1986

RURAL SOCIAL ORGANIZATION IN A SEMIARID AFRICAN COUNTRY THE CASE OF BOTSWANA

Louise Formann
University of California - Berkeley

RURAL SOCIAL ORGANIZATION IN A SEMIARID AFRICAN COUNTRY

THE CASE OF BOTSWANA

LOUISE FORTMANN

Environmental determinism has long been discredited in explaining the social organization of pastoral and agro-pastoral peoples.[1] Today the effect of climate on social organization is recognized as mediated by social, economic, and political factors.[2] Thus, social organization in Botswana reflects the influence of a wide variety of factors, among them Christian missionaries, interethnic warfare, past and continuing aggression of South Africa, introduction of the iron plow, British colonialism, Boer traders, discovery of minerals (most recently diamonds), international donor aid, and so on. Over the past century there have been substantial changes in a number of important trends: life expectancy, literacy, and per capita income have increased; commercial agriculture has evolved; transportation and communication infrastructures have been radically improved; and urban centers and nonagricultural industry have been established. Furthermore, the advent of new technologies has in some ways and some places altered the effects of semiaridity and of drought. Hand-dug wells, dams, diesel engines, and water tankers have allowed the periodic substitution of labor and capital for rainfall. The cumulative impact of such technological innovation has been to change the social meaning of climate for many Batswana.[3]

Yet, in the midst of this monumental change, some aspects of rural social organization in Botswana have been remarkably stable. This article explores the proposition that their stability is partly due to the persistence of the need for household flexibility, regardless of this change and pressure for change. The intent is to remind readers of the kernel of truth in the theory of environmental determinism: climate is one important independent variable influencing social organization.

Four forms of social organization—the social organization of land tenure, water use, multiple residences, and village-level organization—are examined. The context in which

Louise Fortmann holds degrees in rural and development sociology from Cornell University and is currently an assistant professor of forestry and resource management at the University of California-Berkeley. Her research on African agriculture and society has appeared in such journals as Rural Sociology *and* Journal of Development Studies.

[GPQ 6 (Summer 1986): 190–201.]

they function is described in the following discussions of the Botswana setting and of the need for flexibility in semiarid climates.[4]

THE BOTSWANA CONTEXT

Slightly larger than France, landlocked Botswana, with its population of 935,000, is located astride the Tropic of Capricorn, bounded by Namibia, Zambia, Zimbabwe, and the Republic of South Africa. Although the Okavango Delta in the north contains water year-round, most rivers and streams contain water only seasonally (see fig. 1). Most of the country is savanna with, in the north, large areas of mophane trees (*Colophospermum mopane*), which provide fodder for cattle and act as a host for an edible caterpillar. Botswana was a British protectorate from 1885 to 1966. It became independent under the presidency of Sir Seretse Khama in 1966 and has remained a multiparty democracy. Its major export earnings come from the sale of diamonds and cattle.

Early travelers referred to Botswana's Kgalagadi Desert as the Great Thirstland, a rather vivid portrayal of its arid and semiarid qualities. Nationally, mean annual rainfall is approximately 500 mm (20 inches), while actual rainfall varies from roughly 200 to 1000 mm (8 to 40 inches) depending on the year and the place.[5] Tyson (who predicted the present drought) found an approximately twenty-year oscillation in rainfall: ten wet years are followed by ten dry ones with a few dry years interspersed among the wet ones and vice versa. An arable drought (in which crops but not livestock are lost) can be expected every four to five years. Rainfall itself is unreliable with extreme annual variations, tends to occur in heavy showers of short duration, and is highly unpredictable in any one place or at any one time. The average Motswana thus is faced with a difficult climate that is further complicated by wholly unpredictable rainfall.

Most of the population lives in the rural areas, the vast majority being settled within 100 kilometers of the railway line running north-south in the eastern part of the country. The rural household production system is adapted to the semiarid climate through two types of land use—crop production and livestock production. Most rural Batswana live near reliable water in a village during the dry season and move out to a residence in the farming areas (hereafter referred to as the lands) as soon as the first rains fall and surface water can be trapped. The typical rural household in eastern Botswana farms two hectares of land (often located in scattered parcels in order to maximize the chance of some plots receiving rainfall) with an ox- or donkey-drawn plow. Generally sorghum (or, in better watered areas, maize), is the main crop, supplemented with watermelon and perhaps sunflowers or beans. A few chickens or small stock may be kept around the compound. Roughly 45 percent of the rural households hold cattle for plowing, milk, and savings. Wealthier households with larger herds may keep their animals at a third residence (often little more than a camp), called the cattlepost. Smaller herds and draft animals are typically kept at the lands. Needs for cash (to buy food, for instance) are often met by remittances from a household member who has obtained wage employment in the urban areas of Botswana or in South Africa as a miner or domestic servant. Cash may also be generated by selling livestock, crops, or fuelwood; by local casual employment; and by women's small enterprises, such as beer brewing, basket weaving, handicrafts, and snack food sales.

