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Pastoral Values among Vulnerable Peasants: Can the Kipsigis of Kenya Keep the Home Fires Burning?

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The Kipsigis are the largest of the Kalenjin-speaking groups in the Rift Valley Province of Kenya.¹ At the start of the twentieth century the Kipsigis numbered less than a hundred thousand people, organized on a tribal level. Like the other Kalenjin groups, they practiced a mixed economy based on pastoralism and hoe cultivation of finger millet, and they occupied highland slopes adjacent to the more arid grasslands typically associated with East African pastoralists.

Kericho District, which roughly corresponds to traditional Kipsigisland, rises from grasslands of around 5,000 feet elevation with 40 inches of rain annually, to forest zones in the east above 7,000 feet with over 70 inches of annual rainfall. Most of the area is composed of hills or folded ridges of red volcanic loam covered throughout the year with bright green vegetation.

In such a lush environment little transhumance was required in the precolonial era to maintain a significant degree of pastoralism. The majority of the population lived in settled communities of dispersed homesteads in the hills. There they maintained gardens, milk cows, sheep, and goats. Depending on local conditions, some men and boys grazed cattle separately in the lower areas, generally to the west. In most cases the cattle camps were not many miles away from the home communities.

In the last seventy-five years Kipsigisland has undergone a visually dramatic transformation. The countryside is now thick with homesteads, generally of ten to twenty acres each, forming a continuous quilt of enclosed rectilinear fields devoted to several different crops and pasturage. In the most "developed" areas rectangular houses with corrugated aluminum roofs are common, the hillsides are contour plowed by tractors, and indigenous trees such as the flat topped acacias have been replaced with tall, straight, imported species, thus creating landscapes more sug-

gestive of Europe than Africa. In the northern part of the district, adjacent to Kericho town, tea estates cover the hills for miles. Many commercial trucks and government vehicles pass along the main road every hour of the day, scores of buses run regular routes between the town of Kericho and the many smaller trading centers, and bicycles are familiar throughout the countryside.

Almost everyone has abandoned most traditional dress and ornaments. In the more remote areas a middle-aged man might wear khaki shorts, a simple shirt, sandals, and perhaps a blanket, while a farm wife typically wears a plain cotton dress, a headscarf, and a shawl or baby-wrapper. Everywhere, however, younger people aspire to the styles of the towns. Where forty years ago young men wore their hair in greased and ochred braids, kept their ears stretched and laden with beads, wore cloaks over their shoulders, and carried spears in their hands, many now wear leather shoes, long trousers, nylon shirts and neckties, suit jackets or acrylic sweaters, and occasionally carry transistor radios. The Kipsigis, described on the dust jacket of Peristiany's monograph published in 1939 as "one of the most handsome and warlike Kenya highland tribes" now give the appearance of a relatively prosperous peasantry.

What are the processes underlying these changes, and what do they imply for the future?

THE MODEL

I will attempt to answer these questions using the cybernetic mode of analysis pioneered by Bateson (1972). Adaptation can be defined as the process by which a self-organizing system maintains continuity and balance in both its internal organization and its relationship to its environment in the face of change. In any system there are certain variables whose values must be maintained within relatively narrow limits if the system is to persist. In Ashby's model (1956) these are called the system's *essential variables*. Adaptation is accomplished most efficiently if negative feedback regulates the system's more peripheral and more flexible (nonessential) variables in ways which counteract environmental disturbances before they can reach the essential variables. For example, skin temperature in a mammal must be varied frequently in order to maintain blood temperature within the range of viability. Natural systems contain a large number of levels arranged in a "defense in depth" (Bateson 1972: 351) so that they tend to respond first on the level which promises, from past experience, to suffice most quickly, with the

least energy expenditure, and with the least constraint (Miller 1965; Rappaport 1974).

In this paper I will use an organic analogy between adaptation in ecosystems and cultural systems suggested by Ramón Margalef (1968). The basic premise of this model is that, if exogenous factors are stable for a long period, a living system will tend to evolve toward greater efficiency in the conversion of energy into structure, or encoded information. In Margalef's terms, the system increases in *maturity*. More energy is captured and greater use is made of available energy as it flows throughout the system. As matter and energy are added, the informational capacity of the system is multiplied; the specialization and diversity of components increases, and that amounts to an increasingly detailed mapping of, or more finely tuned adaptation to, the context. Certainty within the system increases. The changes experienced by component parts of the system shift from direct reactions to external disturbances, to rhythmic responses to signals filtered through other parts of the system. Fluctuations in the populations of component species are dampened and there is a relative constancy of numbers. Increased internal regulation through interaction (negative feedback) diminishes the chance of outbreaks (positive feedback processes which have overwhelmed local regulation). Reproductive strategies shift from quantity to quality. In general, as maturity increases, member species become increasingly interdependent.

