
Richard B. Lee

INTRODUCTION

Since 1963 a group of investigators has been studying the !Kung San (Bushmen), a hunting and gathering people in northwestern Botswana. The overall goal of the study, directed by Irven DeVore and me, has been to develop as complete a picture as possible of the hunting and gathering way of life, an adaptation that was, until 10,000 years ago, a human universal.

Our interest in the San was sparked in 1962 at the University of California (Berkeley) by Sherwood Washburn and J. Desmond Clark. Washburn argued that the study of living hunting and gathering peoples might throw light on the evolution of human behavior and ecology; Clark believed that the study of campsite behavior would be an aid in the interpretation of prehistoric living sites. In the early 1960s, the anthropological world was excited by the new data pouring in from field

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studies on nonhuman primates and from the Leakeys’ discoveries of ancient living floors associated with fossil man. The ethnographic study of a contemporary hunter-gatherer group seemed to be the next logical step.

Irven DeVore and I chose to work in Africa rather than in Australia because we wanted to be close to the actual faunal and floral environment occupied by early man. After 2 months of survey in Botswana in mid-1963, we decided to concentrate on an isolated region in northwestern Ngamiland that we named the Dobe Area after the water hole where I first camped in October 1963.

When DeVore and I began planning fieldwork with the San, a 13-year commitment of time and energy was not anticipated. DeVore was seeking to expand his interest from the ecology and behavior of nonhuman primates to the ecology and behavior of a human group. A graduate student, I was looking for a dissertation project in which to pursue my interests in human ecology, economic systems, and social evolution.

At first our project was a two-person operation. Later it expanded not only in time, but also in personnel. While continuing to do our own work, DeVore and I supported the work of students and specialists in a range of related fields: medicine, demography, psychology, ethology, archaeology, and folklore.

In all, some 14 investigators associated with the project have carried out major studies of the San (see Appendix at the end of the chapter). Although the scope of our studies has been considerable, four major groups of research problems can be distinguished: ecology and social change, population and health, child development, and the cognitive world.

Each of these studies has contributed in its way to a dozen or more specialties in anthropology and related fields. What these diverse projects have in common is a shared theoretical orientation that can be broadly defined as ecological, ethological, and evolutionary. All of the project workers have sought to relate their data to the basic adaptive strategies of the hunting and gathering way of life. The full range of studies has been brought together in Lee and DeVore, 1976.

A HISTORY OF SAN STUDIES

The San, called Basarwa locally and formerly known widely as the Bushmen, represent the oldest cultural stratum surviving among the peoples of Botswana and Southern Africa. For a people of such importance to science, surprisingly little has been known about the San. Although some medical research was carried out among the Kalahari San in
the 1930s (e.g., Dart 1937), serious ethnographic fieldwork did not get underway until 1951! In that year, Laurence and Lorna Marshall began their work among the Nyae Nyae !Kung of South West Africa. Since then, the Marshall family expeditions have produced a distinguished series of publications, films and books (Marshall 1960, 1976).

Later long-term research was initiated among the /Gwi and //Gana peoples of the Central Kalahari Desert by George Silberbauer (Silberbauer 1965; Silberbauer and Kuper 1966), and by H. J. Heinz among the !Xo peoples of southern Botswana (Heinz 1966). Medical, ecological and physiological research has been carried out by Phillip Tobias, C. H. Wyndham, and the other members of the Kalahari Research Committee of the University of the Witwatersrand in Johannesburg (Tobias 1964). Important linguistic work has been carried out by Westphal (1963) and Traill (1973).

In 1967, a Japanese expedition came out to do San fieldwork in Botswana. Jiro Tanaka studied the /Gwi and //Gana on two field trips, the second one under the auspices of the Harvard Kalahari Research Group (Tanaka 1969, 1976). Mathias Guenther from the University of Toronto studied a mission station on the Ghanzi Farms in 1968–1970, and was among the first to work with San in highly acculturated situations (1976).

The Kalahari Research Project, Stage One: Lee and DeVore, 1963–1967

Our own work has centered on the Dobe area, a line of water holes in the northwest corner of Botswana straddling the Namibian border. Within its area of about 10,000 km² live some 450 !Kung residents augmented by an equal number of seasonal and occasional visitors. There are eight water holes in the !Kangwa Valley, and south of the Aha Hills one large water hole at /Xai /Xai. The !Kung share these water holes with several hundred Herero and Tswana cattle people and their livestock.

