10 Unmaking the Commons: Collective Action, Property Rights, and Resource Appropriation among (Agro-)Pastoralists in Eastern Ethiopia

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In Ethiopian development policies, pastoralist areas have recently attracted more attention. Funding for (agro-)pastoralist development has increased significantly in the past decade. However, much debate and policy advice are still based on stereotypical representations of pastoralist areas as backward, prone to starvation and food insecurity, and hotbeds of violent conflict and contraband trade. Policy has also been based on modernist thinking among the ruling elite, which considers pastoralism an outdated mode of life that needs to be directed toward the path of modernity (that is, sedentary farming, urban life), and on technical interventions that focus on (partial) sedentarization of pastoralists (Hogg 1996; Moris 1999; Gadamu 2000; Yacob 2000; FDRE, Ministry of Federal Affairs 2002; FDRE, Ministry of Finance and Economic Development 2003; Hagmann 2006). A kind of highlander (sedentary farming) versus lowlander (pastoralist) dichotomy continues to prevail in public discourse and provides a discursive "clash of civilizations" between the ruling elite, which originated in the highlands, and the Somalis (and other pastoralist lowlanders), who consider themselves politically marginalized (Hogg 1997; Manger 2000; Gebre 2001; Abdulahi 2004).

This highland bias (Yacob 2000) in the state's policies and politics toward the pastoralist lowlands has resulted in land tenure policies that have largely ignored the specificities of the pastoralist lowlands (Gadamu 1994; Helland 2006; Abdulahi 2007). The highland bias considers sedentarization the precondition of progress in the pastoral rangelands (Moris 1999; FDRE, Ministry of Finance and Economic Development 2003). Typically, the state aided the expansion of agriculture into the lowlands but failed to regulate the tenure transformations that accompanied the diversification of rural resource use (Hagmann 2006). The arid and semiarid lowlands continue to be considered a reserve of "large tracts of unsettled land" to be developed through sedentarization and

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agricultural resource use, which is thought to be best done through irrigated cultivation along the river banks (Moris 1999; FDRE, Ministry of Finance and Economic Development 2003, 31, cited in Hagmann 2006, 210; Halderman 2004).

At the same time, pastoralist livelihoods are undergoing considerable social change. In Somali and neighboring regional states, property rights to land are undergoing significant transformation that goes hand in hand with dynamic economic changes. Periurban places in pastoralist areas have become important market locations for cross-border exchange of livestock products and trading goods. New economic elites invest in periurban places and their surrounding spaces, where land tenure relations shift from communal and collective use to enclosed and individual use (rights). The influx of displaced people from neighboring Somalia encourages opportunistic exploitation of ecological resources, such as charcoal production for export to Somaliland and the Gulf states. At the same time, the (agro-)pastoralist livestock economies continue to struggle for survival at the resource margins, hampered by repeated droughts in past decades (Samatar 2004; Devereux 2006; Hagmann 2006).

These dynamic shifts that (agro-)pastoralist resource regimes are currently undergoing are not confined to Ethiopia but mirror broader trends in pastoralist livelihoods in the Greater Horn of Africa (Lane 1998; Little et al. 2001; Salih, Dietz, and Ahmal 2001; Watson 2003; Mwangi 2007; Hagmann and Mulugeta 2008; Homewood 2008; Hundie 2008). Pastoral commons are undergoing processes of enclosure and territorial subdivision with major ramifications for communally managed water resources and traditional practices of collective action within clans or kinship groups and cooperation between different clan and ethnic groups. It is arguable that this trend toward "unmaking the commons" has significant implications for poverty reduction and income distribution: First, trends toward enclosure exclude marginal households and individuals from access to pasture and water resources or confine them to a shrinking communal resource base. Second, trends toward privatization and individualization of resource tenure undermine incentives for collective action, especially among elite groups as their benefits from using communally managed resources are diminished.

This chapter explores these dynamics in the pastoralist commons of eastern Ethiopia. We study current practices of managing water and pasture resources of pastoralist and agropastoralist groups at three sites in Somali Region, Ethiopia. We investigate how changing property rights regimes affect incentives to participate in collective action. Our studies suggest that in the process of unmaking the commons, benefit streams to significant water and pasture resources are individualized, whereas social duties to manage communal resources through collective action are externalized. Such patterns disturb customary practices of reciprocal resource-sharing arrangements, which in the past have been instrumental in managing risk in pastoralist livelihoods and unraveling intraclan

social obligations that have helped the poor. With regard to the conceptual framework presented in Chapter 2, this study illustrates how relationships between elements of the initial context and the action arena can lead to the emergence of patterns of interaction that have negative implications for the well-being of people, especially poorer, less powerful individuals in society. Specifically, kinship and the elaborate clan system (social assets) supply norms and rules that regulate communal access to water resources (natural assets) and allow flexible and reciprocal access, which helps communities to cope with frequent drought (environmental risk). However, water resource management (the action arena in this study) is challenged by difficulties in excluding nonmembers who do not participate in the regular maintenance of collective water facilities. This depresses overall incentive to invest in maintenance, because increased construction of private cisterns further depresses incentives to manage communal wells; wealthier herders in particular withdraw from communal management and focus on developing private water facilities. These interactions in the action arena result in patterns of interaction typified by reduced collective action for the maintenance of shared water resources and increases in the privatization and commercialization of water resources, including a monopolization of rents by wealthier herders. Poorer herders who cannot afford to pay for water are excluded from water access, an outcome that has unfavorable implications for their well-being.