Margalef's second basic point is that "any exchange between two systems of different information content does not result in a partition or equalization of the information, but increases the difference" (1968: 16). He goes on to state, even more directly, "A more mature system always exploits a less mature system" (1968: 37).

Let us, for simplicity, label the more mature system A and the less mature B. Just as "the process of self-organization [within a single system] stops when fluctuations are unpredictable or insurmountable" (1968: 33), these new exchanges between systems tend to halt the trend toward maturity and endogenous synchronization in the subordinate subsystem, B. System A interferes in B's internal processes according to criteria that are initially, in terms of B's organization, arbitrary. Those components in B which are most complexly dependent upon other parts of the subsystem are most vulnerable in the new contact situation. In ecosystems, for example, the species most likely to suffer are those with "the most advanced examples of defense—mimicry, animal poisons, elaborate symbiotic relations, and complicated territorial behavior" (1968: 91). With the loss of the more exotic middlemen, the relation-

ships between remaining components are interrupted or become short-circuited. Noise increases.

In contrast, system A's actions reward those components of B which can most quickly expand to make use of the new inputs, that is, species with the shortest life-span, highest metabolisms, and greatest reproductive potential—species variously described as "pioneer," "prodigal," or "opportunistic" (1968: 88). Hence B's regulators in the most flexible circuits become incorporated into larger circuits in which they have lost control to components in A. A thus not only short-circuits the most particularized aspects of B, it also coopts, or 'long-circuits,' the most generalized aspects of B. To the extent that B retains limited autonomy as a subsystem, it attempts to protect its own essential variables, whether or not they receive A's direct attention, as best it can.

The exchange between the two systems goes both ways, of course. The extent to which B's excess production is pumped into A is a measure of the degree of exploitation in the situation. Without exploitation maturity would spread from A to B and they would become less and less distinct as subsystems. Strong exploitation keeps B in a "steady state of low maturity" (1968: 38). Where exploitation occurs "it is advantageous for the more mature and exploiting system to develop sinuosities and stretch the length of the boundary to the maximum . . . in the less mature communities the trend must be to reduce to the minimum the extension of the boundaries that are potential sites of exploitation" (1968: 41).

While Margalef's model is based on examples far removed from our immediate interests (his own research is with plankton), it is a highly suggestive analogue of the theory of dependency and underdevelopment. The utility of the model is hampered, however, by its generality. Culture contact situations vary widely. I have therefore been seeking further ideas in the life sciences which may more closely resemble certain features of the situation among the Kipsigis. I will briefly mention two.

The cybernetic model of adaptation can too easily be mistaken for a Panglossian view that all is for the best and that evil does not really exist. We are all aware, however, that culture contact situations frequently contain pathogenic contradictions. Bateson's analysis of alcoholism (1972: 309–37) suggests a dynamic tangle that may be analogous to the situation at hand. Many of the material and symbolic items introduced into the Kipsigis system resemble addictive substances. I will return to this point at the end of the paper.

Another line of thought deals with domestication. I view domestication as one of a variety of specific processes subsumed by Margalef's

general model, and one which, by analogy, describes many of the characteristics of the adaptation of the Kipsigis sociocultural system to colonial rule and the cash economy.

HISTORY

Destabilization and Pacification. It is perhaps two hundred years since the Kipsigis entered their present area from the northeast. During the nineteenth century the Kipsigis expanded southward against the Masai and westward against the Gusii and Luo, securing a large and coherent land base.²

Late in the nineteenth century infections preceded the arrival of significant numbers of Europeans.³ During the 1880s a rinderpest epidemic swept through East Africa killing a majority of the cattle. The sharp reduction in cattle led to a great intensification in warfare. On one major raid into Masailand the warriors contracted smallpox. On their return they infected others, causing a great many deaths.⁴ Further destabilization during this period is exemplified by the Battle of Mogori. A few years before Pax Britannica the southern Kipsigis suffered a major military defeat by Gusii and Luo forces, combined in an unprecedented alliance.

In evaluating the protohistorical period it is important to dispel the notion that the British found a static, tradition-bound society. The Kipsigis had had a dynamic relationship with their various neighbors and, at the time of pacification, their system was in an unusually fluid state. In particular, the many setbacks of the years immediately preceding and the resulting underutilization of much of the land in what became Kericho District must have heightened the expansionist tendencies of the Kipsigis. Their system was dynamically vulnerable to forces promoting immaturity.