FLEXIBILITY IN THE FACE OF RESOURCE SCARCITY

The most important factor for survival in a nonindustrial society in a semiarid climate is flexibility, that is, access to multiple means of obtaining resources. Historically, the household in Botswana had to be able to move to avoid or reduce hardship. There could not be total reliance on one place, one resource, or one mode of production. If a household or

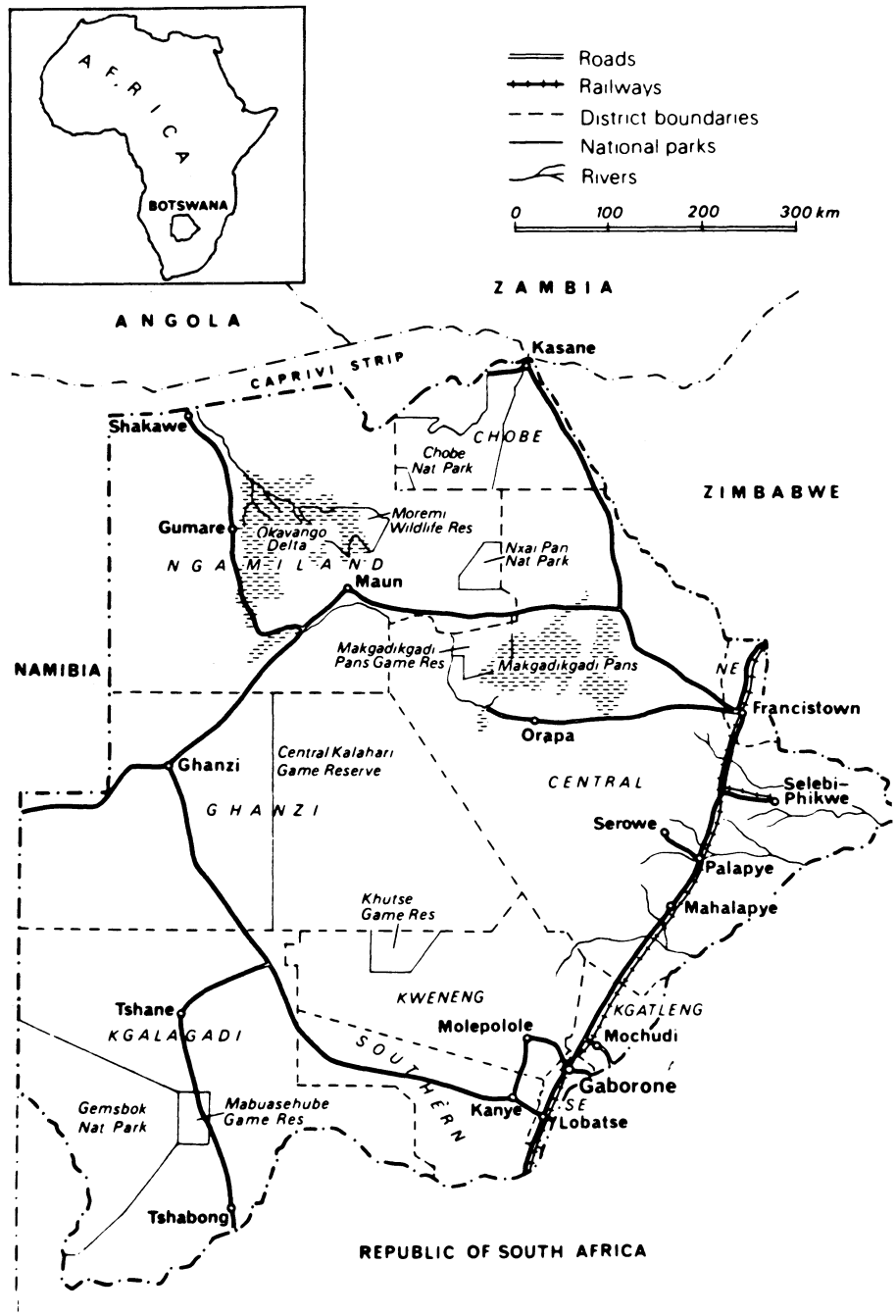

FIG. 1. *Republic of Botswana.* Source: Charles Harvey, Ed. *Papers on the Economy of Botswana.* London: Heinemann Educational Books, 1981. Frontispiece.

village could not move when the times of climatic stress inevitably came, it would exhaust the resources around it. In the past, flexibility was achieved by moving to where the resources were. Today this flexibility can in part be obtained by bringing the resources to the village or the household (for example through relief in the form of food and/or employment or through the provision of water during drought) or by shifting dependence to a new resource such as urban wage employment. Whatever its specific form, flexibility remains a crucial strategy for survival in semiarid areas.