This chapter highlights two thematic areas identified in Chapter 1. First, it provides a window into water access conflicts in dryland settings inhabited by pastoralists. And second, it illustrates how power dynamics (between the state and society and among community actors) can shape the trajectory of property regimes. The study further contributes to the broader literature on the interactions between collective action and property regimes. It demonstrates that robust systems of collective resource control can be destabilized by strong external pressures, resulting in more atomized and exclusive property arrangements that further undermine collective control.

Pastoralism, Property Rights, and Collective Action

Collective action can be understood as an action taken by a group of individuals to achieve common interests (Marshall 1998). These individuals sharing a common goal or interest are characterized by well-defined group membership or boundaries without necessarily encompassing the whole society. In pastoralist economies, collective action is essential for managing natural resources for livestock herding, in particular water and pastureland.[1] Property rights to natural resources do not necessarily imply sole authority to use and dispose of

1. As well as herding itself, though herding is not subject to the analysis in this chapter.

a resource (that is, full ownership), but these rights are often differentiated according to specific users and benefit streams. Property rights are relational in the sense that they define the rights and duties of an individual vis-à-vis a collective (Bromley 1991). In pastoralist societies, many resources are based on communal property rights, that is, resources are used by a group of users, normally the (sub-)clan that holds customary rights to a specified territory. Secondary user rights exist in territories held by other clans. Secondary access and user rights are subject to negotiation with the primary rights holders.

In the theoretical literature on collective action, a number of factors have been identified that induce cooperative behavior in natural resource management: asset ownership (Agarwal 2000; McCarthy, Dutilly-Diane, and Drabo 2004; Place et al. 2004), homogeneity of group members (Bardhan 2000; Dayton-Johnson 2000; Banerjee et al. 2001; Gächter, Herrmann, and Thoni 2004), mutual vulnerability of group members (Singleton and Taylor 1992), and dependence on the resources (Runge 1986; Wade 1987). In addition, Ostrom (1998) has emphasized the institutional arrangements that induce cooperative behavior. Elements of these arrangements include establishment of penalty systems and enforcement of rules (Gebremedhin, Pender, and Tesfay 2004), social norms (Cleaver 2000), and encouragement by peer groups (Kandel and Lazear 1992). Social norms and encouragement by peer groups are particularly important, because interaction among group members is not confined to activities in resource management but embedded in broader social networks. Samuel and Pender (2006), for example, demonstrate that even in the absence of monitoring, rule violations can be limited when rule obedience is based on mutual trust that others would do the same.

The mobile, transhumant mode of livestock keeping of (agro-)pastoralist livelihoods demands a flexible tenure regime based on nonexclusive use rights to pasture and water resources (Scoones and Graham 1994; Cousins 1996). Rules governing access to resources are flexible, based on multiple negotiations and rules (Thébaud and Batterby 2001). These flexible access regimes of property rights are practiced through social networks of kinship and economic exchange in which the settlement and mobility patterns of members of a group favor a spatially diversified risk-sharing arrangement to adapt to erratic climatic conditions (Vanderlinden 1999). These access regimes are based on the principle of reciprocity and balance the rights and duties of different groups (primary and secondary rights holders to specific resources). There is often an implicit assumption in the studies cited that livelihoods in those environments were static in their rules, norms, and practices (the so-called customary practices), although many pastoralist societies are undergoing dynamic processes of social and economic transformation. More recently, market-based, individualized arrangements have emerged in the form of contract grazing (Vedeld 1994; Ngaido 1999; Hagmann and Mulugeta 2008), whereby outsiders (secondary rights holder) pay grazing fees to insiders (primary rights holder), that

is, to those holding customary property rights, or secondary rights holders share benefits with primary rights holders that they derive from using the communal resources of another group (Bogale and Korf 2007).

Case Study: Pastoral Water Management in Eastern Ethiopia

This chapter presents a case study on pastoral water management in eastern Ethiopia, where embedded customary practices in the management and use of the pastoral commons involve various forms of collective action that are governed by a set of rules. These practices have evolved in parallel to environmental stress (drought), political vulnerability (violent conflict, precarious statehood), and economic threats and opportunities (for example, contraband trade). These kinds of stress and instability are endemic to pastoral lives in Somali Region and the borderland of Oromiya Region with Somali Region. They are not of recent origin, as is often implicitly or explicitly assumed, but their dynamics and significance to the lives and vulnerabilities of pastoralists have changed (Sgule and Walker 1998; Watkins and Fleisher 2002; Kassa, Beyene, and Manig 2005; Devereux 2006; Hagmann 2006; Beyene 2008).

Two types of resources are essential in the (agro-)pastoralist livestock economy: (1) pasture and fodder and (2) water (for livestock, humans, and farming). Mobility patterns across seasons and across different years need to take account of both resource types. A herder's possibility of transforming pasture resources into economic value depends on the quality of the pasture as much as on the availability of water, because both are complementary inputs to livestock production. Management of water sources and water points has become even more important due to erratic rainfall patterns. Collective action around water sources is point or location specific, that is, water sources are spatially fixed (immobile), whereas collective action relating to herd management requires spatial mobility and therefore different organizational forms of collective action.