Significant British presence came with the construction of the Kenya-Uganda railroad. From 1895 to 1906 the neighboring, and closely related, Nandi fought a series of bloody campaigns against the intruders. Through skillful diplomacy the British managed to keep most of the Kipsigis out of the Nandi wars and established a post at Kericho in 1903. Punitive expeditions were organized, however, against the southern Kipsigis in 1905 and again in 1912 to suppress Kipsigis encroachment against the Masai and Gusii. In both cases the Kipsigis forces were dispersed with few casualties and large numbers of stock were seized (Moyse-Bartlett 1956: 208). From time to time during the ensuing

decades colonial troops were called out to restore order along the tribal borders, but the Kipsigis never engaged in a direct rebellion against the colonial power. In fact, the Kipsigis willingly cooperated with the British in the mid 1930s in the identification of sorcerers (*or:oiik*) who were rounded up and removed from the district.

These events, I suggest, are analogous to the first steps in domestication, in which the potential domesticate is constrained from interacting with its natural context, is exposed to strong efforts to diminish or remove its capacity for defense, and finds itself dependent upon the domesticator for protection from internal and external dangers (defined as much by the domesticator as by the domesticate) and vulnerable to the threat of force by its new protector. If this can be achieved without destroying the subordinate system's processes of self-maintenance, the dominant system is then in a position to promote or suppress specific features in the other. With this in mind, let us briefly consider the policies of the early colonial period.

Colonial "Development." Early British policy was aimed at the "de-pastoralisation" of the Kipsigis and their conversion into a supporting role in the colonial economy. By 1903 Asian traders had already branched out into the countryside trading metal tools, wire, beads, cloth, salt, sugar, and other goods for millet flour and cowhides. Starting with rather limited barter, their trade in subsequent years became a major inducement for Kipsigis to become involved in the cash economy. Missionaries were supported by the administration in the hope that they would replace indigenous rituals and beliefs—in Rappaport's terms (1971) the higher order regulators of a society—with those more conducive to civilization. In the words of the first missionary to the Kipsigis, "Every pagan brought to Christ becomes in the very nature of the case an asset in the economic structure instead of a liability" (quoted in Manners 1967: 347).

The collection of hut tax began in 1904. At first taxes were payable in kind, but the administration soon pressed for payments in cash. The real importance of taxation lay not in generating revenue but in initiating the diversion of native efforts into the wider economy dominated by European interests (cf. Mitchell 1970; Watson 1970).

Starting in 1906, British settlers obtained large tracts of land along the railway and around Kericho. Further land was alienated to the southwest, ostensibly to form a buffer between the Kipsigis and the Gusii. During the colonial period the settlers' farms produced milk, beef, maize, and a variety of other cash crops. Thousands of Kipsigis came to be employed on these estates. As was typical of much colonial employment, wages did not constitute a true subsistence income but amounted to a

cash supplement to whatever the workers could derive from their homes in the reserve or produce on their own using estate land. A frequent arrangement granted the resident workers, or "squatters," the use of grazing land (from which they or their tribesmen had previously been evicted) in exchange for training and using their oxen to plow the settler's fields. Many Kipsigis learned maize cultivation in this way. The administration soon pressured them to adopt maize in the reserve.

World War I drew large numbers of men into wage labor and into the auxiliary forces in the campaign against the Germans in Tanganyika.⁵ Further destabilization of the reserve population by influenza and crop failures (Wrigley 1965: 233) was followed by the postwar boom in agricultural exports from European farms. Tea, first planted near Kericho in 1912, became a major plantation crop after the first processing factory was opened in 1924 (Manners 1967: 310). Although the Kipsigis never constituted more than a minority of the work force on the tea estates, wage labor on European farms rose dramatically as European settlement was increased by Soldier Settler Schemes.⁶ The problem throughout Kenya Colony, however, was how to induce a greater proportion of local labor away from the more efficient small holdings in the reserves. The solution was to raise taxes and depress wages.

Meanwhile the first plow to be owned by Kipsigis was used in the reserve in 1921, an innovation that many soon copied (Manners 1967: 288). Maize thus became a more productive, though less nutritious alternative to the traditional staple food, eleusine millet, which required fresh land with each planting and a great deal of hand labor. Colonial policy granted white settlers monopoly rights over the major cash crops (tea, coffee, European strains of dairy cattle) while promoting increased production of maize by the Kipsigis as a source of food for the growing plantation work force. As the colonial government hoped, more land came under maize to meet these increased markets and to provide cash for the increasing number of trade goods (maintained at relatively high prices by tariff regulations). Another cause for increased maize cultivation, less directly a concern of the administration, was to support the rapidly growing population in the reserve. As Colin Leys (1975) has argued, the profitability achieved by the private European mixed farms was made possible only by the legally engineered underdevelopment of the reserves.