After our initial contact with the Dobe !Kung in October 1963, I spent 15 months and DeVore 2 months living in the area in 1963–1964. In line with our original research interests, we focused heavily on ecology—mainly hunting and gathering techniques, land use, and group structure. The results were summarized in my doctoral dissertation (1965) and in several papers (Lee 1968a, b, 1969).

This first field study yielded new data on hunters and gatherers that seemed to cast doubt on some of the then current views of the hunting and gathering way of life. At the suggestion of Sol Tax, we organized the symposium on “Man the Hunter,” held in Chicago in April 1966. The conference brought together students of hunter–gatherers from all over
the world and helped to stimulate new research directions (Lee and DeVore 1968).

Two practical consequences emerged from the first field study and from the Symposium on "Man the Hunter." First, it became clear that before studies of hunter-gatherers could be of real usefulness to students of human evolution, a great deal more had to be known about the ethnography, adaptations, and acculturation status of contemporary peoples. Second, it became clear that the range of specialized information required was too broad for any single investigator to collect.

These considerations led to the planning of the second field study. The central ethnographic and ecological interests of DeVore and myself were continued, but the research design was expanded to include specialists in demography, child development, archaeology, population genetics, medicine, and nutrition.


In 1967, DeVore and I returned to the Dobe area to continue the work. In late 1967, Nancy Howell began research on San demography; her study later grew to include reproductive histories of virtually all the adult women of the Dobe area (Howell 1976a). Howell also studied the networks of kinship and acquaintance that held together the widely dispersed San population of Dobe and adjacent areas.

In early 1968, Patricia Draper, Henry Harpending, and John Yellen arrived at Dobe. Draper did an 18-month study of child rearing and subsistence of both nomadic and settled !Kung (1975). Harpending's work in genetic demography took him to camps all over northwestern Botswana where he interviewed and collected blood samples from nearly 2000 San. Yellen, in collaboration with DeVore, did a two-part study of hunting behavior and settlement patterns. They followed hunters on actual hunts and carefully traced the butchering and distribution of the meat and the final scattering of the bone remains. They also plotted the floor plans of recently occupied campsites (Yellen 1976). Yellen also conducted excavations of Stone Age sites in the area.

In 1967–1968, a medical team composed of Doctors Stewart Truswell and John Hansen made two trips to Dobe to examine !Kung adults and children. Truswell and Dr. B. M. Kennelly made a third trip in 1969 to work on heart disease. Medical research was also carried out by Doctors Trefor Jenkins and Jack Metz (Truswell and Hansen 1976). In September 1968, Richard Katz, a psychologist, came out for several months to study the !Kung healing dance in collaboration with me (Katz 1976).
Stage Three: Konner, Shostak, Tanaka, and Biesele, 1969–1972

In mid-1969, Mel Konner and Marjorie Shostak joined Harpending, Draper, and Yellen at Dobe, Konner to work on the ethology of early infant development (Konner 1976). Later, he was joined by Nicholas Blurton Jones from the Institute of Child Study, University of London. Together they worked on several projects including the !Kungs’ knowledge of animal behavior (Blurton Jones and Konner 1976). Shostak made studies of beadwork and musical instruments and collected in-depth life history materials from eight San women (1976).

Jiro Tanaka of Kyoto University, who had worked with the /Gwi in 1967–1968, returned in 1971 to the Central Kalahari Reserve to continue his ecological studies in parallel with my own ecological work in the Dobe area, 400 km to the north (1976).

In late 1970, Megan Biesele, a folklorist and anthropologist, arrived in the Dobe area to study oral literature, myth, and ritual of the !Kung. Most of her work was done at Kauri, about 150 km southeast of Dobe (1976). In addition to her ethnographic work, Biesele focused on the problems of social and economic change among the San. Her findings showed that drastic changes were in the offing for the remaining San groups.

Stage Four: The AAA Symposium on Bushmen Studies and the Founding of the Kalahari Peoples’ Fund, 1971 to the Present

With the return of most of the fieldworkers by 1971, the time seemed ripe for a major presentation of our results. DeVore and I organized the "Symposium on Bushmen Studies" that was held at the annual meetings of the American Anthropological Association in New York in November, 1971. An audience of over 400 people heard papers by Howell, Harpending, Yellen, and DeVore in the morning, and Katz, Konner, Draper, Guenther, and me in the afternoon. An important contribution was made by the discussants who offered constructive criticism of the papers and helped to put our data into perspective. These included Milton Freeman, Jean MacCluer, and Charles Nelson on the demographic and ecological papers; June Helm and Michael Harner on the sociological papers; and Margaret Bacon and Nicholas Blurton Jones on the papers on child development. Sherwood Washburn made some general remarks and also wrote the foreword for the book that came out of the symposium (Lee and DeVore 1976).