For some Batswana part of this strategy for survival consists of limiting pressure on natural resources in order to increase the chance that there will always be a resource to fall back on. This is most readily accomplished by limiting access to the resource. Thus, in some cases, certain areas of rangeland are not used in the wet season in order to insure that they are available for use in the dry season. Similarly, certain water sources are reserved for dry season use in order to preserve a continuous supply of water throughout the year. Obviously, restricting use in order to preserve options in the time of stress necessarily limits options at any given time. This becomes complicated when more than one social unit lays claim to the same resource or set of resources. In such cases one group's management strategy may limit another group's flexibility. Or one group may try to preserve its own resource by using that of another group. Such cases are inevitably fraught with conflict. As we shall see, the ability to limit access to one's own resource is restricted by the need to maintain reciprocal relations with others in order to have access to local resources in time of need.

Despite shifts in power among pre- and post-Independence elites, rural social organization in Botswana has maintained a balance between achieving flexibility and limiting pressure on resources. For example, the local ability to reduce pressure on a resource through exclusion increasingly may be limited by the locus of decision making at national even international (in the form of donor agencies) levels. Thus, flexibility has in some cases assumed even more importance recently that it has in the past.

In summary, the most crucial factor in the adaptation of social structure to the climate is the maintenance of flexibility. Thus, changes in the social structure which reduce flexibility or allow flexibility to be maintained only at the expense of general equity are unlikely to be adopted.[6] Conversely, those changes that do not interfere with general flexibility have a great likelihood of being adopted.

LAND TENURE

> "Land is a very special resource, the very base on which the nation stands. The way in which it is administered is a profound expression of national values."—Presidential Commission on Land Tenure[7]

This section explores the theoretical tradeoffs between communal and private land ownership and the pressures to privatize land tenure in Botswana and discusses available data on the effects of private and communal property systems on environmental degradation in Botswana. Since flexibility is essential to survival and implies the ability to move, land cannot be held in a communal or private form that ties people to a fixed place. The strategies for obtaining flexibility adopted under conditions of private and communal land ownership can, in theory, be expected to differ. In the abstract, the private owner has at least three options for obtaining flexibility. One is to accumulate enough contiguous land to include fallback areas for all or major contingencies. In most semiarid regions this involves such large areas of land as to dispossess others and to have severe effects on social equity. A second option is to acquire scattered parcels of land that include the necessary fallbacks. Such a plan is functional only if one and one's herds have both the right of transit across the land of others and access to the resources (water and grazing) that allow transit to take place. A third possibility is to make

arrangements to use the resources of neighbors when necessary.

In contrast, under communal ownership the entire resource base is, in theory, available for use by all members of the social group, leaving everyone free to go to the resources. Traditional property rights provided flexibility for the whole community in Botswana.[8] The chief, as head of the tribe, controlled all the land in his (or her, in the case of female regents) domain, assigning areas for residence and for farming to each ward in the capital. In turn, this land was assigned to individual households by ward heads. Households had private rights (which could be inherited, loaned, or given away but not sold) to residential and arable land and wells and dams. If land were abandoned, it reverted to the tribe and could be assigned to someone else by the chief or the ward head. Surface water, grazing, wild edible plants, clay, and other natural products were used in common, as was the crop residue left after harvest.

Much of the traditional system of land tenure has been retained to the present day despite the numerous pressures toward change beginning with British and Boer imperialism, which entailed a variety of requests and demands for freehold title to land.[9] A second pressure for change (continued by some post-Independence donors) came from the officials of the Bechuanaland Protectorate, who felt that communal land tenure was incompatible with proper range management.[10] A third set of pressures is associated with the demand for secure collateral for bank loans. Many people believe that they cannot obtain a loan unless they obtain freehold title to their land.

The fourth set of pressures is associated with the monetarization of the Botswana economy and the commercialization and increasing profitability of the livestock sector in particular. The terms of trade have historically favored livestock over arable agriculture, a relationship that has been reinforced by an EEC program for the cattle industry under which Botswana producers have received above world market price for their cattle.[11] As a result, some of the cattle-owning elite have tried various means of bringing grazing land under their exclusive control. The 1975 Tribal Grazing Lands Policy (TGLP), which established long-term leases for private ranches, has been characterized by some observers as a land grab by the rich. Some entrepreneurs have also attempted both legally and illegally to control communal grazing areas for their own private use by various means, including the establishment of private water rights. This has sometimes led to dramatic confrontations with communities whose land is being expropriated.[12]

The strength of the traditional land tenure system against these pressures was demonstrated in the recommendation of the 1983 Presidential Commission on Land Tenure that there be no "tenure changes in respect of arable and grazing land." The Commission noted that customary land tenure systems "already possess the important features of security of tenure, easy access to land and inheritability which can in fact encourage development. The people did not express any need for radical changes because they felt there is nothing wrong with the existing system."[13] The Commission concluded that "Tenure change which could produce landlessness before other economic opportunities are generally available would clearly be ill-advised."[14]