We study three different technologies that make water available for various uses: ponds, cisterns, and wells. Each of these three technologies is governed by different sets of rules for use and practices. These will be discussed in the subsequent sections. We will discuss (1) the physical attributes of the technologies, (2) the rights and duties associated with them, and (3) the political economy of practices of collective action and property rights changes. The case study focuses on three districts (*woreda*) in eastern Ethiopia: Mieso (Oromia Region, formerly jointly administered with Somali Region), Kebribeyah, and Harshin (both Somali Region). These three sites represent different (agro-) pastoralist household economies and political settings (Table 10.1) that demonstrate the complexity of (agro-)pastoralism in the semiarid parts of eastern Ethiopia, which have reasonable market access. In Mieso, we have studied agropastoralists belonging to the Oromo ethnic group, whereas in Kebribeyah,

TABLE 10.1 Backgrounds of the three study sites

Location	Mieso	Kebribeyah	Harshin
Household economy	Agropastoralist	Agropastoralist	Pastoralist
Ethnic and clan groups	Oromo, Ittu, Alan, and Nole	Somali, Abskul, and others (Akisho, Bartere, and Ogaden)	Somali, Isaaq, and others
Kebeles[a] studied	4	2	2
Number of households interviewed	80	40	39
Pastoralist water management issues studied	Communal ponds, communal wells	Communal ponds, communal wells, private and communal cisterns	Communal wells, private and communal cisterns
Location	Borderland of Somali and Oromiya regions, close to highway and railway to Addis Ababa road	55 kilometers east of the regional capital, Jijiga	Borderland with Somaliland (30 kilometers away), trading routes mainly to Hargesa, Somaliland

SOURCE: Authors.

[a]A *kebele* is the lowest formal administrative unit, also termed a peasant association.

agropastoralists are from the Somali ethnic group, as are the pastoralists from Harshin, although the two belong to different clans.[2]

To collect data we employed a mixed-methods approach consisting of (1) focus group discussions using rapid rural appraisal techniques to familiarize the research team and the local population, to gain a basic understanding of community perceptions, needs, and aspirations, and to collect basic information on demographic and socioeconomic characteristics of the communities; (2) a detailed household survey in which we gathered data on the assets, incentives, and opportunities of households for resource management with the support of enumerators and experienced translators; and (3) key informant interviews with government officials, staff of nongovernmental organizations, local elders, and

2. Although the term *agropastoralist* also has a political connotation in Ethiopian politics (because it implies a linear progressive advancement from pastoralism toward agropastoralism and on toward sedentary farming, and this kind of thinking is believed to drive the mindset of Ethiopian policymakers), we use the term here to differentiate the household economies. An agropastoralist household is one that derives a significant part of its income from farming activities, whereas a pastoralist household may also do some farming but to a lesser extent.

other key informants to generate information on institutions of resource governance. Data were collected in two phases: in the first field phase (2004–05), the focus group discussions, the household surveys, and selected key informant interviews were carried out. The second field phase (July–August 2006) focused on key informant interviews to complement the prior data collection. Our empirical study provides a one-shot collection of perceptions, assets, and rules, with retrospective information on the past. It cannot deliver an in-depth longer-term perspective of historical changes over past decades, a weakness shared by many similar studies on livelihoods.

Pasture Management, Water Technologies, and Collective Action

In this section, we analyze collective water management practices related to three technologies (wells, cisterns, ponds). Based on our field data, we first describe the physical attributes of the technology, outline the rights and duties concerning collective action in managing these technologies, and analyze everyday social practices in collective action and how changes in property rights affect these practices. In the section thereafter, we provide an explanation for these findings.

Wells

Hand-dug wells are an important communal water source for livestock and human consumption. Wells are traditionally established, managed, and used by a group. They are often located far away from settlements at strategic places on the routes used for livestock herding. Traditional wells have been a common feature of pastoralist livelihoods in recent decades and centuries, and some wells have existed for more than 100 years as indicated by the reports of early travelers to the region. Although wells are a well-established technology for providing water for human and livestock consumption, elders report declining levels of maintenance of communal wells. These observations raise the question of why customary rules governing the maintenance and use of traditional wells that have worked for a long time have become less effective or efficient.

PHYSICAL ATTRIBUTES. Hand-dug wells vary in depth. A well's discharge depends on its depth and the users' ability to manage it. Digging deeper wells is costly and requires extensive labor, but maintenance of wells is easier than that of ponds. Elders from Mieso reported that in their locality, a properly managed well can serve its purpose for up to 60 years. This lifespan may differ at other sites. Wells, however, require high costs for extraction, which is mostly done by hand. Water extraction is highly labor intensive, in particular for watering animals. At our three study sites, Mieso and Harshen had shallower water tables compared to Kebribeyah, making well construction there less costly.

RIGHTS AND DUTIES. User rules are quite differentiated, but there are some commonalities across different locations and ethnic groups. At all sites,

the usual norm in defining watering priorities is "first come, first served," but users with a small number of livestock are usually given priority over large livestock owners because they require relatively little time to water their animals. Membership in a group using a well is usually defined based on a household's contribution of labor to the digging and maintenance of the well. Initial well diggers who do not contribute to maintenance in one season are expected to do so in the following season. Repeated noncooperation will lead to access restrictions. These internal rules are tailored to preventing continuous, rather than occasional, free riding. Internal informal sanctioning mechanisms are in place whereby members observe who has done maintenance, but this seems to be upheld as a principle rather than being practiced, because in real life it is difficult to distinguish users who have contributed to maintenance work from those who have not because the time of contribution is variable. Monitoring contributions is therefore virtually impossible. Therefore, only in principle is delineation of use rights based on the consideration of a group member's contribution to maintenance.