A sense of the accelerating pace of change emerged clearly at this symposium. As concerned anthropologists, we began to explore how our work could be of maximum benefit to the San. These discussions resulted
in the formation of the Kalahari Peoples’ Fund in January 1973. The goals and activities of the Fund are discussed in the concluding section.

THE LOGISTICS OF TEAM RESEARCH IN THE FIELD

Coordinating the work of a dozen investigators over more than a decade has proved to be a formidable task. During most of the period, there were from one to three researchers in the Dobe area at any one time, although in peak periods there were as many as eight. The abundance of investigators created logistical problems, although we would like to think that the returns in valuable data across a wide range of fields more than offset the drawbacks of too many researchers. Also, the continuing infusion of new research people helped develop an esprit de corps, kept the “senior” researchers on their toes, and yielded practical benefits for language learning, orientation in the field for newcomers, and continuity of observation.

What follows is a critical discussion of our practice as fieldworkers pointing out some of the mistakes we made, and some of the things we did right as well. After 1967, the camp at Dobe water hole became a base camp for the entire research project, from which researchers could branch out on lightly equipped extended visits to remote water holes and rainy season camps. Dispersing the investigators at widely separated points was a necessary strategy; however, it was marred by the fact that the Dobe San people themselves were continuously part of the study population. The Dobe residents enjoyed unprecedented popularity (and later resentment) among other San because of our presence at their water hole. It seems clear in hindsight that our research group exerted a major acculturative impact on the Dobe camps, though one that can be identified and remedied in the analysis. In hindsight, it would have been better to situate the base camp on neutral ground or at the district headquarters to minimize such effects.

Team research also brought with it problems of relations between researchers themselves. The recruitment of new fieldworkers was in part based on gaps in our data that DeVore and I felt had to be filled. Certain areas were given high priority, such as demography, archaeology, and child-rearing practices. In part recruitment was a process of self-selection by the researchers themselves; students who demonstrated a keen interest in the San and a strong motivation to brave the rigors of desert life found a place in the project. Physical fitness was a characteristic common to all the fieldworkers. When the project reached its present size in 1972, we consciously scaled it down by not actively continuing to recruit new
researchers. This was partly to give the !Kung a rest, but mainly to allow us time to assimilate and publish what we had found out.

Each researcher defined for himself a topical niche that had a core of subject matter that became that person’s responsibility. In addition, each research worker identified several topics which touched on the interests of others involved in the project. In this way the interconnections between studies were complementary rather than duplicative or competitive. The advantage (and challenge) of collaborative research of this kind is the necessity to submit one’s findings to the critical evaluation of one’s colleagues within the project. The result has been that a number of individual findings have failed to be confirmed by other workers, while those results that have been corroborated by five or six observers have gained correspondingly in strength.

Another problem area concerned language learning and use. The !Kung language is unwritten and not extensively described. In 1963, no !Kung spoke English. In order to communicate with the !Kung, I had to learn in the field Setswana, the language of the dominant Botswana people. Speaking in Setswana with the aid of an interpreter, I was able to elicit vocabulary in !Kung until late 1964, when I struck out on my own. Back in Cambridge, Massachusetts, I taught the rudiments of !Kung to the next wave of fieldworkers. Since then, returning fieldworkers have taught the language to those embarking for the Kalahari. Most of the later researchers started work directly in !Kung and bypassed interpreters entirely.

When it became clear that many fieldworkers would be researching and writing about the Dobe area !Kung, standardization of format became a high priority. A standard orthography and coded lists of place names and personal names have been used by all members of the research group since 1973. Perhaps of greater significance to long-term field research is the problem of identification of individuals. Nearly 1000 !Kung live in or visit the Dobe area. Because of the peculiar system of inheritance of personal names, dozens of people may share the same given name; since there are no surnames, this creates real dangers of misidentification. If one meets a man named “≠toma,” for example, how can it be determined which of the 25 “≠toma’s” he is or whether he is the same “≠toma” studied by Lee 10 years before?