The staying power of the traditional land tenure system lies in its adaptation to the vagaries of the climate, its compatibility with other social institutions both modern and traditional, and the drawbacks of the much-touted alternative of privatization. For example, J. Bruce has demonstrated that the traditional tenure system is compatible with the requirements of modern commercial lending institutions.[15] Financial institutions themselves testified before the Presidential Land Tenure Commission that "restrictions on the hypothecation of tribal land are not their main constraint on lending."[16] Thus the argument that capital-dependent development cannot take place in the absence of freehold title is not persuasive.

Traditional rural social relations based on reciprocity and interdependence, which provide households with flexibility, also support the maintenance of the traditional tenure system. P. Peters has observed that

> All but a tiny minority are engaged in complex networks of ties, often based on cattle exchanges, with a range of other . . . families. It is through such ties that they acquire labor for herding and for crop production, services, political support, favors, help and so forth. Such dense networks of dependence and interdependence represent social relations of production that effectively inhibit, for now, the thrust toward . . . exclusionary ranching practices."[17]

Garrett Hardin's Tragedy of the Commons argument holds that communal land tenure leads inevitably to environmental degradation.[18] But privatization in Botswana has been associated with environmental degradation and has, in some cases, been the cause of degradation resulting from land shortages created by the alienation of communally held land. For example, the worst environmental degradation (both overgrazing and sheet and gully erosion) in Botswana is generally considered to be in Northeast District where the Ndebele chief Lobengula granted a concession over all minerals in a 6000 square kilometer (2316 square mile) area to a European mining company. The terms of the concession continued to be broadened until the Tati Company obtained freehold ownership of the land in 1911.[19] The result of the concession was the crowding of the former inhabitants of the land and their livestock onto 344 square miles of "Native Reserves." This area, only 15 percent of their former holdings, was grossly inadequate for the size of the population and, as a result, the environment rapidly deteriorated.[20] Privatization in this case created conditions of land scarcity under which no land tenure system could have prevented degradation.

The implicit argument of those who press for privatization is that management techniques can be substituted for flexibility. But privatization does not necessarily create the conditions of good management. Many private farms are themselves not well managed and are the sites of considerable erosion.[21] Some ranches established on the principle that private land is best have had adverse ecological and social effects.[22] The establishment of private ranches has not succeeded in stopping overgrazing because of the amount of the investment required for good management on these relatively small pieces of land and the lack of government enforcement of either good management or stocking limits.[23] Further, in a perversion of the use of communal land as a means to flexibility, private ranch owners may graze their animals on communal lands in order to reduce the pressure on their private holding.[24]

To be sure, there is degradation associated with communal land tenure in Botswana. But even here, available data suggest comparatively less overgrazing in some communal areas. The point is that privatization has not proven to be uniformly effective in controlling overgrazing. And, even given existing levels of overgrazing on communal land, the specter of dispossession that privatization raises has made it the less desirable of the two options for many Batswana.

Customary Water Law and Water Use Patterns

Water is the sine qua non of survival in a semiarid climate. Because it is crucial in providing access to other resources (in this case grazing and arable land), the rules governing access to and use of water will affect other institutional arrangements.

Customary water law in Botswana is similar to that of other arid and semiarid regions.[25] Typically, naturally flowing water and naturally occurring surface water are common property resources. Travelers and their herds and those who need water for domestic uses generally have the right, upon seeking permission, to use any water source. These rights may be attached to obligations to assist in the

maintenance of the water point. Such rules are consistent with the adaptive principle of maximizing flexibility, ensuring that a household will have access to water should it be forced to move.

The investment of either labor or capital in the development of a water point creates private rights to its use. (Sometimes the point is made in customary law that it is the structure and not the water which is privately held.)[26] Thus, dams, haffirs, wells, and boreholes can only be used with the permission of the owner, although she or he is subject to the norm about providing water for travelers and domestic use. This regulation of water use is important because it can limit pressure on grazing. Unless there is open-access water nearby, the range in the vicinity of a private water point will be grazed only by the cattle of the owner and of those who have permission to use the water point. This rule is further enforced by the common understanding that the owner of a borehole has priority over grazing within an eight kilometer radius around it. Indeed, it is increasingly felt that the surrounding land is allocated along with the right to drill the borehole. This understanding has furthered the development of water points as a means of controlling land.

