai Reserve. Not until the legal property rights were imposed and enforced by the British was ethnicity and tribal affiliation an issue.

Maasai and Kikuyu Rent Seeking as a Response

This exercise in maintaining ethnic purity soon became another case where European authorities, believing Africans belonged to distinct tribes, caused Africans to create well-defined tribes [*ibid.*, 237]. The British wanted to protect a Maasailand that had never existed by separating groups into tribes that had never been separated by an impermeable wall of ethnic identity. Africans soon realized the benefits of redefining themselves to fit into the ethnic taxonomy believed to exist by their colonial rulers. Thus by encouraging such efforts, *Pax Britannia* allowed the Kikuyu and Maasai to discover and participate in rent seeking.

Kikuyu could belong to the Maasai by marriage, by claiming to be adoptees, or by otherwise finding or "creating" a Maasai sponsor. Maasai themselves would not object to individual Kikuyu with some relationship to the Maasai as long as they were useful. While Maasai objected in general to Kikuyu squatters taking advantage of *osutua* and *enaashe* by overstaying their welcome, the Kikuyu presence seemed to be more bothersome to the British. To the British, the backward and gullible Maasai's

tolerance was causing their own victimization by the more cunning Kikuyu. After all, the Crown had promised to "protect" the Maasai and their land.

The colonial authorities tried to point out the serious implications of such tolerance. If property rights were not enforced, the Maasai could lose their land. By 1912, the Maasai had already lost half of their range to Europeans and were sensitive to further land alienation. If the Maasai wanted the Kikuyu to stay, the British suggested they lease or sell their land outright to the Kikuyu. Of course, the Maasai viewed either option as a further loss of land. In fact, a lease or sale would involve the abrogation of the Treaties of 1904 and 1912. And the treaties did offer some protection against additional colonial land grabs [*ibid.*, 233].

The Maasai sought to satisfy the authorities by becoming more Maasai. If they were to maintain their autonomy and secure their rights, they had to appear to be what the authorities expected, and at least in an ideological sense, separate themselves from the Kikuyu. In public, they collectively opposed the alien presence, but as individuals they continued their patronage of Kikuyus. This infuriated British administrators. In responding to Maasai demands to remove aliens, officials found that, as one Kajiado district commissioner put it, "Whenever you try to remove any individual...there is a storm of protest." All too often it seems a Maasai would cry, "That's *my* Kikuyu!" [*ibid.*, 241].

The British colonial government did not improve the working of the pastoral commons.⁹ One is reminded of Hayek's discussion of institutional evolution, where social order is the product "...of many men but not the result of human design" [1972, 37]. The British failed to see a social order different from their own. Complex social institutions that arose within Maasai pastoral economy were replaced with relatively simple legal institutions based on British ideas of the way things were supposed to work. The imposition of property rights did not allow for the complex social arrangements between the Maasai and Kikuyu. The Kikuyu no longer felt obligated to respect Maasai conventions and their relationship atrophied.

POSTWAR AND POST-COLONIAL PRIVATIZATION AND LOSS OF THE COMMONS

Postwar colonial policies toward the Maasai continued to encourage cultivation and to emphasize stock sales to avoid overgrazing. The fact that "overgrazing" occurred only in times of drought did not change the minds of those who maintained these policies. Officials continued to believe common ownership of land was the main cause of environmental degradation. Policies were enacted to solve the problem, and in 1953, the first individual ranch was created out of the Maasai commons. This ranch was placed under the strict supervision of the veterinary department and proved quite successful. Four other ranches were formed in the next few years. These ranches were created in areas with better rainfall and with land suitable for cultivation, removing from the commons dry-season pasture important for the Maasai. The individual owners of these ranches became relatively affluent [Campbell, 1993, 263].

The post-colonial government continued the same policy and ideological biases against pastoralism. The major emphasis was to provide legal title to the land [Mifsud,

1967, 62]. After independence, the Group (Land) Representatives Act allowed the formation of group ranches where members would have a form of common tenancy [Wanjala, 1990, 34]. The group ranches were originally intended to be comprised of traditional grazing areas with sufficient wet- and dry-season pasture. In practice, however, the ranches were only sufficient in times of adequate rainfall. In times of drought, the ranches continued to rely upon each other [Campbell, 1993, 264].

Group ranches were viewed favorably by most Maasai as a means of protecting their lands from non-Maasai farmers. Others hoped that group ranches would be able to use their land titles as collateral to borrow for such improvements as dips and boreholes to improve productivity [*ibid.*]. Others maintained that group ownership was intended eventually to lead to individual ownership [Wanjala, 1990, 57]. By 1981, the government policy was set to encourage the subdivision of group ranches. By 1984 twenty-nine of fifty-one group ranches in Kajiado District had subdivided or voted to subdivide. Those that did not subdivide were located in the drier areas of the district [Campbell, 1993, 266].

Other internal pressures contributed to the breakup of the group ranches. Individuals wanted to obtain individual title to use as collateral for access to credit. Credit can be viewed as a type of insurance [Urdu, 1990]. Further, the commons of the group ranch was going to be divided among more and more people as the population grew since under customary law children of members have interest in the land [Wanjala, 1990, 54]. The incentive was to break up the commons before its average capital value was diluted even more.

