

HOW THE EAST AFRICAN PASTORAL NOMADS, ESPECIALLY THE RENDILLE, RESPOND TO THE ENCROACHING MARKET ECONOMY

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ABSTRACT The maximizing strategy for livestock herding of the East African pastoral nomads has been accused as irrational and thereby destroying the ecological balance of rangeland. Carrying capacity and pastoral productivity promoted in state policies, however, are arbitrary concepts. This paper finds the maximizing strategy of indigenous herders more adaptive to the precarious and drought-ridden tropical arid zone, using the Rendille herding as the main example. The Rendille further buffer themselves from market economy through manipulation of the local dual economy and the symbiotic personal relationship with the local livestock dealers.

Key Words: East African pastoralism; Maximizing strategy; Rational herding; Local dual economy; Social transactions and transfers of livestock.

INTRODUCTION

The pastoral nomads in East Africa breed camel, cattle, goats, sheep and donkeys altogether, which is called the multiple-stock herding. The balance among the various types of livestock varies according to regional ecological differences. The principal stock shifts gradually from cattle combined with small stock to camels combined with small stock, as aridity increases. Also, the relative degree of the social and cultural values vested in livestock is different from society to society. The Eastern Nilotic Maasai, Samburu, Ariaal, Turkana, Karimojong, Jie peoples, and the Eastern Cushitic Boran and Dasanetch peoples value cattle more than camels, and conversely, the East Cushitic Somali, Rendille and Gabbra peoples value camels more than cattle. In all the pastoral societies, however, herders make for their own living within the socio-ecological framework of the openland. Living as they do symbiotically with their livestock, their rhythm of life is dominated by the needs of the animals. Anything that affects the life of flocks and herds affects humans just as acutely.

These pastoral nomads live off their livestock who provide them with the pastoral diet of milk, blood and meat. Far from treating their livestock merely as sources of meat, milk, and cash, they display an obsessive reverence for their livestock. They use them in marriage settlements to acquire wives and children, as compensation for injuries and death. Livestock are used in social exchange to adjust and activate personal relationships. Also, they offer livestock to gods and spirits, and communicate

with the spiritual world. With these and a multitude of other social and symbolic significance, livestock represent the ideal prestige wealth, the measure of a man's substance and success.

However, pastoral nomads' comprehensive and obsessive concern with livestock is accused as pre-modern, obstructing the development of state economy which aims to incorporate livestock into market economy (Herskovits, 1926; Murdock, 1959; Lomax & Arensberg, 1977; FAO, 1980; Lamprey, 1983). In Kenya, so many rangeland specialists have criticized the maximizing strategy of indigenous herders as leading to the destruction of ecological balance through overgrazing and overstocking. These specialists presume that livestock should be bred according to the carrying capacity of rangeland. Therefore, every policy effort has been to maintain ecological balance by culling "excessive" livestock from the herd that outgrew the optimal size.

This rangeland policy was already in effect during the colonial times. The government changed taxation to be paid from livestock to money. At the same time, herders were assigned and restricted into their "tribal" zone. Furthermore, livestock were extracted from the indigenous herds on the grounds that overstocking should be avoided (Dalleo, 1975; Sobania, 1980). The independent government has followed the colonial policy of market economy for pastoral production. The IPAL (Integrated Project in Arid Lands) project, started in 1976 in Marsabit District, was put in effect to integrate the local pastoral production into state-wide market economy (Fratkin, 1991). Many herders were employed by this project and itinerant auctions and shops were facilitated to advance consumerism. Moreover, the livestock auctions were frequently held in order to enforce livestock supply from the herders. Consequently, opportunities for wage labour and commodity exchange increased, and market economy of livestock was promoted by the IPAL project.

A policy to promote livestock supply to the market intended profit expansion through market exchange. But such economic transactions were principally different from indigenous livestock transactions that aimed to promote social coexistence through reciprocal interpersonal relationships. It is a serious problem how the indigenous transaction is balanced with the market economy transaction because it lies at the core of how subsistence economy and credit transaction should be. This essay reexamines the concept of carrying capacity used to advance so-called rational production of livestock for market economy. By illustrating the functions the social transactions of livestock play in the social life of the herders, I will show why it is difficult to integrate nomadic pastoralism into market economy.