Because private rights to water sources create de facto private rights over the surrounding land, we can judge the relative effects of private and communal land tenure by comparing the grazing around private and communal water points. L. Fortmann and E. Roe measured range conditions at four points along grazing transects around 21 group- or government-owned (both of which were in these cases de facto communally owned) water points and 22 privately owned water points in the eastern communal areas.[27] While the areas around both sets of water points were in poor overall range condition, the range around the communal water points was measured as being significantly better than that around the private water points. That is, de facto private control of the land did not appear to have the beneficial environmental effects claimed for it. Indeed, quite the contrary was true.

These results are not explained by the type of water point associated with private and communal ownership. There were no significant differences in the state of the range around different types of water points (wells, boreholes, dams, etc.)[28] Rather, the explanation would seem to lie in the flexibility of the customary pattern of water use that involves moving to where the water (and other resources) are. Communal water points in rural Botswana are used in a fallback system. Each year as the rains start, households move out to the lands areas where seasonal water sources are filled by the rains and then fall back to more reliable groundwater sources and eventually back to the village as the seasonal sources go dry. This system creates rotational grazing that relieves pressure on the range. Private sources, in contrast, tend to be used year-round and the grazing thus gets no relief. The danger of being locked by private property into an inflexible pattern of resource use that is inappropriate for the climate is apparent in this example.

Flexibility is furthered by customary water law, which preserves certain sources as common property and establishes the right of certain categories of users to water even from private water sources. The traditional use pattern utilizes resources as they are available and preserves certain sources for times of stress. Thus, both customary water law and the traditional system of water use can be seen as adaptations to the semiarid climate.

Nonetheless, the possibility of substituting capital for rainfall has led to changes in the pattern of water use. New water sources provided by the government, particularly the boreholes, have reduced the necessity of moving to find water. Moreover, since it is possible to transport large quantities of water, people do not necessarily have to move now even in drought or when the boreholes go dry. Yet the effect of this technology is limited because it can overcome the effects of weather but not necessarily those of climate, and it introduces a new kind of uncertainty in the

form of mechanical failure. Even the deepest borehole may go dry or suffer an engine breakdown.[29] Therefore, many private water point owners still must maintain reciprocity with their neighbors in the event they may need to use other private or communal water points in the future. It is this need for reciprocity (which might also be viewed as the need for the substitution of social organization for rainfall) that is probably the major force for equity in the system.

Multiple Residences and Shifting Settlements

Various Tswana peoples have lived in the area now known as Botswana for many centuries. For much of this time they have lived in large settlements reported by astonished European travelers as early as 1804.[30] For example, in 1906 the village of Serowe had an estimated population of 22,000. However, as noted above, farming was done at separate, smaller, seasonal settlements. This pattern of multiple settlements was dictated by climate and soils. The Agricultural and Economic advisor to the 1933 Pim Commission commented:

> The climate being a dry one, land suitable for cultivation is not always easy to find—the best is undoubtedly in the lower lying places. The present tribal organization which consists of the consolidation of the population into large villages . . . has enabled the tribes to select the best situated areas for tillage purposes. Scattered cultivation with the individual owner living on the soil with his arable holdings and grazing immediately around him would be unsuitable for the greater part of the Native Reserves, owing to this difficulty of obtaining arable land suitably situated for each holding. It would increase denudation and might eventually turn the country into a wilderness. The consolidation of holdings has, on the other hand, permitted a real choice of sites for crop-raising and it's quite a noticeable feature in the Reserves that the best lands have been selected for this purpose.[31]

The pattern of multiple residences has been in a process of change for many years. At one time it seems that nearly the entire population moved to the lands during the farming season, returning to the village after harvest. But by 1943 I. Schapera was reporting Chief Bathoen's negative views of those who at that time were remaining year-round at the lands.[32] In more recent times additional households have taken up permanent residence at the lands. For example, some 22 percent of the respondents in a large-scale 1980 survey said they lived there permanently.[33]

This change can be explained only in part by the water technology that can make water available year-round at the lands. For even in lands areas served by boreholes and with such social amenities as schools and health posts, some households continue to come and go with the seasons. In other lands areas with extremely inconvenient dry season water sources yet other households soldier on at a permanent lands residence.

Admittedly, there has been more change in this form of social organization than in land tenure or the system of water rights and use. But this change must be judged in the light of three factors. First, three out of four households still move every year. Under the system of multiple residences, the village was the locus of civic and ceremonial activities. This role, which the village retains to the present day, tends to draw people back into the villages. Second, choice of residence can be distinguished from systems of property rights in that it has become an individual, not a societal, decision. A family's decision to maintain a single residence at the lands does not interfere with the flexibility of other households as would a change in the land tenure or water rights systems. Third, it is a rescindable decision. Should water technology prove to be unreliable or excessively expensive, permanent lands residents may once again establish a

village residence. Thus, a household's relinquishing flexibility of residence is not itself an inflexible act; flexibility can be resumed at any time.