CONCLUSION

The tragedy of the commons is often thought of as the result of overgrazing: too many cattle devouring too much grass so that the commons is not sustainable. For the pastoral commons, this was caused by the dry-season grass being devoured. The Maasai case is different from the usual pastoral example; farming devoured the grass instead of cattle. The individual decision of a farmer to devour the grass with more farming is analogous to a herder deciding to devour the grass with more cattle. In both instances, the individual has little incentive to take into account the benefits of the grass to others.

The Maasai pastoral commons worked in pre-colonial times because of a complex institutional structure that controlled and coordinated access to resources as well as providing insurance against uncertain environmental circumstances. Rent seeking and a clash of ideologies with the Maasai led British colonial powers to weaken the management of the commons through the alienation of vital dry-season range and by imposing property rights that led to the atrophying of social institutions. The diminished long-run viability of the commons caused by colonialism only served to confirm Western ideology that private property rights were necessary. Ultimately, individual ranches were formed that took the better dry-season range necessary for the sustainability of the commons.

Privatization could not efficiently replace Maasai institutions given the complexity of pastoral coordination and environmental risk-management problems. The high

transaction costs of a system of similar, but explicit, private contractual arrangements among individuals would have been prohibitive.¹⁰ In a sense, privatization created externalities by disrupting Maasai social organization and institutions. These indigenous institutions were social capital necessary for the efficient operation of the pastoral economy. The loss of productive, although intangible, social capital is just as inefficient as the loss of productive physical capital.

Indigenous Maasai institutions made the commons work, but colonial and post-colonial regimes contributed to the loss of the best dry-season ranges. Some of the best pasture was lost before World War I to white appropriation. After the war, incursion by agriculturists took additional dry-season grazing land. The best remaining dry-season land has been, and is being, lost with the creation of individual property rights. In each instance, those who benefited had no incentive to take account of the collective returns.¹¹

The Coasian firm exists because it efficiently reduces the transactions costs of organizing cooperative behavior. The institutions of Maasai pastoralism were likewise efficiently able to reduce transactions costs of managing the commons. These institutions, with tacitly specified group rights, had the same virtues as a Coasian firm. The problem was that government policies essentially capped the size of the Maasai organization, diminishing the long-run sustainability of pastoralism. Private property encouraged and allowed the destruction of the pastoral commons. The commons was and is being destroyed not by individuals allowing too many cattle to consume the range, but by individuals consuming the dry-season range by converting it to other uses.

NOTES

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1. Hardin [1991, 178] acknowledges that the tragedy of the commons occurs only with open-access CPR's and that the title of his 1968 article should have been "The Tragedy of the *Unmanaged Commons*."
2. The Maasai structure successfully controlled access to the commons and also provided insurance against environmental uncertainties. These institutions and other aspects of Maasai social organization discussed in this article still exist today.
3. The latest historical and archaeological evidence indicates that East African pastoralists were never completely subsistence herders. Also, the definition of "Maasai" and what it means to be Maasai are highly problematic [Spear and Waller, 1993]. These issues are discussed in the text below.
4. See Thompson and Wilson [1994a; 1994b] and Runge [1992, 21]. Coate and Ravalion [1993] show in a game-theoretic context that informal reciprocal risk-sharing arrangements are feasible.
5. With warfare, the losers could be assimilated into Maasai society or take refuge with other groups.
6. For more detail see Waller [1988].

7. Most of the range was not economically viable in agricultural use. Although pastoralism yielded relatively high rates of return, this does not prove that land use was less efficient with farming. A historical analogy might be made with the American West and the conflicts between cattlemen and farmers. Only in that case both sides were involved with a cash economy and an evaluation of the relative economic benefits is potentially feasible. With the Maasai, such a cost-benefit calculation is not possible since they were not involved with the cash economy. This points to the need for appropriate institutions that internalize externalities among land parcels and allow for mutually advantageous exchange.
8. For the connection between mercantilism and rent seeking see Ekelund and Tollison [1981] and Soto [1989].
9. The change in institutional structure was clearly not a strictly Pareto improvement. The institutional change was imposed by force and the compensation offered was insufficient to compensate the Maasai.
10. Ellickson [1991] has shown how cattle ranchers in Shasta County, California are able to voluntarily deal with commons-type problems without resorting to explicit legal remedies. If cooperation is forthcoming from these rugged individualists of the current American West, we should not be surprised at cooperation among pastoralists in a more communitarian society.
11. After World War II, large tracts of the best dry-season range were also lost as the National Parks Ordinance of 1945 ultimately led to the creation of Nairobi, Tsavo and Amboseli National Parks. Wildlife habitat is another economic factor which, if accounted for, would increase the value of the commons, thereby making the loss of the pastoral commons more tragic. Wildlife habitat can be a complementary product of the pastoral economy. Large mammals have always used the pastoral commons as migratory paths. Ninety percent of their range is outside the national parks. The demarcation of individual land holdings may disrupt these paths, however, as land is put into agricultural use or fenced for ranching.

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