The norms of access to water are differentiated taking into consideration labor investment costs and (potential) reciprocal gains. In fact, the rules and norms governing access to and exclusion from wells are further differentiated beyond a cost–benefit logic that considers the contribution of users to well construction and maintenance. For instance, a household that contributes much to well maintenance may temporarily migrate away while other members are using the resource. In most cases, it appears that any contributing member from a village or subclan can use as much water as needed irrespective of the amount of labor contributed. Poor clan members often contribute significantly, although they use small amounts of well water. They do this to gain wider social recognition within the clan. The practices of granting access to well water further consider the livelihood interdependence among clan members and with outsiders.[3]

Although members reserve the right to exclude nonmembers from access to water, they do so in consideration of longer-term reciprocal relationships. Rights to access water are usually granted in expectation of future reciprocity. A good example of those reciprocal arrangements can be observed between the Ala and Ittu clans in Mieso, where the water tables are shallow and the labor contributions to well construction were not immense. These longer-term reciprocal relations are important because of the spatially differentiated rainfall patterns, which can cause water scarcity in one location but not necessarily in another location not too far away. In other locations where water tables are deep and well construction requires large labor inputs, access to water is usually restricted or denied for nonmembers. This indicates that reciprocal sharing is more common where initial investment costs have been low.

3. Outsiders (that is, nonmembers) are those neighbors or other (sub-)clan members who have not contributed.

SOCIAL PRACTICES. Communal well management and maintenance have faced several challenges since the late 1980s, especially after the downfall of the Siad Barre regime in Somalia, when violent fighting in Somalia brought a large influx of refugees to the Somali Region in Ethiopia. At many sites, elders reported declining water tables, indicating overextraction of water resources. The second challenge derives from more severe droughts in recent years, which have increased the pressure on well-endowed wells. In times of crisis and feed stress, pastoralist households seek to use grazing resources and well water based on kinship relations; for example, they will access water from a well where a relative is a member, that is, where the relative has contributed to well construction and management. Relatives from another territory are granted access to the well, although they have not contributed and are not members of the group. Mostly, elders facilitate and negotiate the decision to grant access, which is then collectively binding. However, when this influx of nonmembers with kin relations becomes extraordinarily common, it reduces the incentives of the members to contribute their share to the maintenance of the well. However, when the well is located far away from the settlement area, it is used only randomly and exclusion is difficult. Collective herding, that is, several households pooling their livestock for herding, further exacerbates the pressure on water wells (extraction labor largely surpasses surcharge rates), because even households that have not contributed can water their livestock as part of the larger pool of animals, thereby gaining access to water wells that are managed by others.

Broadly speaking, it is almost impossible to exclude nonmembers from using well water, either because the resource location entails greater cost of monitoring or because of clan and kinship relations. It is considered to violate commonly accepted cultural norms to exclude someone who is related to a member, even remotely. Furthermore, especially among Somali clans, entitlements to use water are often based on multiple clan relations and social obligations, which persist over generations. Contributions from nonmembers that date back several decades or generations may continue to entitle the family and clan members to access rights even though the current generation has not contributed. In effect, this creates a system of customary rules whereby even nonmembers gain rights of access to well water (see also Unruh 2005; Devereux 2006; Hagmann 2007). Among Somali clans it is not deemed appropriate to exclude someone in need, in particular in times of crisis. This means, on the other hand, that incentives for members to contribute to well management decline the more often crisis situations prevail and multiple users from different clans make use of communal water wells. Well water is thereby transformed from common property to an open-access resource, because the sanctions and enforcement rules for members cannot be applied to nonmembers, but nonmembers can still use the resource.

Cisterns

Cisterns or *birkas* are water collection reservoirs dug into the ground. They are either covered or remain open, because both options permit inflow of the surface runoff, but most cisterns are cemented and covered. In the study area, cisterns are constructed only in Kebribeyah and Harshin, the two sites in Somali Region. They are normally cemented. At these locations, *birkas* are often the main sources of water for livestock and humans (Boku 2000). The construction of *birkas* started in the 1960s but increased significantly after the 1970s due to increasing competition for water from communal wells between pastoralists and refugees from neighboring Somalia. Communal wells tended to deteriorate because of neglect; the massive in-migration of refugees weakened the ability of user groups to enforce their traditional rules (Sugule and Walker 1998). In addition, several aid agencies constructed *birkas,* but many of those have been abandoned due to poor maintenance. For example, many *birkas* in Kebribeyah disappeared due to conflicts over ownership and control after the South East Rangelands Project , the aid program that had constructed the cistern, left the location. Property rights disputes around communal *birkas* are widespread. The core question that interests us here is why clan elders fail to enforce user rights and duties, although water from *birkas* is essential for pastoralist livelihoods.

PHYSICAL ATTRIBUTES. Because *birkas* are cemented, infiltration and leakage are reduced. Evaporation can also be limited by covering the cistern. In Harshen, communal cisterns can be quite large and deep, with dimensions of $30 \times 40 \times 4$ meters, but private ones are typically smaller. The most expensive part of the investment is paying for skilled labor (masons) and the purchase of cement. Private *birka* owners either pay those skilled laborers in cash or transfer user rights to them in return for labor contributions. In the case of communal cisterns, all users contribute labor and other inputs, but often construction is subsidized by aid agencies (which distorts investment costs).