VILLAGE LEVEL VOLUNTARY ORGANIZATIONS

From the arrival of the first European, there has been a proliferation of western social organizations, starting with the church. Now nearly every village in Botswana is awash with Parent Teacher Associations, Village Development Committees, Village Health Committees, Social Welfare Committees, Burial Societies, Farmers Committees, dam groups, small stock groups, dosing groups, carvers' groups, basket making groups, the Red Cross, Youth Associations, and several kinds of women's clubs. Some of these are defunct or moribund; others are small, weak, and of limited duration. Indeed, some existed in the first place only because villagers were too polite to tell their initiators to go away. The groups that survive are interesting because they have been adapted to local conditions, often in ways which lead those familiar with their western prototype to conclude that they, too, are defunct.

In contrast to exclusionary western organizational forms, traditional local organization in Botswana has often been calculatedly reciprocal.[34] Further, traditional organizations have not necessarily followed the western pattern of year-round formal meetings. Among the myriad village-level nontraditional organizations, perhaps the most illustrative of the complexities of their organizational adaptation are the dam groups.[35] These were initiated by the government as a part of its program of providing dams for livestock watering at the lands. Each group was to be given exclusive rights to use the dam in return for their agreement to maintain the dam and restrict its use to 400 head.

The expatriate originators of the dam group project were accustomed to sedentary communities with a reasonably fixed population and private rights to land and water. The communities in which the dam groups were to be established were seasonal ones with communal rights to land and many water sources and, in certain cases, de facto rights to use even private water sources based on reciprocal networks of rights and obligations.

Not surprisingly, the dam groups did not function in the way their originators anticipated. First, they did not function regularly or year-round. Rather, they were seasonal, not just because residence in the communities was seasonal but because the need for their functioning was restricted to the limited period of the year after ephemeral surface water sources have gone dry and before most people have left the lands area for the village. Nor did these groups have expressive functions. Social action in Botswana is generally located in kin, residential, neighborly, and patronage relationships, not in clubs or similar organizations. Hence, when the dam groups had no instrumental function to perform, they were allowed to lapse. When it came time for fences to be repaired and dam regulations to be enforced, the dam groups became active. To those accustomed to regular, solemn, and formal meetings this perfectly rational seasonal strategy appeared to be the sign of a defunct organization.

Although dam groups provide a particularly clear example, various forms of seasonal adaptation are typical of village-level organizations in Botswana.[36] Thus, we find flexible, seasonal social structures based on reciprocity and adapted to the difficulties of living in this semiarid climate overwhelming the demands of more rigid alien organizational forms.

CONCLUSIONS

Social structures in Botswana have historically been adapted to the vagaries and stresses of the semiarid climate, as can be seen in the land tenure system, the system of customary water use and law, the system of multiple residences, and the seasonal nature of many village-level organizations. These social structures have shown remarkable staying power in

the face of heavy pressures for economic and political change since Independence. This is particularly true of the systems of land tenure and water rights that have persisted in spite of national policy changes that, if successfully implemented, would have affected rural households' flexibility and undermined the societal value of equity. Note that this sort of flexibility is necessary only for agricultural and livestock production systems. Were the economic system to swing to, say, total dependence on diamond revenues, much of the rationale for the land and water rights systems would collapse.

Although changes have occurred in the substitution of permanent residence at the lands for the system of multiple residences, these changes have taken the form of individual decisions that do not affect the flexibility of others and that affect equity only insofar as those who live permanently at the lands are able to farm more productively.

Finally, let us return to the conventional wisdom that, while climate does affect social organization in a semiarid environment, its effect is mediated by a variety of social, political, and economic structures. It has been argued here that equal consideration should be given to the fact that a variety of political and economic changes may only slightly alter social structure if a need for flexibility in a semiarid environment persists. We have seen that maintaining flexibility is the keystone of adaptation in Botswana and that major shifts in the social structure which weaken flexibility are unlikely to occur unless the economic base changes. Nor are changes that maintain flexibility but that significantly undermine basic societal equity likely to occur. In sum, adaptation to a particularly difficult climate would seem in part to explain the stability of particular organizational forms in Botswana.

NOTES

The helpful comments of E. Roe, P. Peters, J. Gilles, and anonymous reviewers are gratefully acknowledged. This research was funded in part by the Government of Botswana, the U.S. Agency for International Development Contract (AID/DSAN-C-0060) with the Center for International Studies, Cornell University, and the cooperative agreement between USAID and the Land Tenure Center, University of Wisconsin. The views expressed are those of the author and do not necessarily represent those of the funding institutions.

1. See B. S. Orlove, "Ecological Anthropology," in *Annual Review of Anthropology* 9 (Palo Alto: Annual Reviews 1980) 235–73.