ECOLOGICAL CARRYING CAPACITY AND HERD DYNAMICS

I. Carrying Capacity of Rangeland and the Optimal Herd-Size

Market economy policy depends on surplus livestock steadily supplied to the market under the condition that optimal herd-size is kept in balance with the carrying capacity of the rangeland. This idea is derived from ranching management in the temperate zone, where livestock is bred within an enclosure with waterhole and pas-

turage. In this case, a rational target is that the feeding efficiency of livestock should be in balance with animal growth to cut down feeding cost. In contrast, nomadic herding is accompanied by rearing livestock and movement of humans and livestock, and does not work with the efficiency of the man-made environment.

The concept of optimal herd-size was emphasized by Hardin in the thesis of "tragedy of commons" (1968). He had two presuppositions. First, the pasture of joint ownership is freely open to private use. Second, livestock are owned privately by individuals. The cost increase of a communal pasture for a head of livestock should impose equal burden on the individuals who share it. But each individual tries to maximize his herd-size, because each monopolizes the profit earned by increasing the herd-size. This leads to overgrazing, exceeding the limit of carrying capacity of the pasture. Hardin thus denied the communal system of the pasture.

But, Hardin has come under criticism (Horowitz & Little, 1987). First, the presupposition of communal resources for individual freedom is completely unrealistic. The pursuit of private profit does not escape communal control (Tausig, 1980). Second, the carrying capacity of the pasture is difficult to determine precisely, and it is a vague and unpractical concept in the tropical zone where the livestock population fluctuates violently. Moreover, it is doubtful whether livestock grow to the limit of carrying capacity in reality. Dietz (1987), who studied the correlation between livestock population and climate change in Pokotland of western Kenya, concluded that overgrazing never occurred in reality, because livestock died in periodical droughts, before ever reaching the limit of carrying capacity.

Furthermore, the concept of optimal livestock population is not realistic in the drought-ridden zone of arid East Africa. When Turkana land was devastated by the severe drought of 1979-81, so many livestock died a natural death, and many people starved. People were forced to give up herding. Only the households with relatively many livestock managed to weather this drought (Itani, 1981; Ohta, 1980). This demonstrates the adaptive meaning of maximization strategy.

It has been reported that herding has higher pastoral productivity than ranching. Cossins (1985) concluded that herding productivity in the Boranland of southern Ethiopia was higher than that of ranching in Australia with a similar climate to Boranland. The pastoral Boran produced four times as much protein and six times as much food energy as the Australian ranching in terms of productivity per hectare. Also, the Boran herding was more favorable than the Australian ranching in terms of in-put cost. One-kilogram of protein was produced at the monetary cost of 1.9-3.9 US\$ by Australian ranching, and of 2.0 US\$ by Laikipia ranching in Kenya, whereas the Boran herders produced 1 kg of protein at the cost of only 0.1-0.3 US\$.

Per capita productivity is generally presumed higher for ranching than for herding. However, comparison by production per unit area of protein quantity and food energy and the amount of monetary investment, herding turned out to be more productive than ranching. Thus, different conclusions can be drawn with different measures of productivity. It is wrong to apply the general idea of the optimal herd-size, which is standardized for the temperate ranching system, to the herding system in the arid land with unstable and drought-ridden conditions.

II. Multiplication and Reduction of Herd-Size

The East African herd compositions by age and sex are fragmentally available (Ohta, 1982; Sato, 1980). Based on 20 herds of Rendille camels, an average herd-size was 49 heads of camels, including stud-camels (3%), ox-camels (15%), cow-camels (62%), juvenile camels (10%), and calf-camels (11%) (Sato, 1980). An average herd of camels of the Ariaal in the southern part of the Rendilleland had similar composition to the Rendille's (Fratkin, 1980). The compositions of cattle herds in four cattle-raising societies of the Turkana (Ohta, 1980), the Karimojong (Dyson-Hudson, 1966), the Bodi (Fukui, 1979), and the Lokoro (Kurimoto, 1981) revealed that the percentage of oxen increased from 1 to 23% as the average herd-size increased. This means that more surplus oxen are kept in larger herds. Oxen are used in household consumption, social transactions and sales. Beyond the number of heads necessary for the socio-economic life, oxen are neither culled entirely or increased, but are kept as surplus at hand. On the other hand, as herd-size increased from 20 to 181 heads, the number of the cows to a bull increased from 6 to 11 heads, and conversely the percentage of cows in a herd decreased from 43 to 34%, and that of bulls from 7 to 3%.