RIGHTS AND DUTIES. There are marked differences between private and communal cisterns. In Kebribeyah, private cisterns are dominant, whereas in Harshen, there are both private and communal cisterns. The owners of private *birkas* use them to generate revenue and thus are seen as profit-seeking entrepreneurs. Water users have to pay for water. Prices may vary from 5 birr per barrel in the rainy season to 20 birr per barrel in the dry season.[4] In some places, there are fixed rates for each animal species. Private owners normally allow their relatives to use *birkas* freely or levy a lower price. In the case of communal cisterns, those who contributed labor gain access and user rights. Moreover, revenue generated from water sales to nonmembers, such as livestock traders crossing the area and neighboring clan members, is shared among group members.

4. US$1.00 ~ 8.60 birr (May 2007).

SOCIAL PRACTICES. The proliferation of private cisterns in the 1980s and 1990s, in particular in Kebribeyah, brought water prices down and reduced incentives to maintain communal cisterns and wells because it was more convenient to buy water at low prices from private *birkas*. However, with the gradual decline of communal water points, private *birka* owners realized their strategic importance in supplying water. They subsequently increased the water prices. Because of a decline in technologies providing access to water, water became unaffordable during prolonged dry seasons, when it is scarce and prices are higher.

The move of wealthier clan members to construct private cisterns was a turning point in collective action for the joint management of communal water resources. Wealthier segments of the clan did not have further incentives to contribute to the maintenance of communal water points (cisterns, wells, ponds). In other words, it was the potential leadership group, the elite of the clans, who failed to deliver their share of collective action and thereby weakened the organizational capacities of the remaining clan members to act collectively for resource management. In effect, communal *birka* maintenance was considered an issue not for the whole clan but for the remaining clan members, who are often politically less influential and/or economically less powerful. This transformation of intraclan responsibilities and duties toward the pastoralist commons effectively changed the genealogical and social networks and connections that balance the rights–duties relationship inherent in customary rules.

Cistern owners have gained strong power over a strategic resource in the pastoralist economy, which potentially disfavors the poor and vulnerable clan members who depend on buying water from their cisterns (because communal water points have declined). Clan elders have often tried to negotiate with cistern owners in times of acute water scarcity to keep water prices at affordable levels for less wealthy clan members, but their action has not always been successful or only temporarily so. In Kebribeyah, clan elites have also tried to establish rules that forbid the construction of new private cisterns. Cistern owners stated that they were worried that additional cisterns would further disturb the grazing patterns and reduce the availability of grazing land, increasing the pressure on the remaining pastureland and leading to its eventual degradation. Cisterns also compete for watershed space, because they require a long water inflow channel. Those wishing to build new cisterns argued that the current cistern owners wanted to keep potential competitors out of the water market in order to be able to uphold water prices and secure oligopolistic gains from a limited number of cisterns.

Interestingly, in neighboring clan areas, similar agreements (not to allow establishment of new cisterns) can be found: in 1996, members of the Habr Yoonis clan in Gashamo District south of Kebribeyah made agreements not to establish new cisterns, as was done in the Ogaden and Isaaq controlled territories (Sugule and Walker 1998). The rapid spread of this rule has put pressure

on clan elders in Kebribeyah to follow suit. In effect, this rule may increase wealth disparities at the expense of more vulnerable clan members, because those who in earlier years established the rule to allow construction of private cisterns now exclude potential newcomers who wish to join the club. The bargaining power of poor and vulnerable clan members to influence the elites in rule making is thereby limited. The individualization and commercialization of water as a commodity rather than as a common (club = clan) good has increased not only wealth disparities but also power differentials within the clan. It is a case of elite capture.

Ponds

In the study area, ponds are shallow earthen reservoirs dug to capture and store rainwater runoff. Compared to cisterns, they have a lower water retention capacity and are normally not cemented. Pond construction is a low-cost water-harvesting technique propagated by the central government in various campaigns and regional programs of community-based water management. This type of water-harvesting technique is tailored toward increasing farm productivity and encouraging the production of high-value crops. Pond construction was a traditional water-harvesting technique of agropastoral groups even prior to the government's intervention, but the government programs reinforced those traditions.

PHYSICAL ATTRIBUTES. User groups need to provide labor for the construction of ponds as well as for maintenance (silt removal, fence construction and renewal, channel clearing). The capacity of ponds varies, on average, a communal pond contains up to 5,000 cubic meters of water, while privately constructed ones range from 150 to 200 cubic meters. If effectively managed, such ponds can retain water up to six months after the end of the major rainy season and the water availability from them is quite predictable and reliable. At the same time, infiltration losses are large because the walls and surfaces of the reservoirs are generally not cemented. Even cemented ponds experience water losses because the poor soil quality leads to cracks in the cement and resulting seepage. These technical limitations are site specific and predominant in Mieso. To reduce infiltration losses, the government propagated plastic sheets that were supplied for user groups on loan basis. However, most plastic sheets are used in private ponds rather than communal ones, because the sheets are not sufficiently large to cover larger communal ponds.

USER RIGHTS AND DUTIES. A communal pond is a common property of *kebele* residents.[5] The Ethiopian government has made great efforts to encourage the construction of communal ponds as a means of water harvesting. According to the specifications of most government-initiated programs, user groups have the duty to contribute labor during construction and for maintenance.

5. A *kebele* is the lowest formal administrative unit, also termed a peasant association.

Noncontribution will result in oral warnings and financial fines. When a user remains absent during a day of communal labor, a warning is issued after the first day of absence. If he or she fails to contribute repeatedly, a fine will be imposed. The amount of fines is set in advance to avoid bias and ensure fairness. But it is subject to revision depending on a defector's health, physical ability, and wealth; the rich pay higher fines. Enforcement is exercised through the "team leader"—a person selected from among the users—with the support of elders. The team leader reports about payment of fines at village meetings. Poor users who cannot pay fines may compensate by providing double amounts of labor in the future. These are the kind of rules that exist "on paper"; they provide some flexibility in meeting the specific needs of poorer group members, but enforcement is often difficult due to other social obligations and reluctance to punish.