We solved the problem by assigning each person a master number from 1 to 1000. In 1964, some 460 residents were enumerated. Thereafter new !Kung entering the population through birth or migration were assigned a number. A master file containing a short biography, a genealogy, and a photo of every individual became the core data base of the Dobe area research. It was kept up to date from 1963 to 1973 and has been periodi-
cally updated since then; it is the standard work referred to by all the
researchers. This core data base is especially useful for demographic and
other quantitative analyses and allows for computer cross-tabulations
among a wide range of variables. It helps to maintain the clarity of the
boundaries of the study population and gives the research group a handle
on accounting for discrepancies if one set of observations is at odds with
another. This factor was of crucial importance in the study of social
process, since the Dobe area population was undergoing microevolu-
tionary changes throughout the period 1963–1973. Identifying these pro-
cesses and weighing their differential impact on the various geographic
divisions of the population became crucial to the understanding of the
!Kung hunting and gathering way of life and its transformations.

HOW THE DOBE AREA CHANGED

In 1963, the San of the Dobe area were the most isolated and traditional
hunter–gatherers we could find in northern Botswana. Our choice of
Dobe as a study site did not spring from archaism or romanticism; rather
to achieve our goal of preserving a record of the hunting and gathering
way of life, it was necessary to find the most unacculturated group.

The Dobe area is cut off from the rest of what was then the Bechuanal-
land Protectorate by a 100 km stretch of waterless country that takes two
or three days to cross on foot or by donkey. When I first arrived at Dobe
in October 1963, the area had no stores or schools and only intermittent
contact with the outside world. A government truck would come out
about once a month, but the main concern of its crew was the Bantu-
speaking cattle people and not the San themselves. At that time, the San
planted no crops and kept no domesticated animals except for the dog.
The majority of the people lived mainly by hunting and gathering. The
pastoralists lived at eight of the nine water holes, but beyond these areas
stretched a vast uncharted, unfenced hinterland 10,000 km² used almost
exclusively by hunting and gathering groups of San.

For the foraging peoples, group structure was intact, traditional kinship
patterns were very strong and the people moved freely back and forth
across the unfenced boundary between Bechuanaland and South West
Africa. In 1960–1961, a government settlement station had been set up by
the South Africans at Chum!kwe, 50 km west of the Dobe area, but this
had barely begun to affect the lives of the Bechuanaland !Kung. Dobe
appeared to be an ideal area to study the hunting and gathering way of life.

As our fieldwork continued, a more realistic picture of the "pristine"
nature of the Dobe area began to emerge. Most of the men of the Dobe area at some point in their lives had had some experience herding the Bantu cattle and, at any one time, about 20% of the young men were working with cattle. Some men had even owned cattle or goats in the past. Similarly, the !Kung were not total strangers to agriculture. Many had learned the techniques by assisting their Bantu neighbors in planting and, in years of good rainfall, some had planted and harvested small plots themselves. However, because of the extreme unreliability of the rainfall, none of the San had succeeded in establishing himself on an agricultural basis. Hunting and gathering continued to be by far the most reliable and therefore dominant means of subsistence.

We sensed that the !Kung were on the threshold of great changes, but we could not have anticipated how rapidly these changes would come or what their consequences would be. In 1964, after the first census of the area, the !Kung were canvassed in a voter registration drive, this being one of their first direct contacts with the central government of the country. In 1965, the Dobe area San voted in the first election and became, along with their fellow countrymen, citizens of the independent Republic of Botswana in 1966. In 1965, the previously unguarded international border that runs through the Dobe area was fenced and began to be patrolled regularly by the South African occupation forces in Namibia (South West Africa). This fencing limited access to the western hunting areas of the Dobe area and in the mid-1960s, a number of Dobe area families decided to emigrate permanently to Chum!kwe where the South Africans were providing jobs and rations.

In 1967, a trading store was built at !Kangwa in the heart of the Dobe area and, for the first time, store-bought food and dry goods were available for cash. The San women of !Kangwa immediately set up a thriving business in home-brew beer using brown sugar from the store as the main ingredient. The arrival of the store and the increase in government services after 1966 reduced the isolation of the Dobe area. In 1967–1968, an average of one truck a week arrived at !Kangwa from the outside world. This improvement in transportation made it much easier for Dobe area San to travel out; in the years 1964–1968, about 20 young men went to work in the gold mines of the Witwatersrand in South Africa.