Every herd of any size is assigned at least 1-2 heads of bull, whereas bulls are not assigned to a herd in proportion with the number of cows. A bull can copulate with as many cows for breeding. Comparing the herd-size of camels with that of cattle, the camel herd is smaller than the cattle herd. The ratio of breeding males is lower in the camel herd than in the cattle herd. The ratio of castrated animals and that of adult females is higher in the camel herd than in the cattle herd. It is because the ox-camels are reared for meat, cash and packing that more castrated males are kept at hand.

The ratio of cow-camels is higher than that of cows because cow-camels have a longer reproductive period than cows. A cow gives birth to its first calf at 3-4 years of age, and continues giving birth for approximately 10 years thereafter. The cow-camel reproduces at 4-5 years of age, and continues giving birth for approximately 20 years thereafter. Thus, adult females are more abundant in the camel herd than in the cattle herd.

The annual rate of herd growth is estimated at 3.4% in the camel herd (Sato, 1980), 4-10% (Allan, 1965) or 5.6-14% (Spencer, 1965) in the cattle herd. Dahl & Hjort (1976) simulated the increase rate of livestock variety by using many suppositions, and showed that a little change in the variables such as the year of age for the first childbirth, birth rate, and death rate would result in a great fluctuation of herd population. Such drastic changes threaten the herd population dynamics in East Africa with periodical droughts. When a herd population declines due to a drought, the death rate of juvenile and old-aged animals increases, and the birth rate also decreases. Also, the off-take rate of animals increases with household consumption and sale.

According to Itani (1981, 1982), when the Turkana experienced the devastating drought of 1979-81, goat population decreased by 41%, sheep by 7.4 %, cattle by 70 %, and camels by 41%. The Turkana made every effort to keep the cattle they culturally esteem the most. This tendency was also pointed out in the Somali society

with its importance attached to the camel (Cassanelli, 1982). The recovery process of the herds, has been reported for the Isiolo Boran (Hogg, 1980) and the Maasai (Meadow & White, 1979). The annual rate of increase was 28% a year for the cattle herd, three years after the 1975-76 drought in the Boranland. In the Maasailand, it was at 24% for the cattle herd in 1964, three years after the 1960-61 drought, but it declined to 7% in 1968. Herd-size is subject to drastic fluctuations by the drought. Furthermore, the kind of livestock kept at the time of the drought is determined by the cultural value. The higher the cultural value for a livestock species, the more effort is made to keep them. The model of optimal herd-size should be applied to actual herds with consideration of cultural and time factors.

ECONOMY AND SOCIETY OVER LIVESTOCK

I. Economic Aspect of Livestock

Pastoral nomads live on the pastoral diet of milk, blood and meat from their livestock. Yet not all the members of a household can be supported with their livestock, depending on the number of livestock (Spooner, 1973; Dahl & Hjort, 1976). Some herders (the Samburu) thus supplement livestock products by imported grain of maize or sorghum. Others (the Rendille) vary their diet between settlements and herding camps. They have mainly livestock products in the herding camps and eat more grain in the settlements (Sato, 1984b).

Milk is the most stable food of the livestock products. It is consumed as fresh and sour milk, and consumed with tea, blood and grain. The milk yield is determined by the quality and quantity of pasture and the lactation cycle of the milking animals. Herders milk the lactating animals according to the milking schedule, allocating the milk between themselves and the calves. According to Field (1980), the experimental camels in the Rendilleland yielded the largest quantity of milk 3-7 weeks or 1-2 months after childbirth. The milk yield of 1-2 months after childbirth counted as 1 unit decreased to three-fourth in the third month and to a half during the 4-6 months.