In adapting to these changes, the Kipsigis system had incorporated processes which had dynamic implications beyond those intended by the British. A major example of this is the spread of land enclosure. Manners (1967: 292) traces the start of land enclosure to a mission-trained Kipsigis farmer involved in cash-cropping maize. In 1930 this man

plowed a field too large to be fenced in the manner of a traditional patch of millet. Soon embroiled with his neighbors over incursions by their animals, he persuaded them to plant their millet gardens around his field, with each man fencing his share of the outside perimeter. Since millet plots are not replanted a second year, he then expanded his maize to the fence. A few years later he completed the inversion of traditional spatial order by placing his cattle *inside* the fence. As Manners comments, "The process of land accumulation by this man was only stopped when his neighbors undertook the cultivation of maize and defended themselves against further encroachment by this means and by the erection of paddock fences" (1967: 292).

And so, while the British pondered over land policy (see, for example, Orchardson 1935), enclosure spread in a self-reinforcing manner. Twenty years after enclosure started, virtually all usable land was divided and individually claimed. Enclosure produced many hundreds of court cases, and although many were relatively minor squabbles among neighbors, a certain amount of injustice also occurred (Manners 1967: 296). As Margalef's model would predict, some of the men appointed by the government as chiefs and subchiefs were among the more prominent opportunists. Still, the most remarkable feature of enclosure was that it was compatible with the preexisting settlement pattern of dispersed homesteads and caused so little immediate change.

Most of the visually striking changes appeared during World War II and the postwar period. A large proportion of Kipsigis men entered the army and served in North Africa and the Far East. This period also saw expansion of the tea estates, prosperity among white settlers, and a major increase in the impact of the colonial government through road building, a system of native courts, and so on. Schools, originally introduced with coercive pressure, became available to a significant minority and were sought after by the many. School fees became established as a major cash demand on most Kipsigis families. The rudiments of modern medicine were sufficiently available to have been used by the vast majority of families, at least in times of crisis.

In both education and medicine, the key impetus was supplied by missionaries working in cooperation with the government. Their effectiveness on a purely religious level has been far less. While today almost everyone declares himself to be Christian, missionary teachings have not been deeply absorbed or syncretically woven into daily life.⁷

Virtually everyone, however, became involved to some degree with the cash economy. In 1959 the value of sales through the Maize Marketing Board exceeded \$200,000 even though the majority of maize in excess of domestic needs was being sold privately to tea estate workers,

to Masai and Luo in border markets, and on the black market to Kipsigis middlemen (Manners 1967: 301). During the same year regulated sales of cattle and cattle products approached \$300,000.

The Modern Era. Economic intensification increased still further in the last years of the colonial regime and has continued at an accelerating rate after independence. In 1957 the first Kipsigis small holdings in tea were planted. Today thousands of homesteads are involved. In 1959 the tea estates ceased supplying workers with maize rations purchased from European settlers; thus Kipsigis small-scale cash-crop farmers gained access to an enormous new market. In 1960 the ban against African ownership of European "grade" cattle was lifted, allowing development of commercial milk production that had already started with native cattle and grade cattle owned surreptitiously.

Political events outside the district brought the era of the white settlers in Kenya to a close. Government schemes, starting in 1961 and continuing after independence, purchased European estates and subdivided them, at calculated densities, among African small holders. By 1968 a few European settlers remained in the northern end of the district, and the tea estates were still expanding, but the majority of the formerly alienated land was being resettled by Kipsigis under government direction. The new homesteaders assumed ten-year development loans and thirty-year mortgages at commercial rates and were required to start modern farming with grade cattle, tractors, hybrid maize, superphosphate fertilizers, and, where applicable, tea. While most people on the schemes found themselves squeezed between government suppliers and government buyers,⁸ many of these same changes were being voluntarily adopted in the former reserve at the same time, apparently with some success. During the 1960s the black market price for maize was more than double the official rate and government control was not effective in most areas outside the schemes.

By the early 1970s business was booming. All major indicators of the commercialization of the countryside were increasing rapidly. A few individuals started to accumulate land holdings totalling over a hundred acres in the former reserve, while a large proportion of the people faced the prospect of having to subdivide family plots into smaller units than ever before.