In principle, all members who have contributed have the right to use water from communal ponds, but access to water may be prioritized among users according to certain criteria, such as the numbers and types of animals to be watered or human versus livestock consumption. The rules (or enforcement of rules) for those who fail to contribute differ from place to place. In some locations, those who do not contribute will be excluded from water use. In other places, rather than excluding defectors, users collectively push defectors to contribute because exclusion is difficult to enforce due to the organizational challenge of monitoring water use and social obligations that may make it difficult to refuse water use to a member in need. Many communal ponds are located at considerable distances from places of residence, often in the middle of crop fields. Most of them are not fenced off, so stray animals can water in the ponds and exclusion is difficult to enforce without guards, making rule enforcement costly.

SOCIAL PRACTICES. In our sample, ponds were constructed by agropastoralists only in Mieso and Kebrebeyah. Pond water allows some intensive farming and livestock-keeping activities but only in locations with good market access and natural conditions conducive to water harvesting. A number of agropastoralist households have started cultivating high-value crops (vegetables, fruits, *k'hat*) using water from the ponds. Other agropastoralist households use water for livestock fattening in conjunction with intensive feeding (using stalks and a cut-and-carry system), because the road to Addis Ababa provides good market access for livestock. Where pond water is used for crop farming, oxen ownership serves as an incentive to contribute labor during pond construction. However, those (asset-poor) households without oxen often rent oxen from wealthier farmers in order to ensure their contribution to pond construction. However, not all asset-poor households are able to pay for the rental, and those who cannot are potentially unable to derive benefit streams from their rights to use water; they are effectively excluded from these entitlements.

Government-led programs, such as those for water harvesting, tend to construct an additional organizational level (for example, the "team leader")

and layer of rules that coexist with the established clan rules. Users prioritize clan rules and clan relations over rules and structures developed in the state-driven programs, because those programs are present for a short period of time only, whereas the clan, clan rules, and genealogical relations will prevail. This makes enforcement of rules difficult, because it requires the consent and tacit or explicit support of clan elders. Where the economic benefits that can be appropriated from ponds is significant, for instance, due to good market access, clan elders have a greater incentive to support the construction and management of ponds.

Multiple Technologies, Multiple Uses, Multiple Rules

In the (agro-)pastoralist economies of eastern Ethiopia, we found different technologies with their own sets of rules and practices to make water available for human consumption, livestock watering, and irrigation purposes. Differential sets of rules in use have emerged around these different technologies depending on physical attributes, social relations, and economic incentives. Table 10.2 summarizes the attributes of the three technologies (ponds, cisterns, wells) in use among (agro-)pastoralists across the study sites.

Our research suggests that incentives for collective action in managing water technologies depend on economic cost–benefit considerations as well as on social norms. In the cases of all three technologies discussed here, exclusion of nonmembers is difficult to enforce, either because it is impossible to monitor water access or because it is socially unacceptable to exclude nonmembers. This reduces the incentives to contribute to collective action in maintaining those infrastructures, a problem particularly pertinent in the case of communal wells. Although in the case of ponds reciprocal and social obligations instill a kind of inclusive access practice, it is the opposite in the case of cisterns, where wealthy clan members have appropriated the technology of water use and established an oligopoly of cistern owners that has imposed new rules that forbid others to construct their own cisterns. This results in a form of elite capture of former common property through individualization of rights that comes at the expense of poorer segments of the clan and increases economic inequalities within clans.

Our research has shown that poor households may also practice enclosure, which offers them control over some types of benefit streams (such as cultivation, charcoal burning). Overall, however, the enclosure and privatization process excludes many poor households from access to resources that are essential for livestock keeping (for example, access to water from private cisterns, for which they have to pay high prices). Some of the practices linked with privatized benefit streams are environmentally and economically unsustainable in the medium term. For example, many poor households use their enclosed land to sell its charcoal resources to private traders. This promises a short-term wind-

TABLE 10.2 Comparison of artifacts for water management at the three study sites

Artifacts	Ponds	Cisterns	Wells
Sites	Mieso, Kebribeyah	Kebribeyah, Harshin	All sites
Uses	Livestock, irrigation	Livestock, water sales	Livestock, drinking water
Resource location	On farm	Communal and enclosed land, close to settlement	Communal land, far away from settlements
Labor inputs	Constructing channels, silt removal, fencing, planting perennial trees	Digging, cementing, maintaining cracked walls, sharing costs of skilled labor	Digging, covering, and opening; preventing inflow of runoff; fencing
Physical attributes	Poor water retention capacity, water loss through evaporation; require a watershed to capture water inflow	High investment costs, lower amount of seepage; require a large watershed to capture water inflow	High investment costs (digging) but durable if well maintained; point source
Access rules	Members only; unclear or underspecified user rules	Members only, reciprocal use for nonmembers, water sales to nonmembers	Members; nonmembers on a reciprocal basis; first-come, first-served rule; priority given to small herds
Enforcement	Enforcement through fines but exclusion difficult in practice	Exclusion relatively easy to monitor (close to settlement)	Exclusion from water use nearly impossible due to cultural norms and kinship obligations
Property rights	Club good but exclusion difficult to enforce	Private or communal	Attenuated due to reciprocity obligations
Management challenges	Large water losses	Conflict of interest between established cistern owners and potential new ones	High extraction costs, poor maintenance, disputes over who comes first
Effects on livelihoods	Incentives for crop production	Elite capture of water resources	Domination of reciprocity principle

SOURCE: Focus group discussions and interviews with elders and district experts.

fall gain but degrades the pasture basis and deprives users from future benefit streams.