The Rendille leave the calf-camel to suck all its dam's milk for a month after childbirth. Then, they share the milk with the calves. A dam-camel has four nipples, and is milked respectively from two nipples twice a day in the morning and at night for the second month after childbirth. In other words, a calf-camel shares a half of the milk of its dam with the Rendille. During the 3-8 months after childbirth, the Rendille milk the dam-camel from two nipples in the morning, and from four nipples at night. After 9 months, milking is done from four nipples both in the morning and at night, and for the first time the calf-camel is kept from finishing off what milk is left.

According to the Rendille milking schedule, about 38 (three-eighth) - 56% (nine-sixteenth) of the total amount of milk lactated by a dam-camel is consumed by the people. Whereas the milk yield varies with the lactation cycle, human milk consumption is not determined by the lactation cycle. Rather, with the milking schedule, the Rendille secure about 40-60% of the total amount of lactated milk.

In general, the dam-animals lactate more milk in the rainy season when good pas-

ture is available, but less in the dry season. Under a severe drought in Turkanaland, 200 g of milk a day per dam was estimated as an average for the cattle, and 1,400 g a day per animal for the camel (Itani, 1982). In the 1975-76 drought in the Rendilleland, 800 g of milk a day was estimated as an average for the cattle and 1,300 g for the camel (Sato, 1980). Normally in 1982, a dam-cattle supplied the Rendille with 1,200 g of milk daily, and a dam-camel, 2,000 g of milk daily. Camels can stably supply more milk than cattle.

Unlike milk, meat remains a luxury and is largely reserved for special occasions. These include both times of festivity and of emergency. In fact, small stock are most frequently killed in the dry seasons when milk is scarce, and their skins are then sold or exchanged for grain and other foods and necessities. Thus the herders tend to sell livestock and its products, not when they have a surplus, but when they are hard up. Herders drink milk in the rainy season when livestock yield much milk, and eat meat, blood and grain in the dry season when milk dries up.

Both cattle and camel herders, use small stock as cash animals for elastic small money besides as food source for home consumption. Cattle and camels, however, are treated differently. Cattle herders, who keep donkeys as pack-animal, readily sell more camels for cash, although they use meat and milk of camels. Conversely camel herders strive to keep their camels, used for transportation, milk and meat.

Following the laws of supply and demand underlying market economy, herders are recommended to sell their livestock at the highest price as the rational economic behaviour. Yet generally speaking, they do not sell their livestock in the rainy season when milk is abundant. Conversely, as milk decreases with the advent of the dry season, they sell their livestock. Livestock is fat in the rainy season and lean in the dry season. When demand is the greatest and prices the highest, supplies of livestock actually declines. In other words, herders tend to sell livestock in time of depression rather than boom. Under favourable conditions, they engage in what might be called target-sales, where the objective is to acquire a certain cash sum for certain purposes. Once this is achieved, the motive for selling livestock diminishes or disappears.

The herders' selling behavior is reinforced by the mutual and reciprocal relationship with their livestock dealers, most of whom run either retail or wholesale shops. The persons left behind in their settlements have less food and cash as the dry season advances, because their livestock are taken away to the herding camps. They purchase necessities on credit for a while, and in the rainy season when their livestock are back in the settlements, they repay the debt with their livestock. The dealers also can take advantage of such credit transactions. The cost of keeping livestock to fatten is high in the dry season even if livestock is purchased with low price from the herders. Through the above credit transaction, the dealers can place the herding cost on the herders, and also acquire fattened livestock in the rainy season. Furthermore, they can acquire livestock in the rainy season when supply of livestock actually declines, and gain more profit at the livestock market when demand is greater than supply and the price is favourable for suppliers. Thus the relationship between the herder and the dealer can be described as symbiotic.

When the purchasing policy for livestock from herders was put into effect by the itinerant auctions of cattle, the Ariaal cattle herders did not respond positively. But

the Rendille camel herders supplied more cattle to the auctions (Fratkin, 1991). Importance is attached to small stock as cash animals and camels as animals for milk in both the societies. However, the Ariaal maintain a cattle-oriented culture under the influence of the Samburu, the neighbouring cattle herders, and attach more importance to cattle than to camels for ritual use and bridewealth payment. In contrast, the Rendille can readily sell their cattle because they attach more importance to camels than to cattle. Again, the type of livestock vested with higher social and cultural value is kept at hand.