Population and Land. Population had increased rapidly during the colonial era. In 1939 Peristiany (1939: 1) estimated a Kipsigis population of 80,000. The 1948 census figure was 157,211. The 1962 census figure was 341,711 Kipsigis, of whom 84 percent were in Kericho District. Most of those absent were men between 20 and 35 years old (Morgan and Shaffer 1966; Ominde 1968: 176). The 1969 census counted

471,459 Kipsigis; extrapolation from these census data suggests that the Kipsigis now number over 600,000. The age-sex pyramid shows the classic pattern of an immature population (Margalef 1968: 90), with a broad base representing an overburden of dependents due to a high birth rate, and sharply narrowing sides indicating a significant rate of death at all ages. At present the median age is around 15 or 16 years.

Many of the effects of population growth have been slow to emerge, however, because of the extensive land base with which the Kipsigis started the colonial era. At the start of the century only one fifth of the total area controlled was being used for settled communities, with a density of 150 to 200 persons per square mile (Pilgrim 1961: 33). Now the whole district has been homesteaded and enclosed. The 1962 census indicated an average density of 264 per square mile in the former reserve. While the density varies with the fertility of the soil, even the densest areas are still, by Kenyan standards, uncrowded, and the Kipsigis have been able to maintain conditions similar to those for which their domestic institutions are adapted. Thus much of the impact of the population explosion on family and community organization has been delayed for one or two generations. There is no doubt, however, that population pressure now threatens to overload both traditional and modern institutions.

ESSENTIAL VARIABLES

East African pastoralists are well known for their stubborn devotion to the "cattle-complex" and their lack of interest in modernization. Considering their rapid development, the Kipsigis *appear* to be a clear counter-example. Manners states that "most of [the Kipsigis] seem eager to discard the old for this new [world]" (1968: 222). In my experience this statement, if taken as a description of individual orientation, applies to only a small majority of the population. On the societal level Manners's statement contains a questionable assumption about economic and social dynamics: the relationship between cash-crop agriculture and wage employment on the one hand and pastoralism on the other is far more complex than the unilineal replacement process Manners suggests.

My own fieldwork focused on a grasslands community on the edge of the more fertile hills. Although primarily a grazing area in the past and not now noted for progress, all homesteads in the area are involved in some cash-cropping. After my lengthy discussion of change it may come as a small surprise to learn that the Kipsigis still keep large numbers of

native cattle. Homestead herds ranged from 13 to 32 head, or 2.6 cattle per person, a figure that compares favorably with such confirmed pastoralists as the Nuer, the Dodoth, and the Pakot.⁸

Along with the cattle themselves, the Kipsigis have maintained the set of social principles premised on cattle that characterizes East African pastoralism (Daniels 1975). Most significantly, the kinship system seems little changed from precolonial days; descent and marriage continue to be defined in terms of rights to cattle. Bridewealth continues to be paid in cattle, though now augmented with cash and trade goods. Paternity is defined contractually by bridewealth, a large proportion of marriages are still arranged, leviratic marriage of widows is the norm, and one of the hallmarks of East African pastoralism, marriage between an old woman who lacks sons and a young bride, still occurs regularly. Compensation for homicide, intentional and accidental, continues to be paid in cattle, and quite apart from any court action, cattle are still being seized by force in cases of homicide and elopement. Polygyny continues to be very common. In a sample taken in 1967, 208 men aged 20 to 75 were married to 329 women; 39 percent of the men were polygynous, and the majority—61 percent—of the women had cowives.

Male initiation, although now restricted by law to the six-week school vacation, is still universal. The symbolism of initiation is still heavily pastoral, as are the virtues it stresses. While a small number of highly educated females have successfully avoided initiation, most school girls and all girls not in school are initiated; the latter are secluded, as in the past, for a number of months.

The retention of so many aspects of the pastoralist system cannot be dismissed as the last fragments of an incomplete acculturation. Clearly a more dynamic interpretation is necessary. From a viewpoint that stresses the initiative of the larger system, one can say that the fertility of Kericho District has permitted Kipsigis society to be bloated into a state of highly productive immaturity, i.e., domestication. In terms of the adaptive initiative of the smaller system, I argue that the abundance of land, and those proceeds of its fertility which have remained within the smaller system, have been used to subsidize the essential social and psychological variables of pastoralism. The persistence of this core of traditions is not immediately obvious to the non-Kipsigis, for the cultural forms have been stripped of their more dramatic and exotic expressions and are embedded in the "down-home" ordinary events of familial and dyadic relationships. Taken together, the features mentioned here combine to produce a vast social network which, being uncentralized, is not readily comprehended until one pieces together a great deal of private information.