2. R. and N. Dyson-Hudson, "Nomadic Pastoralism," in *Annual Review of Anthropology* 9 (1980) 16–17; J. Bennett, *Northern Plainsmen* (Chicago: Aldine Press, 1969); M. Dove, "Development of Tribal Land-Rights in Borneo: The Role of Ecological Factors," *Borneo Research Bulletin* 12 (1980): 3–19, P. Bonte, "Ecological and Economic Factors in the Determination of Pastoral Specialization," *Journal of Asian and African Studies* 16 (1981):33–49.

3. One citizen of Botswana is a Motswana. The plural is Batswana.

4. This article is based primarily on social organization at the lands, where differentiation is less marked than in Botswana society as a whole. Of the 354 sample households, 65 percent owned cattle (compared to 45 percent nationally). Those who do not have enough assets to farm typically are not found at the lands, hence the poorest segment of the rural population is not included in this study. This should be kept in mind when the question of equity is discussed.

5. The information on climate and weather is drawn from the following sources: B. Wilson, "A Mini-guide to Water Resources," in M. T. Hinchey, ed., *Proceedings of the Symposium on Drought in Botswana* (Hanover, New Hampshire: University Press of New England, 1979), pp. 59–68; P. D. Tyson, "Southern African Rainfall: Past, Present, and Future," in M. T. Hinchey, ed., *Symposium on Drought*, pp. 45–52; S. Sandford, *Dealing with Drought in Botswana*, (Gaborone: Overseas Development Institute, 1977), pp. 26–28; H. J. Cooke, "Botswana's Present Climate and the Evidence for Past Change," in M. T. Hinchey, ed., *Symposium on Drought*, pp. 53–58; McGowan and Associates, *Botswana: A Study of Drought Relief and Contingency Measures Relating to the Livestock Sector—Draft Final Report*, 2 vols. (Commonwealth Fund for Technical Cooperation, Commonwealth Secretariat, 1979).

6. It is easy to oversimplify the question of equity in Botswana society. There is ample evidence of significant and increasing economic differentiation in Botswana that adversely affects certain ethnic groups. See D. Cooper, "How Urban Workers in Botswana Manage Their Cattle and Lands: Selebi-Pikwe Case Studies," Working Paper No. 4.

(Gaborone: National Migration Study, 1980); R. Hitchcock, "Tradition, Social Justice and Land Reform," *Journal of African Law* 24 (1980): 1–34. Nonetheless, the belief that Botswana society is an equitable one has a certain societal credence and may well serve to prevent even greater distortions and inequities than presently exist.

7. Republic of Botswana, *Report of the Presidential Commission on Land Tenure*, (Gaborone: Government Printer, 1983), p. 3.

8. I. Schapera, *Native Land Tenure in the Bechuanaland Protectorate* (Lovedale: The Lovedale Press, 1943), pp. 42–47. See also Hitchcock, "Tradition," pp. 4–10.

9. I. Schapera, "The Native Land Problem in the Tati District. Report and Recommendations Submitted to the Bechuanaland Protectorate Administration," *Botswana Notes and Records* 3 (1971): 219–68; M. Perham, *Lugard: The Years of Adventure 1858–1898* (London: Collins, 1956), p. 562. But see A. Sillery, *The Bechuanaland Protectorate* (London: Oxford University Press, 1952), p. 174.

10. See "Overstocking in the Bechuanaland Protectorate" Republic of Botswana National Archives, V 1/6.

11. E. Roe, *Development of Livestock, Agriculture and Water Supplies, in Eastern Botswana Before Independence: A Short History and Policy Analysis*, Occasional Paper No. 10. (Ithaca, New York: Cornell University Rural Development Committee, 1980); Carl Bro International A/S, *An Evaluation of Livestock Management and Production in Botswana with Special Reference to Communal Area*, Vol. 2 (Gaborone: Ministry of Agriculture and Commission of the European Communities, European Development Fund, 1982), p. 22.

12. F. Zufferey, *A Study of Local Institutions and Resource Management Inquiry in Eastern Central District* (Gaborone: Applied Research Unit, Ministry of Local Government and Lands, 1983), pp. 100–103.

13. Land Tenure Commission, p. iv.

14. Ibid, p. 3.

15. J. Bruce, "Observations on Land Tenure and Housing Development in the Major Villages of Botswana," Research Paper No. 75. (Madison, Wisc. University of Wisconsin Land Tenure Center, 1981).

16. Land Tenure Commission, p. vi.

17. P. Peters, "Struggles over Water, Struggles over Meaning: Cattle, Water and the State in Botswana," Working Papers No. 88 (Boston: African Studies Center, Boston University, 1984), p. 16.

18. G. Hardin "The Tragedy of the Commons," *Science* 162 (1968): 1243–48.

19. Henderson M. Tapela, "Movement and Settlement in the Tati Region: A Historical Survey," in R. Renee Hitchcock and Mary R. Smith, eds., *Proceedings of the Symposium on Settlement in Botswana—The Historical Development of a Human Landscape* (Marshalltown, Republic of South Africa: Heinemann Educational Books Ltd., 1982).