II. Household and the Livestock

In the pastoral societies of East Africa, a household composed of man and wife (or wives) with her (or their) children, is the communal holding group of livestock. The agnates of the household exercise the legal management of household livestock. Sons cannot separate their own livestock from their father's without difficulty, whereas the household head is obligated to support his household members by distributing livestock as the need arises.

Upon a father's death, his legacy is inherited by the children. Whereas the eldest son is responsible for allocating the legacy livestock, societies follow either the primogeniture inheritance or the division inheritance (Sato, 1984a). The former is the inheritance in which most of the legacy livestock are retained within the eldest son's household with a few livestock allocated among other children. The latter is the inheritance in which the legacy livestock are divided among the children.

The Rendille, Gabbra, and Boran peoples follow the primogeniture inheritance. For them, a father does not transfer the ownership of his livestock to his eldest son during his lifetime. Instead, the eldest son may be given some livestock by his mother's eldest brother. At his father's death, he succeeds to the patrimony and inherits most of his legacy livestock. The larger part of household camels are successively retained by the eldest sons from generation to generation, maintaining the primogeniture inheritance. This does not necessarily mean, however, that an eldest son monopolizes all of his father's camels. Upon inheritance, he is obliged to redistribute a few heads of livestock to each younger brother and sister.

The division inheritance is typically followed by the Turkana, Karimojong and Jie peoples. For them, a father transfers the ownership of his livestock among wives with children during his lifetime for subsistence use and marriage payment, and the remaining few heads of legacy livestock are inherited by negotiation among his children. Household livestock are thus dispersed from generation to generation. There is an intriguing correspondence among the above two types of inheritance and two ways of bridewealth payments, namely the fixed payment and the negotiated payment, which I explain below.

The bridewealth livestock, mainly consisting of large livestock, are handed over to the bride's close kin by the groom upon marriage. Bridewealth payments can be classified roughly into two types: the fixed and negotiated payments. In the former, the groom is responsible for collecting and paying bridewealth to each conventionally designated recipient. For example, the Rendille groom has to hand eight heads of camels (four male and four female) over to the bride's brothers, mother, and

mother's eldest brother. In societies with fixed payments, the amount of bridewealth livestock ranges from eight heads (the Rendille, whose per capita holdings is 3.0 heads of camels), through four of cattle (the Boran, whose per capita holdings is 5.5 heads of cattle), to three of camels (the Gabbra, whose per capita holdings is 2.6 heads of camels), which is equal to 0.7 - 2.7 times as many as per capita holdings of large livestock (Sato, 1984a).

In the negotiated payment, the amount of bridewealth livestock is negotiated and agreed upon each marriage between the close agnates of the groom and bride, and the groom is responsible for collecting bridewealth livestock and handing them over, ideally in toto, to a close agnate, usually the bride's father, who redistributes them in turn. Among societies with negotiated payments, the amount of bridewealth livestock ranges from five to eighty heads of cattle (the Turkana, whose per capita holdings is 2.8 heads), thirty to seventy (the Jie, whose per capita holding is 3.5 heads) and thirty to fifty (the Karimojong, whose per capita holding is 3.7 heads), and is thus equal to 1.8 - 28.6 times as many as per capita holdings of cattle as a whole (Sato, 1984a).

Bridewealth tends to be more abundant in societies with negotiated payments than in those with fixed payments (Goldsmith, 1974), and conversely, per capita holdings of livestock is less in the former than in the latter. Moreover, the former follows the division inheritance, and the latter, the primogeniture (Sato, 1984a). The paradoxical correlations among bridewealth types, per capita holdings of livestock and inheritance systems can be explained by both the ways bridewealth livestock is collected by the groom and redistributed by the recipient.

According to the fixed payment, the groom is responsible for collecting bridewealth, and then hands it over directly to several recipients who are conventionally designated as the bride's elementary kin, namely her brothers, mother, and mother's brothers, instead of handing it over in a lump to a specified person, such as the bride's father. This way, the number of participants in the transactions of bridewealth livestock is very few, and such interpersonal relationships are conventionally stereotyped. Moreover, it is easier for the groom to collect his bridewealth, usually by himself and infrequently aided by "his persons,"⁽¹⁾ because the amount of bridewealth is small.