The social network is continually renewed as all but one of an elder's mature sons establish separate homesteads, usually in other communities, while daughters are married to nearby families. Thus communities are neither bounded descent groups nor loose collections of neighbors who happen to interact on a daily basis, but particularly dense clusters of relationships, the majority of which are *affinal*, woven into a seamless social fabric that extends throughout the district. There are in addition several modes of relationship beyond kinship (for example, women's cooperative work sets and bonds between men initiated together). Inasmuch as descent and affinity mean sharing and exchanging livestock, family herds are similarly intertwined. Cattle are further redistributed by a system of private partnerships (*kimanagan*) which is very widespread, if not universal. Neighbors are those who share fire from hearth to hearth. In this practical act the Kipsigis see a rich metaphor of their society.

In such a network behavior is governed by the multiple relationships which impinge on any individual decision. On the societal level the very high degree of redundancy ensures stability of norms and values. The patterns of what people do and what they agree should be done are little affected by individual shortcomings and idiosyncracies. It is this informational resilience, anchored in cattle, that the Kipsigis have defended through seventy-five years of change.

THE FUTURE

One of the fundamental premises that has shaped the evolution of Kipsigis culture is that the only way to create a cow is with another cow. Deeply encoded in the core institutions is the message that continuity of herd and family is a *sine qua non*. In situations of microadaptation no man has the right to make decisions for another, but on any issue involving the maintenance of basic patterns, consensus and cooperation must override individual choice. At present, however, there are many situations in which it is not clear what the long-range implications of individual actions will be, for they become caught up in new circuits and amplified in new ways.

In trying to second-guess the future I will first focus on the immediate continuities and the trends for change that have become well established within Kipsigis society through interaction with the larger system. Finally, I will briefly speculate on the implications of trends in the larger system.

Local Trends. As long as the Kipsigis are able to avoid abrupt change

in their domestic social processes, particularly in the network of marriage ties based on exchanges of rights in cattle, the future appears to be fairly predictable. The shared sense of order which this system gives to individual lives makes it highly unlikely that there will be widespread changes in individual thinking on deeper epistemological levels. I do not expect any rapid increase in the penetration of missionary teachings into most lives. I doubt the possibility that the initiation ceremonies, for all the lack of correspondence that has developed between their manifest content and their present social context, will be replaced by operations at medical clinics and marked by minor Christian observances, as has happened in some Bantu groups.

For similar reasons, I do not expect the Kipsigis to mount any modern political action. As long as people define themselves in terms of the uncentralized web of relationships, I do not see them mobilizing in large numbers behind any institutionalized authority. A prepolitical movement of Kipsigis against Kipsigis is out of the question, and since the political situation in Kenya rules against the efficacy of both traditional ad hoc mobilizations against non-Kipsigis and modern political agitation, I do not predict any major redefinition of the boundary which separates the Kipsigis from those who control the institutions of modernization. Thus one can expect a continuation of the current relationship between the Kipsigis system and the larger economy.

Undoubtedly involvement in wage labor will increase a great deal, but here the Kipsigis will find themselves competing for unskilled jobs against the growing number of landless, and hence economically more desperate, people from other areas, while most of the better paying jobs have already been preempted—in many cases whole economic niches are already dominated by single ethnic groups.

At home the traditional mode of social organization has been highly successful in extending itself, at every opportunity, through homesteading new land. Yet the family network has not taken root in urban areas. Wage labor, it appears, will continue to be used in an attempt to maintain the status quo back home.

The economic squeeze will undoubtedly intensify. In the long run grade cattle may totally replace native cattle in the fertile hills, as has happened in other areas of Kenya. Obviously, this would have serious effects on social organization. I am not convinced, however, that all native cattle will disappear from the system in the foreseeable future. I find it hard to believe that grade cattle will compete successfully with native cattle in the lower zones. I also note that the system of cattle partnerships persists and that many people in the hills and most, perhaps all, of the people resettled on the schemes (where native cattle are pro-

hibited) keep native livestock with friends in the lower areas. I thus predict that a large sector of the population will be able to maintain the currency of traditionally defined marriage.

The individual Kipsigis, caught between rising economic demands and a shrinking land base, finds (whatever his personal motivations) that the solution almost always involves further contact with the wider system and thus more exposure to its negative effects. However, the options for increasing agricultural production (maize, tea, and coffee) are more responsive to capital intensification than to labor intensification.