Reciprocity and Social Obligation

The literature on pastoralism in the Greater Horn of Africa generally emphasizes clan membership as a precondition for access rights to pasture resources, which are confined to a clan's territory (Lewis 1999; Gebre 2001; Getachew 2001; Hagmann 2005). Access to pasture resources beyond a clan's territory requires negotiation and interclan cooperation (Unruh 2005). Interclan cooperation is based on kinship relations and reciprocal resource access; that is, access to clan territories and their resources is granted in the expectation that similar treatment will be returned by the receiving clan or another clan in similar conditions (this mostly occurs during dry season). A complex customary set of rules regulates access to grazing land and pasture resources for secondary users, that is, neighboring clans that ask for permission to use the communal grazing resources of another clan. Interclan kinship relations that exist because clan members have relatives within other clans with distinct territories are crucially important in these negotiations. These lineages and networks across clans or subclans have played an essential role in establishing the reciprocity principle (Lewis 1999; see also Unruh 1995). Somali pastoral society is organized on a genealogical basis, with lineages and their segmented units forming the basis for defining rights to clan territories and their communal grazing (and water) resources. Access to communal grazing is based on membership in a lineage responsible for and capable of defending such rights against competitors. Based on interclan genealogical linkages, co-users from other clans in the clan territory can therefore hold primary user rights and become important agents in negotiating secondary access rights for their fellow clan members who lack those genealogical linkages (Gebre 2001; Hagmann 2005, 2007; Unruh 2005; Beyene 2009).

Our research suggests that the spread of private enclosures in Kebribeyah and Harshen undermines the reciprocal system of granting access to grazing resources. At many places in our study area, clans have subdivided their territory and distributed the land to individual private rights holders or influential clan members have violated clan rules and created "facts on the ground" by unmaking the commons and constructing enclosure fences for cisterns or pastures. This reduces the overall availability of communal resources (pastureland and water) that could be subject to reciprocal exchange in negotiations with other clans over reciprocal sharing.

This situation becomes clear when considering the process of negotiating interclan reciprocal access arrangements. In our study area, each clan possesses primary user rights over its own clan territory and is expected to confine herd movement within the boundaries of this clan territory under "normal" condi-

tions. Secondary user rights, that is, the right to use the communal grazing resources of a neighboring clan's territory, are considered adequate only in times of crisis when the clan's own pasture resources are insufficient due to drought or are inaccessible due to violent conflict with other clans. In our research, clan elders explained that interclan negotiation rituals encompass discussions of the rights to use communal water points, the length of stay in a clan's territory (the extent of grazing rights), the number of livestock to be admitted, agreements not to trespass enclosed lands of hosting clan members, complete payment of "blood money" (*mag*), and assurances that the livestock entering the clan territory is healthy (to avoid the spread of disease).[6] Clans usually grant access rights in prolonged dry seasons when grazing reservoirs have been used up. Enclosed pastureland and privatized water sources (such as cisterns) are not subjected to these interclan negotiations but require individual market-based transactions (rental contracts) between individual households of different clans. This reduces the leverage of clan elders in negotiations, makes mobility patterns across seasons and years more complicated and restricted, and decreases the options for adapting to and coping with drought conditions.

The problem of enclosure is not confined to our study areas. Indeed, a significant part of clan territories in northern Somali Region has become enclosed, that is, privately owned, and therefore is not subjected to interclan negotiations (Hagmann 2007). Other studies conducted in the Ethiopian context similarly suggest that changes in land tenure regimes favoring privatization and individualization, mostly of land, have discouraged mobility and undermined reciprocal sharing arrangements (Helland 1997, 1999, 2006; Tache 2000; Gebre 2001; Getachew 2001; Abdul, Swallow, and Kirk 2004; Hagmann 2006; Hundie 2008; Mulugeta and Hagmann 2008; Bogale and Korf 2009; Beyene 2010a, 2010b). Further, Mulugeta and Hagmann (2008) suggest that enclosure, individualization of tenure, and privatization of access rights—the unmaking of the commons—was significantly reinforced by the administrative decentralization of the Ethiopian state. Physical violence is the result of individual and group attempts to increase a clan's territorial boundaries in order to become less dependent on interclan reciprocal arrangements.

Our research suggests another problem emerging from the unmaking of the commons that is less discussed in the literature: access to grazing land is effective only if granted in combination with access to water. Through privatization of water resources, access to grazing land and to water becomes subject to negotiations on different levels. In interclan negotiations, the right to communal grazing land is generally granted in combination with access to communal water sources but not in combination with access to private water sources, which requires individual contractual arrangements with the owners. Where

6. Blood money is compensation for persons killed or wounded in interclan strife and is paid in cash or in kind to the relatives and kinship group of the victim (Hagmann 2007).

water is not available from communal sources, secondary users have to negotiate individual access to private water sources (and pay for the water). This means that the granting of grazing rights (including the right to use communal water sources) on an interclan level may not be sufficient for poor pastoral households to transform their access rights to pasture into economically viable user rights because of inadequate access rights to water. In our research area, this situation triggered a differentiation of secondary users between those wealthy enough to buy water from private cistern owners and those poorer clan members who could not afford to buy water from private cisterns.