A period of high rainfall was 1967–1970 and the San took this opportunity to plant and harvest extensive crops of maize, sorghum and melons. However, when the rainfall failed in 1972–1973, they again fell back on hunting and gathering. The 1960s also saw a sharp increase in livestock holdings. Whether purchased with cash from mine wages or obtained in payment for herding services, these goats, cattle, donkeys, and horses
came into the San economy by the dozens. By 1973, at least 20 families (particularly at !Goshe water hole) were deriving more of their subsistence from pastoralism than from hunting and gathering.

Two further developments occurred in the early 1970s. In 1973, a primary school opened at !Kangwa offering Standards I–IV. This was an incentive to the cash economy-oriented !Kung to stay in Botswana rather than emigrate to Chum!kwe to put their children into school. Counteracting this incentive was the campaign on the South African side of the border to organize some !Kung into paramilitary units of trackers in South Africa’s counter-insurgency warfare against the African liberation forces. The implications of these developments are discussed in the concluding section.

THE IMPLICATIONS OF LONG-TERM FIELDWORK

The changes we observed in the Dobe area provide the background to what we have learned by doing long-term fieldwork. Observing the San over a 13-year period forcibly impressed upon us that a sense of history is essential to an understanding of social structure. Hunter-gatherer societies are strongly influenced by seasonal and annual variation in climate and resources. Thirteen years of work brought home to us the annual range of variation in ecological conditions. There is no such thing as a typical year for hunter-gatherers. In the case of the !Kung the annual cycle in group structure looks very different in a wet year from a dry year, and the key to their adaptation is the flexibility to adapt to a long run of conditions (Lee 1972a).

In addition to these cyclical ecological changes are the long-term acculturation trends in the direction of the way of life of their pastoral and farming neighbors. Although the Dobe area !Kung have been in intermittent contact with the Tswana since the 1880s, administrative control was only established in 1948. Since then the !Kung have been moving in fits and starts towards the adoption of herding and farming. The pace of this change, however, is strongly affected by the climatic cycles mentioned above. Two examples will serve to illustrate the articulation of these two kinds of trends—cyclical and secular. Secular here is used in the sense of unidirectional and irreversible.

Rainfall and the Annual Cycle in Group Structure

During the first period of my fieldwork (October 1963–December 1964), all the San of the Dobe area were full-time hunter-gatherers. When the
rains came (November–March), they dispersed in small groups to the seasonal water holes. When these dried out (April–May), they converged into larger groups to winter at the nine permanent water holes of the area (June–September). When the rains came the following year, the pattern of dispersion was repeated. This was the pattern I described in my 1965 dissertation.

Returning to the Dobe water hole in August 1967 with this pattern fixed in my mind, I expected to find a large concentration of San wintering there. I was surprised to find Dobe almost deserted! Most of the Dobe people were to be found wintering at !Gausha, a “summer” water hole 16 km to the north of Dobe. To make matters even more confusing, when the rains came, the people moved back to the permanent water holes, exactly the reverse of the pattern I had observed in 1963–1964.

How were we to account for this apparent reversal in the annual cycle of group movement? A clue to the answer appeared when, taking advantage of the good rains of 1967–1968, a number of people began planting small gardens near the permanent water holes. Those who did not plant dispersed out to the summer water sources. As the season progressed, those whose crops failed also moved out to these summer water sources, while the successful farmers confined themselves to short 2–5-day visits to the summer areas returning frequently to tend their fields. In autumn 1968 (April–May), several families harvested crops. These were rapidly consumed by kinfolk and neighbors, and, by mid-June, the farming families, along with a number of others, had moved out to the numerous water points that held water well into the winter months.

Comparing 1967–1968 to 1963–1964, two kinds of changes were in evidence. First was the cycle of rainfall. The dry years (1960–1964) had been marked by full-time hunting and gathering and a fairly strict adherence to the pattern of winter concentration and summer dispersion. With a run of good rainfall years beginning in 1965, the seasonal water points persisted into the winter months. This extra water gave the San the choice of wintering at permanent or temporary water holes, the conditions I observed in 1967–1968. During 1963–1964 fieldwork, this choice was not available.