The population problem may well be the undoing of the egalitarianism implicit in traditional organization. The inversion of spatial definitions is beginning to invert the logic of family organization, especially polygyny and the associated house-property complex. Once a man with two wives had two farms. Today he is likely to have two half-farms. To persist with polygyny threatens to impoverish the family. One can therefore expect polygyny to decline sharply as population pressures become critical. A reduction in polygyny will reinforce the effects of the cash economy in leading to a differentiation in the accumulation of capital and a loss of the mutual interdependence which marked tribal organization.

Recently the national government has instituted a program to survey and register all land holdings. While proceeding, at least at first, only in those communities in which individual claims are not in dispute, the program has not met with enthusiasm. At the time of my research most people saw little benefit in accepting a new set of fees and expenses, giving government courts a say in future land transfers (now private and familial affairs), or in creating accurate records which would threaten their "catch me if you can" approach to paying taxes. Whatever its intent, land registration promises to become an official sanction for the accumulation of large and multiple holdings by the more successful modern farmers. The issues involved in land registration clearly exemplify Margalef's point that subsystem A will seek to maximize, and subsystem B to minimize, their points of informational contact.

I believe that a consideration of several other features of traditional family organization and marriage networks would reveal similar dynamic inversions in which, at some critical level of population density, the former strengths of the system become major liabilities. Over time the various economic changes threaten to simplify, weaken, or render irrelevant existing shared meanings. Individualization increases the vulnerability of the Kipsigis to further exploitation. Although I do not think social cohesion will be undone all at once, the projection of present

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trends, if allowed to continue long enough, will bring about the loss of much information currently encoded in social structure and result in a shift from a society based on shared fate to a society rapidly differentiating into the haves and the have-nots.

The Kipsigis and Larger Trends. Having come to this rather unhappy prospect, I think there are three reasons for returning once again to Margalef's model.

First, I have left implicit, as he does, the question of defining the immaturity of the system relative to its scale. The system which has intruded upon the Kipsigis, however one defines its boundaries, has a very high level of maturity. Yet in Margalef's terms there are many features of the world system which seem to be increasing in immaturity, for example, the loss of linguistic diversity with the spread of major languages or the replacement of mixed farming with agribusiness.

Second, as I indicated earlier, the changes that have occurred among the Kipsigis have frequently taken the form of an addiction. Many of the actions and substances which were adopted in order to preserve the autonomy of the local system in the colonial context (for example, maize cultivation and wage labor) have produced paradoxical effects, since they are adaptive in the short run while generating long-term positive feedback processes which amplify the original predicament. In Kenya, as in the United States, the solution to problems arising out of rapid growth is too often seen as a little more growth. It is useful to consider what has fostered these contradictions introduced into the Kipsigis system.

Third, Margalef's model begs the question of what might happen should a sudden change occur in the context of the *larger* system. Clearly the predictions based on what "more of the same" would do to the Kipsigis must be altered if there is reason to believe that "more of the same" will not be forthcoming.

All three considerations—the growing immaturity, the addictive aspects, and the instability of the world system—can be traced, as Margalef's model suggests, to enormous increases in free energy, in this case fossil fuels. The relevance of this is immediate when one reflects that the current interchange between the Kipsigis and the national and international economy is now largely predicated on petroleum.

There are many predictions concerning the oil supply; perhaps it is sufficient here to note the conclusions of the Workshop on Alternate Energy Strategies (Flower 1978). They estimate that, on a worldwide basis, production will fail to meet demand sometime before the year 2000—indeed, considering probable OPEC policies, sometime in the 1980s. As the turning point draws nearer I think we can expect to see

an increase in last-minute exploitation of rich environments such as the East African highlands. Perhaps this is what I have been describing.

A failure of oil production to keep up with demand must surely lead to higher prices and economic recession, particularly in a country like Kenya that generates a major portion of its foreign exchange from tourism and relies heavily on road transport. It seems likely that areas in the periphery of the world system will experience the withdrawal of funds more sharply than the core.

If all this is true, then the timing of these events becomes critical for the Kipsigis. Judging from the experience of other highland groups, I would predict that the Kipsigis can sustain the current rate of growth in population for another generation with some serious problems but without a general collapse. The sooner economic development in its current form peaks out, the more leeway the Kipsigis will have to adjust to the situation using the large measure of social and economic autonomy they have been able to conserve. In the words of Howard Odum, "In times of declining energy quantity and quality, the economics of scale shifts to smaller dispersed units" (1976: 269). The Kipsigis are still largely preadapted to a coming age of low energy. To quote a Kipsigis saying, "In the afternoon the shade is on the other side of the tree."