Conclusions

Regimes of property rights to pastoral resources have undergone dynamic changes in eastern Ethiopia. Our research has shown a pertinent trend toward privatizing and individualizing benefit streams to resources, whereby rights to those benefits are individualized but the duties—for instance, to maintain communal resources—are externalized. This process of privatization, individualization, and enclosure, or the subdividing of the pastoralist commons (Mwangi 2007), has become a widely observed phenomenon in pastoralist societies in eastern Africa and in the literature is often attributed to the commoditization and diversification of resource use, governmental interventions, unclear tenure legislation, and ambivalent clan rule (Niamir-Fuller 1999; Manger 2000; Salih, Dietz, and Ahmed 2001; Unruh 2005; Abdulahi 2007; Mwangi 2007; Beyene 2008, 2009; Hagmann and Mulugeta 2008; Homewood 2008; Hundie 2008). This literature generally suggests that the individualization and privatization of pasture regimes disturbs reciprocal resource sharing between different clans and also herd mobility. In our case study in eastern Ethiopia, we found similar problems, but our focus was on the effects of individualization and privatization on customary practices of collective action and intraclan social obligations in managing pasture resources.

Our research has shown that property rights to land and its multiple resources (for example, pastureland, water, wood) are central in defining incentives for collective action. Even genealogical rights–duties relationships of reciprocal obligations—the "clan" factor in Somali society—come under scrutiny when privatization and individualization of property rights take place. In our study area, private cistern construction has reduced incentives to maintain communal wells and water points, as has land enclosure. Both patterns of individualizing access rights have disturbed the reciprocal resource-sharing arrangements between different clans and have also induced interclan disputes and restricted mobility patterns and thereby coping strategies in times of resource scarcity. The de facto privatization and individualization of property rights has provided some clan members with secure access to resources and additional income, for instance, by selling production inputs to other users. In many

instances, poor households have been excluded from such benefit streams or have been burdened with additional costs to access pasture resources. For example, in some places in our study area, poor households were increasingly forced to buy water at private cisterns because communal water points were dilapidated. Owners of private cisterns did not have an incentive to contribute to collective action in managing these communal resources.

The broader conclusions that can be drawn from our case study are therefore that the unmaking of the pastoral commons unravels patterns of reciprocity and social obligation, both intraclan and interclan. In some cases, unmaking the commons may lead to entitlement failures. On the interclan level, the use of reciprocal customary mobility patterns as a strategy of risk coping is becoming more difficult, increasing the risk that marginal pastoralist households are experiencing in the face of climatic variability. Although wealthier households are able to pay for access to privatized resources (for example, water, contract grazing), asset-poor households cannot afford to do so and experience entitlement failures and a shrinking of their coping capabilities. In particular, although interclan negotiation may entail access to pasture commons, asset-poor households may fail to capture the associated benefit streams when water access is privatized and prohibitively priced. In such cases, clan members may have endowments to some commons resources (here pasturelands) but will not enjoy entitlement to actual benefit streams because of exclusion from others (in this case, water).

Policy Implications

Any kind of policy recommendation needs to be read within the context of the Ethiopian state's politics of pastoralist development and "ethnic federalism." Past and present land tenure policies have tended to discriminate against the communal interests of pastoralist communities (Helland 2006; Abdulahi 2007; Hagmann 2007). The federal government's policy has not yet resulted in a balanced land tenure policy on regional levels that would account for both customary modes of communal land use and emerging trends in privatized land use (Helland 2006). The latest version of the federal Rural Land Administration and Land Use Proclamation 456/2005 reinstates the doctrine that all land is state property with ambivalent effects on the communal rights of pastoralists: "The Government being the owner of rural land, communal rural landholdings can be changed to private holdings as may be necessary" (para. 5, 3). This means that communal land can be easily appropriated for private purposes and user rights be individualized, thereby substantially weakening communally held rights.

Collective action on a local scale—cooperation among a group of users of communal resources—is insufficient to counter the unmaking of the commons. It needs to be complemented by a land tenure policy that ensures the rights of

communal users. Privatization and individualization of property rights to pastoral resources often comes at the expense of less endowed pastoralist households that lack access to clan power and financial resources to even out the diminishing returns from communally managed resources. Externally funded programs for collective action to manage communal resources are often insufficient to effectively support the poor, especially when they are paralleled by such a trend of privatizing water (and subsequently pasture) access by influential, wealthy clan members. The Ethiopian government's program that supports the construction of communal ponds for water harvesting is a good example of this dilemma. This program addresses poorer households but often fails to provide them with viable access to water. Ponds suffer from technological deficiencies (high seepage rates). In our study area, ponds have been economically viable only in a few places with good market access where vegetable production has been possible.

The Somali Regional State in Ethiopia has given the powers to define communal versus private user rights to clan rulers. Our study shows that this has had ambivalent effects; elite capture has encouraged some clan elites to drive forward a politics of enclosure, which excludes asset-poor households from benefit streams, encourages unsustainable land use practices (for instance, charcoal production as windfall gain), and disturbs customary reciprocity patterns among and between clans. The disturbance of these patterns has triggered violent disputes over resource access, as Hagmann and Mulugeta (2008) have shown. This indicates that clans and customary rule systems are not "innocent" or best adapted to environmental and social requirements, nor has the state found a constructive role yet in the encounter between pastoralism and clan societies. It is the redefinition of this relationship that is needed most urgently to deal with the unmaking of the commons.

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