20. Since 1932 overgrazing has been noted in the District files, which contain many descriptions of a landscape the authors considered to be on the brink of catastrophe. The carrying capacity of the district is estimated to have fallen from 8 hectares per livestock unit (LSU) to 24–32 hectares per LSU. Although there are problems with these figures, the trends they indicate are probably correct. See L. Fortmann et al., "Local Institutions, Village Development, and Resource Management: Case Studies from Northeast District, Botswana" (Madison: Land Tenure Center, forthcoming) for a detailed discussion. Local residents also recognize the problem. During a 1976 radio consultation campaign, 62 percent of the Northeast District Radio Listening Groups said there was a lot of overgrazing in their area, compared with a national figure of 32 percent. Fortmann, "Local Institutions," p. 174. Erosion has been described by M. D. Rigby, "Cultivated Lands Survey, Botswana" (Gaborone: DHV Consulting Engineers, 1980), who noted on the 1980 map of Northeast District, "Sheet and gully erosion are both extensive—conservation measures are required throughout."

21. L. Sambona, *The Survey of the Freehold Farms of Botswana* (Gaborone: Ministry of Agriculture, 1983).

22. M. Odell, "Botswana's First Livestock Development Project: An Experiment in Agricultural Transformation," (Gaborone: Swedish International Development Authority, 1980), pp. 33–37, 44–54; and S. Bekure and N. Dyson-Hudson, "The Operation and Viability of the Second Livestock Development Project (1497-BT): Selected Issues" (Gaborone: Ministry of Agriculture, 1982), pp. 30, 39. Bekure and Dyson-Hudson (pp. 31, 40) recommended that the World Bank withdraw from commercial ranch development and that the government be encouraged to buy up freehold land for "the formation of voluntary local *groups* in production and range control experiments" (emphasis added). See also J. Gilles and K. Jaamtgard, "Overgrazing in Pastoral Areas: The Commons Reconsidered," *Sociologica Ruralis* 21 (1981):129–40.

23. Odell, "Botswana's First Livestock," pp. 49–54.

24. Bekure and Dyson-Hudson, "The Operation," p. 31; Fortmann et al., "Local Institutions," p. 42.

25. N. Dyson-Hudson, *Karimojong Politics* (Oxford: Oxford University Press, 1966), pp. 59, 112–13, 219–20; P. H. Gulliver, *The Family Herds*

(London: Routledge and Kegan Paul, 1955), pp. 37–38; I. M. Lewis, *A Pastoral Democracy* (London: Oxford University Press, 1961), p. 49; J. T. McCabe, "Land Use among the Pastoral Turkana," *Rural Africana*, 15–16 (Winter-Spring 1983): 102–26.

26. Dyson-Hudson, *Karimojong*, pp. 219–20.

27. L. Fortmann and E. Roe, "The Water Points Survey" (Gaborone: Ministry of Agriculture, 1981), p. 95. See also, E. M. Roe, "Range Conditions around Water Sources in Botswana and Kenya," *Rangelands* 6 (1984): 247–49.

28. Roe, "Range Conditions," p. 248.

29. Peters (pers. comm., 1984) notes "borehole syndicates expected to water their cattle at neighbouring boreholes when their borehole broke down. This is a frequent enough condition . . . to need such an arrangement."

30. G. J. Hardie, "Tswana Design of House and Settlement—Continuity and Change in Expressive Space" (Ph.D. diss., Boston University, 1981), p. 30.

31. A. W. Pim, *Financial and Economic Position of the Bechuanaland Protectorate: The Report of the Commission Appointed by the Secretary of State for Dominion Affairs* (London: His Majesty's Stationery Office, 1933), p. 191, cited in Hardie, *Tswana Design*, p. 34.

32. See Schapera, *Native Land Tenure*, pp. 267–72.

33. L. Fortmann and E. Roe, "Settlement on Tap: The Role of Water in Permanent Settlement at the Lands," in R. R. Hitchcock and M. R. Smith, eds., *Settlement in Botswana*, p. 307.

34. See R. P. Werbner, "Production and Reproduction: The Dynamics of Botswana's North-Eastern Micro-Regions," in R. R. Hitchcock and M. R. Smith, eds., *Settlement in Botswana*, p. 264; N. Mahoney, "Contact and Neighborly Exchange among the Birwa of Botswana," *Journal of African Law* 21 (1977): 40–65.

35. See E. Roe and L. Fortmann, *Strategy: The Changing Organization of the Rural Water Sector in Botswana*, (Ithaca, New York: Rural Development Committee, Cornell University, 1982): 81–101.

36. See L. Fortmann, "Seasonal Dimensions of Rural Social Organization," *Journal of Developmental Studies* 21 (1985): 377–89.