When all this occurs, if it does, the Kipsigis will still face the enormous problem of regaining control over population expansion. Changes in this direction so far are very modest, and the traditional family patterns, on which so much depends, also continue to promote large families for several mutually reinforcing reasons. I am at a loss to predict how the demographic transition will come about. I can only conclude that if circumstances shift control of such problems back to the local level fairly soon, the Kipsigis may still reach a new homeostasis based on the accumulated wisdom encoded in their culture, which has served them so well this far.

NOTES

1. Fieldwork among the Kipsigis was conducted from August 1965 to March 1968 and again in June 1972. It was supported by a grant from the National Science Foundation and through research appointments to the Cross-Cultural Study of Ethnocentrism Project and the Child Development Research Unit (University of Nairobi), both funded by the Carnegie Corporation of New York. I am also indebted to the University Research Council of the University of North Carolina for making possible the very able assistance I have received from R. Bruce Clymer in the development of the ideas presented in this paper.

2. Many Kipsigis descent groups (*ortinwek*) are said to be derived from Nandi, Okiek, Masai, and Gusii immigrants and captives. In particular, several descent groups which are heavily represented in the southern portion of the district trace their derivation to Gusii lineages which were surrounded and absorbed en masse as the Kipsigis expanded.

3. Although protohistorical evidence is meager, it does not appear that nineteenth-century Arab slave caravans had much contact with the Kipsigis. Between 1886 and 1896 half a dozen British and German expeditions reached Kipsigisland. One of them became involved in a major skirmish, but the others seem to have passed without incident (Manners 1967: 223).

4. On this raid the younger warriors killed and mutilated Masai women in order to plunder brass coils from their arms and legs. Brass was a trade good that had not yet appeared in Kipsigisland. The events also indicate the desperate lack of livestock at home with which to support dependents; bridewealth averaged eight to ten head of cattle, and under normal conditions these women would have been adopted as wives and daughters. The Kipsigis interpret the smallpox epidemic as divine retribution for these atrocities.

5. "Some 47,000 Africans from East Africa died on war service" (Middleton 1965: 353).

6. Begun in 1919, the Soldier Settler Schemes were a device used by settlers to increase their numbers by making large areas in Kericho, Nandi, and other districts available to British veterans, particularly former officers, at very low cost (Bennett 1965: 233, 241).

7. Many of the early converts to the Protestant missions left the church over the issues of polygyny and of native beer. A small number of men who were circumcised by mission personnel later paid high fees to have their status endorsed by attending traditional rites, after they became the targets of severe social pressure. Informants also claimed that some women, who had been convinced by missionaries in the early years to forego initiation, later underwent the ceremony in order to be able to attend their daughters' initiations. Kipsigis informants claim, and my impressions agree (although I do not have systematic information about this), that those communities most affected by mission teachings have higher rates of social and psychological disorder (broken homes, illegitimacy, and so forth). In cybernetic terms, this would be called *noise*.

8. See Leys (1975) for a discussion of the British and World Bank loans underwriting the resettlement schemes, and the national and international renegotiations which became necessary when a majority of the small farmers on the early schemes failed to keep up with loan repayments. On a more personal level one of the hundreds of 45 rpm records recorded by Kipsigis musicians in Kericho during the 1960s starts with the spoken words "song of the scheme" and contains the following line comparing Kenyatta's imprisonment during the Emergency with the new mortgages: "Kenyatta was tied up for seven years; we, the people of the scheme, have been tied up for thirty." Sung in Kipsigis, and labelled "*Bane Rogoroni?*" (Does This Beer Tube Bewitch?), the record apparently escaped the notice of the national government.

9. In comparison, Evans-Pritchard's estimate for the Nuer, whose herds were still depleted by rinderpest, was less than 1.5 cattle per person (1940:

20). Thomas (1965: 22) gives figures suggesting about 3.5 cattle per person for a Dodoth neighborhood. 1952 government figures for the Pakot, who are an example of "pastoral resistance to change" (Schneider 1959), work out to an average of 10 to 20 head of cattle per adult man in the main pastoral areas and an average of from 2 to 5 head in the more heavily agricultural areas" (Schneider 1957: 279). The numbers for the Kipsigis community I studied, in the more pastoral part of Kericho District, are 17.4 cattle per married man (including dependent sons, or 22 per homestead). I do not have figures for the Kipsigis highland areas, but they are certainly higher than those cited for the Pakot (Daniels 1975).

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