The second kind of change is that of the long-term trend towards farming and herding. This also influenced the various choices that people made during the 1967–1968 rainy season. The nonplanters adhered more or less closely to the winter concentration–summer dispersion pattern, while the planters were mainly responsible for the apparent reversal of this pattern. This new insight, plus a very detailed reconstruction of the patterns of group movement during the 1920s (before the arrival of the Bantu-speaking colonists), enabled me to confirm that the pattern ob-
served in 1963–1964 possessed a substantial historical validity. This revised model of !Kung group movement under traditional hunting and gathering conditions was presented in my paper "!Kung Spatial Organization: An Ecological and Historical Perspective" (1972a).

**Population Growth and Sedentarization**

A second example of the importance of long-term fieldwork concerns the demographic changes that have taken place in the Dobe area since 1963. Starting with July 1963, our research project has maintained a registry of all Dobe area births and deaths. When workers are in the field, birth dates are recorded by direct observation: these dates are usually accurate to ± 5 days. For periods when there has been no observer in the field, birth dates have been reconstructed through interviews. These dates are usually accurate to ± 30 days. In all, we have followed the reproductive lives of 256 adult women over the 10-year period.

During the 1960s, a process of sedentarization was going on in the Dobe area, but this had a markedly differential effect on groups at different water holes. At one eastern water hole (!Goshe), the San had built a village of mud huts in the early 1960s, which they occupied throughout the study period. They continued to hunt and gather on short trips but an increasing proportion of their subsistence came from cows’ milk and cultivated grains. At the other extreme of mobility were the /Du/da subpopulation 60 km south of the Dobe area who continued to move camp five or six times a year in a classic foraging pattern. The remainder of the population exhibited patterns intermediate between these two poles.

These varied adaptations offered a natural laboratory for testing hypotheses about the social, economic, and demographic effects of sedentarization. My main hunch concerned the role of sedentarization in triggering population growth. Could the mere fact of settling down increase the birth rate even in the absence of an expansion of the food supply? If so, what form would it take and what would be the possible mechanisms involved?

In a paper written in 1970, based on 1963–1969 data (Lee 1972b), I pointed out that long birth spacing of 3 or 4 years was essential to the subsistence economy of the !Kung San. Since women were highly mobile (1500 km of travel per year) and since it was necessary to carry the infants and toddlers for much of the first 4 years of life, long birth spacing was necessary to maintain a mobile mother’s burden at a tolerable level. A woman with 4-year birth spacing would have only one child to carry at a time, while a woman with 2-year birth spacing would have twice the burden to carry, placing her and her offspring at a distinct disadvantage in
terms of survival. The model also predicted that even partial reduction of mobility would lessen the deleterious effects of short birth spacing and might lead to an increase in the birth rate. There seemed to be some indication that at !Goshe, the easternmost water hole, such a process was already under way.

I returned to the Dobe area in 1973 to complete the full 10-year record of births and deaths and to provide data for testing the model of birth spacing and sedentarization. Data on 256 adult women, including virtually all of the resident women of reproductive age in the population, were recorded. Of these, 119 had had no pregnancies during the period 1 July 1963–30 June 1973, 43 had had only one birth, and for 2 other women data were incomplete. This left 92 women with two or more births and hence with one or more measurable birth intervals.

The average interval between successive live births for all 92 women (165 intervals) was 37.23 months. That means that over 3 years elapsed between births whether or not the first baby died. This figure varied from a low of 11 months in the case of a woman whose infant died in the first month of life and who conceived soon after, to a high of over 8 years. A 3-year interval is very high for a population in which no forms of contraception are practiced.

In order to eliminate the effects of infant mortality, I abstracted from the data those birth intervals in which the first child survived to the birth of the second. I further divided the population into two groups: more nomadic women and more sedentary women. Finally I divided the 10-year run of data into two 5-year periods. This last division yielded three temporally related sets of data:

1. Intervals falling within the period 1 July 1963–30 June 1968
2. Intervals falling within the period 1 July 1968–30 June 1973
3. Intervals straddling the mid-1968 boundary

By comparing Period 1 with Period 2, I could discern possible secular trends through the 10-year period.

The results are set out in Table 14.1. The mean birth interval for nomadic women was 44.11 months and for sedentary women 36.17 months, indicating that throughout the period sedentary women tended to reconceive about 8 months earlier than nomadic women. This 8-month difference would significantly increase both the birth rate and completed family size for the sedentary women.