On the other hand, in negotiated payments, the groom is responsible for collecting bridewealth, hands it over in a lump sum to a responsible recipient, who in turn redistributes it. No groom can collect the sufficient amount of bridewealth without requesting "his persons" for aid, because the amount of bridewealth needed is far and away from per capita holdings of livestock. Usually, the responsible recipient also has been already heavily in debt to "his persons" for his own marriage aid, and thus, when his daughter gets married, he is pressed to pay back his debt and to redistribute some portion of his daughter's bridewealth.

It should be remembered that most societies with negotiated payments follow division inheritance, where household livestock are diffused over the descendants as generations proceed. It means that the corporate identity based on the communal holdings of household livestock weakens with the generations, so that each descendant is driven to strengthen his own reliable partnership with "his persons". The bridewealth livestock are collected and distributed within a wider interpersonal rela-

tionships beyond household members, and thus has functions of defining and strengthening the personal networks of the groom and the bride's father beyond individual households, besides confirming affinal relationships.

It has been said that the bridewealth payments can be expected to be high where livestock play a relatively insignificant part in the total economy (Jacobs, 1965; 1970; Turton, 1980), and that the negotiated payments derive from the economic motive, whereas the fixed payments derive from the social (Goldschmidt, 1974). These arguments, although useful to some degree, neglect the fact that livestock are transferred within the framework of social structure.

The negotiated payments are different from the fixed payments in that the former has the function of defining and strengthening personal networks of both the groom and the bride's father. Such function is closely correlated with the unstable intra-structure of household. The fixed payments are more pervasive in societies where the intra-structure of household is regulated and stabilized by the primogeniture inheritance. In contrast, the negotiated payments are more pervasive in societies where the intra-structure of household is weakened by the division inheritance. Bridewealth livestock are used for surmounting such inherent weakness of intra-household solidarity by activating interpersonal relationships beyond the individual household.

III. Social Transactions and Transfers of Livestock in the Rendille Society

Among the pastoral societies of East Africa, livestock are used for social transactions that bind and regulate societal interactions. When certain livestock are transferred between partners, one recognizes that the breadth of one's decision-making is different from society to society because the motives and occasions for livestock transactions and the types of livestock involved are prescribed by social conventions. The East Cushitic peoples, such as the Rendille, Gabbra and Boran peoples, have the peculiar system of livestock transfer classified as the trust system, whereas the East Nilotic peoples, such as the Turkana, Karimojong, Jie, Maasai and Samburu peoples, do not. Such difference is derived not only from the number of animals reared and the scarcity of livestock.

For example, the Rendille have four forms of transaction, namely, gift, exchange, loan and trust. Gift transaction means transferring one's personal camel to another for no direct return, whereas exchange transaction is for a direct return. Loan transaction means transferring a camel to another on condition that the transferred camel itself is returned in the future according to a prescribed convention, and trust transaction means transferring female camels in accordance with the rules of the trust system (Sato, 1992).

In any camel transaction, there is a clear distinction between the personal camel (*alal*) and the trust camel (*maal*), and this is confirmed by the persons concerned. Personal camels are valued higher than trust camels. A man who keeps his personal camel can dispose it as he pleases. All male camels are categorized as personal camels, whereas female camels can be either personal or trust camels. The trustee has no ownership of the trust camels, but holds usufruct rights to their milk, blood, and male offspring. He has to return the camel to his trustor at his request. As long

as any trust camel, including the one originally entrusted and its female offspring, is alive, the eldest sons of both parties inherit the credits and debts of their fathers over generations.

The trustee can sublease either the entrusted camel itself or its female offspring to a third party of his choice. A chain of trust relations is then formed on the basis of the dyadic interpersonal relation between the trustor and his immediate trustee. Along the chain of trust relations, any trustee must mark the trust camel as instructed by the first trustor. The first trustor (the owner of original personal camel) retains the ultimate credit, so he is regarded as the owner of all the trust camels transferred through the chain of trust relations. When he irrevocably falls out with the trustees, the first trustor can forcibly withdraw all the trust camels.