The difference between the more nomadic and the more sedentary women is even more striking when we consider the time dimension. The entire population was undergoing sedentarization during the period 1963–1973; this is reflected in the fact that the birth interval dropped from
TABLE 14.1
Intervals in Months between Successive Live Births to !Kung Women during the Period 1963-1973

<table>
<thead>
<tr>
<th>Mean length of birth interval in months (n)</th>
<th>1963-1968</th>
<th>1968-1973</th>
<th>1963-1973</th>
<th>Mean of all three periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>More nomadic women</td>
<td>42.27 (11)</td>
<td>36.42 (12)</td>
<td>47.63 (32)</td>
<td>44.11 (55)</td>
</tr>
<tr>
<td>More sedentary women</td>
<td>38.35 (17)</td>
<td>29.82 (22)</td>
<td>40.12 (26)</td>
<td>36.17 (65)</td>
</tr>
<tr>
<td>All women</td>
<td>39.89 (28)</td>
<td>32.15 (34)</td>
<td>44.26 (58)</td>
<td>39.81 (120)</td>
</tr>
</tbody>
</table>

39.89 months in Period 1 to 32.15 months in Period 2. This shortening of the birth interval was particularly marked for the more sedentary women, with a drop of 8.53 months, but the process is apparent in the more nomadic women as well, who exhibited a decrease of 5.85 months.

The increase in fertility was most marked at the most settled village—!Goshe—where each of four young women had had two successive live births spaced 22, 23, 21, and 20 months apart respectively in the period 1968-1973. Several women at !Goshe and other water holes asked me for birth control assistance (a pill to make them stop having babies)! This request indicated that even for sedentary women the rapid succession of births was not an unmixed blessing.

The probable mechanism for this decreased birth spacing is not hard to find. The nomadic !Kung diet, though rich in nutrients, is deficient in suitable weaning foods, such as milk and porridge which are easily digested by infants and toddlers. As a result, though infants are introduced to solid foods by 6 months of age, mother's milk continues to be an important part of the child's diet into the third year of life. At !Goshe and other more settled !Kung villages there is a more plentiful supply of milk and cultivated grains. This availability of alternative food lessens the child's need for breast milk. The lowered level of lactation in turn may trigger the resumption of a woman's ovulation as early as 11 to 14 months after giving birth. The shortening of the birth interval may also be connected with the earlier restoring of critical fat levels in nursing mothers (Frisch and McArthur 1974; Howell 1976b). The probable mechanism for this decreased birth spacing is not hard to find. The nomadic !Kung diet, though rich in nutrients, is deficient in suitable weaning foods, such as milk and porridge which are easily digested by infants and toddlers. As a result, though infants are introduced to solid foods by 6 months of age, mother's milk continues to be an important part of the child's diet into the third year of life. At !Goshe and other more settled !Kung villages there is a more plentiful supply of milk and cultivated grains. This availability of alternative food lessens the child's need for breast milk. The lowered level of lactation in turn may trigger the resumption of a woman's ovulation as early as 11 to 14 months after giving birth. The shortening of the birth interval may also be connected with the earlier restoring of critical fat levels in nursing mothers (Frisch and McArthur 1974; Howell 1976b).

I have discussed these results in some detail in order to make two points. First, the evidence strongly supports the hypothesis that sedentarization is associated with an increase in the birth rate and that this increase is expressed through a shortening of the interval between birth and conception. Second, this important finding could only have been determined by the continuing observation of a population over a period of years. Periodic recensuses 5 or 10 years apart or retrospective reproductions
tive histories can only imperfectly reflect the actual changes that take place.

**LONG-TERM FIELDWORK AND THE FUTURE OF TRADITIONAL SOCIETIES**

Up to 1973, the Dobe area !Kung had shown extraordinary resilience, having survived as an independent hunting and gathering people long after most of the world’s hunter–gatherers have been subjugated by and incorporated into more powerful societies. Yet we had no illusions about their future. Their lands were becoming increasingly fenced in, missions and schools were opening in their midst, and, most sinister of all, the South African military were recruiting the San as trackers in their border patrols against African liberation movements. There was also the danger that the Dobe !Kung and other San groups would be swallowed up and dispersed in rural and peri-urban slums in the cities and towns of Botswana and Namibia (Biesele and Lee 1974).

Throughout our years of fieldwork, the San have shown us great hospitality. In 1963, I was given the personal name /Tontah; I was adopted by a family and incorporated into the kinship system. Since then, every other research worker has also been named and adopted by someone, so that all of us feel a personal, as well as a professional, involvement with the San.