The first trustee never subleases the trust camel to the close agnates of his trustor if he belongs to the same clan as the trustor; nor does he sublease it to the clansmen of his trustor if he belongs to a different clan. In the whole chain of trust relations, the close agnates and clansmen demarcate a double boundary, which functions like a semi-permeable membrane. Those trust camels which have been once placed beyond their boundary cannot be brought back in through subleasing. In other words, the solidarity among the close agnates and clansmen becomes obvious in the trust system (Sato, 1992).

As mentioned above, the trust system works through the medium of the unity of a father with his eldest son. Fundamentally it works on the basis of the favourable societal relations, and at the same time it works together with the structural framework of the more corporate groups of close agnates and clansmen within the patrilineal descent group.

On some occasions and in some social relations, a man is obliged to donate his personal camels to another. Such occasions include the death of parents, circumcision, the killing of an enemy, and marriage. If an eldest son is circumcised or kills an enemy, he is entitled to at least one female camel from his mother's eldest brother, whereas on the same occasion, the other sons are entitled to at least one female camel from his father. Upon marriage, the groom has to pay eight personal camels (four male and four female) as bridewealth to the bride's elementary kin, such as her mother, brothers and mother's eldest brother. Moreover, the bride's eldest brother is expected to give one female camel out of his sister's bridewealth to his father's brother's son. Since the bride's father has no share in the bridewealth camels of his daughter, he cannot divert them to his own marriage.

The above occasions are landmarks in the developmental cycle of the household as well as in the age-set cycle. The eldest son is obliged to donate personal camels to his own and his wife's elementary kin, his father's brother's eldest son, and his sister's eldest son, and conversely he can receive personal camels from his sister's husband, his sister's daughter's husband, and his mother's eldest brother. I call the category of these persons, "effective kindred." The relationships among the effective kindred are maintained and reinforced by the reciprocal donation of personal camels, and are structured not only by the unity of a father with his eldest son, but also by the relationship of a mother's eldest brother to a sister's eldest son, and by the relationship among the eldest sons within close agnates.

I have analyzed elsewhere (Sato, 1994) the actual camel transfers made by three

sons from one household. The total number of transfers counted 149, of which donations of female and male personal camels (44 and 41 cases, respectively) made up 58% and trusts 39% (58 cases), adding up to 97% of the total transfers. The remaining 3% was repayment and exchange of camels. In terms of social relations between the partners of the transfers, 99% of the 85 donations were carried out among effective kindred; 90% were household members, wife's elementary kin and sister's household members. In contrast, 31% of the 58 trust camels were transferred to patrilineal clansmen, 28% to classificatory clansmen and 19% to household members. Trust camels were transferred to a wider circle of people than other transfer camels were, based on ego-centred dyadic relations.

The occasions of transfers were mostly marriage and circumcision, respectively 40% and 13% of the total. Those for pledge of bond-friendship formed at age-set ceremonies, represented 10%. As a whole, 63% were transferred on occasions related to the age-set cycle. To note, 40% of all the transfers were carried out between age-mates, and the members of the senior age-set tended to give camels to those of the junior age-set. Thus, the age system serves as an important provider of camel transfers (Sato, 1998).

IV. Pliability of Camel Transaction

For the Rendille, the four forms of transaction above are formal classifications. In reality, one form of transaction can turn into another, depending on the relative degree of solidarity between the giver and recipient, and the circumstances of transaction.

Sometimes, a calf-camel is adopted in order to ensure milk from the mother-camel. When one requests a calf-camel from another for the purpose of adoption, the latter usually gives away either one male calf as a personal camel or one female calf as a trust camel. But I came across a case where one female calf was donated as a personal camel for the purpose of adoption. In this case, a man was donated a female calf by his mother's eldest brother in return for the female camel which his father once handed over to the latter as a personal camel in compliance with his request for bridewealth aid.

A lactating camel is temporarily lent out to someone for the duration of lactation, and soon after lactation stops, the borrower has to return it to the lender. But, there was a case where a son-in-law lent out a lactating female with a suckling calf to his father-in-law and then turned it into a trust camel. The reason was that the loan camel with milk should be treated as trust camel once it bore a calf in the borrower's pen. That camel bore a calf while the son-in-law refrained from requesting its return. The above transactions were made through moral reciprocity.

The Rendille have a standardized exchange rate for one type of livestock to another. For example, one head of heifer-camel is equivalent to either one head of heifer or 12 heads of adolescent small stock. Also, one female calf of either camel or cattle is exchangeable for one ox-camel or ox. This exchange rate is applicable to neither transactions with livestock dealers nor those at the livestock market, where transactions are negotiated, but applicable only to transactions within the communal Rendille society. Also, one type of livestock may be exchanged with livestock com-

bined with other goods, for example, sack of maize.

Some conventional barterers may take place over time, even as long as after twenty years, within Rendille society. Usually, the giver of female camel can claim cancellation of the barter, either if his camel reproduced overly in favour of the recipient, or if the transaction had violated the conventional exchange rate. Such unexpected profit on the part of the recipient or subjective hindsight of distorted exchange is sufficient for the original owner to contest the transaction. The contestation is never treated indifferently and taken up publicly. This suggests that excessive profit through barter of livestock is checked by public opinion and that the owner of personal camel can exercise very strong discretion.

Whereas camels are esteemed more than cattle by the Rendille, there is less demand for camels, and prices offered often fall short of the herder's expectation. Therefore, he first exchanges the less demanded camel for the more demanded cattle using the conventional rate in his network, and then sells that cattle in the market. This manipulation of the local dual economy enables the herder get through the disadvantage to market economy.

CONCLUSION

Ecological carrying capacity and optimal herd-size, often used as driving concepts for promoting market economy and incorporating local herding systems into it, are not applicable to the tropical arid zone. The concept of productivity is too arbitrary for application to East Africa because it is estimated differently from index to index. For the precarious and drought-ridden tropical habitats, the maximizing strategy of the nomadic herders is more adaptive. I advocate that every effort must be made not only to understand the complex herding ecology and to preserve and promote its most productive aspects, but also to clarify and uphold the indigenous rationality against the hitherto implied irrationality.

With the devastation from the recent catastrophic droughts, government administration and policies promoting market economy has encroached rapidly into indigenous pastoral area, together with the international development programs since the 1970's. The Rendille and other pastoral societies in East Africa have undergone drastic changes and become marginalized. Hogg (1986) noted that economic differentiation was increasingly polarizing the Isiolo Borana society and that the communal ties hitherto bound by the ethos of equality were weakened. He called this phenomenon, "new pastoralism," in which, the wealthy take advantage of their socio-economic standing to elevate their status, while the poor are forced to become employed as wage herders or drop out from pastoral economy. The same phenomenon of economic and social polarization has been also reported for the Chamus (Little, 1985).

However, Rendille camel pastoralism is persistent. Camels are treated as livestock symbolic of their well-being. Camels are also their essential means of production, and at the same time important property of social exchange through which the solidarity of kindred is enforced and networks of favourable friends expanded. Historically, social and economic polarization has been latently inherent in nomadic

pastoralism, and the Rendille have refined livestock transactions in order to build social insurance. Camel transactions are collectively activated through the age-set cycle as well as the kindred network. The legal ownership is closely interconnected with the social structure and excessive profit is checked by the public pressure, maintaining social and economic coexistence.

The Rendille are indeed more involved in market economy than ever before, yet, they never sell female camels for cash. When they need cash, they first exchange camels with cattle using conventional exchange rate, and then supply these cattle to the market. Such manipulation of the local dual economy, and the symbiotic personal relationships with the local dealers still buffer the Rendille from encroaching market economy.

NOTES

- (1) Among the pastoral societies of East Africa, the term "one's persons," for example *etaya* meaning my person in the Rendille and *ngitungakan* in the Turkana (Gulliver, 1955), is commonly referred to as those persons who have trustable and reciprocal supportive relations with him, and always expressed with deep reverence. They have affectionate sympathy for each other on the basis of moral duty and obligations, and are confirmed by reciprocal transactions of livestock, other gifts, and good will, if necessary. They are individually and voluntarily created as significant kindred from other kindred and as particular friends from other friends.

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