In January 1973, the Kalahari Research group met in Hancock, New Hampshire, to discuss the future of the San, including our own relationship to them. After much debate we agreed that our responsibility went beyond merely publishing the results of our studies in the appropriate journals. It also included working with the people in their struggle to determine their own futures. As a focus for our efforts in this direction we created a nonprofit foundation called the Kalahari Peoples’ Fund (KPF) and assigned the royalties from a forthcoming book of ours to the Fund. To give the KPF more working capital, most of us turn over a portion of our royalties and fees from writing or film-making projects on the San. The Kalahari Peoples’ Fund (P.O. Box 4973, Austin, Texas 78751) has initiated several projects relating to San development. In 1973, we presented a complete set of the published output of the Research Group (65 items at the time) to the Botswana cabinet minister responsible for Bushman affairs. Scholarships were provided for 22 !Kung children to enter the !Kangwa Primary School in January 1974. The Government of Botswana through the local District put up a matching grant. At the invitation of the Government in 1975, the KPF sent a full-time representative to work with the Office of Basarwa Development. This was Megan Biesele whose participation was made possible by grants from the Marshall family. During her year of liaison work, Biesele visited all the
northern San communities to find out what kinds of development are socially and ecologically feasible. Biesele also assisted the San in applying to the government's land board to establish legal rights to parts of the lands they have traditionally occupied.

The KPF is also exploring the kinds of economic possibilities which are compatible with San survival as a cultural group. First is their transition to a settled village life based on horticulture and livestock. This is the dominant mode of subsistence for Botswana peasants. Ecologically, farming is unreliable except in the Okavango Swamps. Cattle raising, as practiced locally, has high initial returns but these will fall off after a generation due to a lowering of the water table and a decline in the quality of forage because of overgrazing.

The disadvantages of farming and herding have directed attention to a second alternative: the harvesting of mongongo nuts and other wild staples for subsistence and as a wild cash crop. The mongongo fruit and nut are excellent food sources, so abundant that part of each year's crop rots on the ground for want of being eaten (Lee 1973). The San are well set up to harvest large quantities of these nuts, eat what they need, and export the rest to the towns where they would provide a much needed source of protein. Mongongo forests are plentiful in northwestern and northeastern Botswana; in the center and south, the Tsin bean is an equally abundant food source. The regular marketing of these high quality wild foods might also be tied in with the marketing of traditional San crafts. Their bead and leather work is well known and brings high prices. The Canadian Eskimo artists' and craftsmen's Coops may provide a model for the San.

Because of the variety of settings in which the Botswana San are found, no single economic alternative will work in all cases. Probably a mix of foraging, farming, stock-raising, cash cropping (of wild foods) and craft work will be worked out that will suit the needs of each local community. As a result, in part, of KPF's initial groundwork, the Botswana Government has earmarked funds in each year's budget for Basarwa development projects, while the Basarwa Office now has five full- and part-time Basarwa Development Officers working throughout the country.

Although the Kalahari Peoples' Fund is only a few years old, there are already signs that the intervention of concerned outsiders has started to arrest the processes of proletarianization, dispersal, and militarization that we saw at work through the 1960s and early 1970s. Ultimately the future of the San is tied in with the future of all the peoples of Southern Africa. No one can predict what the outcome of the coming struggle there will be or what role the San will play. We will be happy to see the San enrich the future national life of Botswana as they have enriched the lives of those who worked with them.
### Appendix: The Kalahari Research Project Personnel

<table>
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<tr>
<th>Name/department/university</th>
<th>Topic</th>
<th>Dates</th>
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<tbody>
<tr>
<td>1. Megan Biesele</td>
<td>Folklore, music, applied social change</td>
<td>1970–1972</td>
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<td>Kalahari Peoples Fund,</td>
<td></td>
<td>1975–1976</td>
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<td>Austin, Texas</td>
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<td>2. Nicholas Blurton Jones</td>
<td>Ethology, animal behavior</td>
<td>1971</td>
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<td>Child Study, London</td>
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<td>3. Irven DeVore</td>
<td>Hunting behavior</td>
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<td>Child Health, Witwatersrand</td>
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<td>Radcliffe Institute</td>
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<td>13. Stewart Truswell</td>
<td>Medicine, nutrition, cardiology</td>
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<td>Nutrition, London</td>
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<td>Smithsonian Institution</td>
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