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Nomadic Hunters and Village Cultivators:
A Study of Subsistence Interdependence
in the Ituri Forest of Zaire

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J. M. Hunter

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NOMADIC HUNTERS AND VILLAGE CULTIVATORS: A STUDY OF SUBSISTENCE INTERDEPENDENCE IN THE ITURI FOREST OF ZAIRE

By

John A. Hart

A THESIS

Submitted to
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ABSTRACT

NOMADIC HUNTERS AND VILLAGE CULTIVATORS:
A STUDY OF SUBSISTENCE INTERDEPENDENCE
IN THE ITURI FOREST OF ZAIRE

By

John A. Hart

Mbuti (Pygmies) and Bantu have co-existed for four hundred years or more in the Ituri Forest of Zaire. The Mbuti are forest hunters while the Bantu are oriented toward agriculture in small clearings in the forest. The two peoples share a common concept of a preferred diet which includes meat protein and starch. The forest has abundant meat, but little starch, while the opposite is true for the village. This dichotomy constitutes the ecological basis of a system of subsistence exchanges between Mbuti hunters and Bantu gardeners. At the same time the Mbuti are involved in another system of meat-starch exchanges with commercial entrepreneurs from nearby markets. The commercial meat trade seeks to maximize the flow of meat out of the forest. Excessive demand has put a strain on Mbuti hunting and is leading, at least in the short term, to a decline in game populations. A concluding discussion places the Mbuti-Bantu exchange system into a broader context in which outside interference affects the availability of subsistence resources and shapes the relationship between the two cultures.

To Paul Riesman

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First thanks go to the Thomas J. Watson Foundation which provided me with the fellowship to travel to Zaire, and to the Mbuti and villagers of the Ituri Forest whose generous hospitality and openness far exceeds anything I could give in return.

Many individuals made my stay in Zaire both enjoyable and rewarding. Here I would most like to acknowledge Commissaire d'Etat Bokanga for help in acquiring visas, and to the Kahiigwa Sedhe family and R. P. Theyert, for making their homes my own when I was not in the forest.

In writing this thesis my committee consisting of Professors John M. Hunter, Daniel Jacobson, and Elizabeth Ross of the Department of Geography, Professor Charles Cleland of the Department of Anthropology and Professor Kazadi wa Mukuna of the Department of Music provided guidance and discipline. Innumerable discussions with my wife Terese clarified my thinking in many areas. This thesis would not have been written without her insights.

Finally I would like to acknowledge Professor Paul Riesman of Carleton College, my undergraduate advisor, who supported me in applying for a Watson Fellowship and encouraged me while I was in Zaire.

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CHAPTER I

INTRODUCTION

For many anthropologists and geographers, the distinction between hunters and gatherers on the one hand, and food producers on the other represents a fundamental step in social evolution. Yet many societies which practice agriculture, and hence are not classified as hunters and gatherers, depend upon wild food resources, in particular meat protein for their subsistence.

Studies in Africa, Latin America and New Guinea have established that hunting is prominent in many agricultural societies (Marks, 1976; Denevan, 1971; Bennett, 1962; Nietschmann, 1973; Dornstreich, 1977). Indeed, dependency on wild sources of protein can be more important than agriculture in defining a society's relationship with its environment. For example, Carneiro (1970) and Denevan (1966) have argued that the highly nomadic agriculture, simplified material culture and fluid settlement system of interfleuve Amazonian Amerinds is a function of their dependency on the meager and dispersed faunal resources of this environment. Similarly, in New Guinea,Morren (1977) has presented evidence which indicates that intensification of agriculture may occur not so much to meet human needs for starch, but rather to provide for populations of feral and domestic pigs when wild game is no longer available in adequate supply.

These observations suggest that a categorization of societies as hunters and gatherers, horticulturalists, pastoralists etc. may obscure important relationships which determine diet, and social and economic structure (Dornstreich, 1977). What is missing in such a classification is an ecological perspective which seeks to assess the relative importance of all aspects of subsistence behaviors and their relationship with the environment. The purpose of the present study is to provide at least some aspects of such a view of the subsistence of the Mbuti (Pygmies) and Bantu people who co-inhabit the Ituri Forest of Zaire.

The Mbuti, who may number up to 50,000 (Cavalli-Sforza, 1977), are the earliest known inhabitants of the rain forests of northeastern Zaire (Figure 1). They are believed to have originally subsisted entirely on wild food resources and are still classed as hunters and gatherers (Murdock, 1959; Lee and DeVore, 1968). Indeed, most Mbuti, even today, are nomads who do not cultivate gardens on a regular basis.

But the Mbuti are not an isolated population. The climate and soils of the Ituri Forest are, by and large, well suited to cultivation, even on a large plantation scale. There have been people speaking Bantu and Sundanic languages who have lived in the forest, practiced agriculture and who have been in contact with the Mbuti for four centuries or perhaps longer (Moeller, 1936).

Previous studies, extending back to the first ethnographical reports of Schebesta (1933, 1936, 1937) have recognized the long standing contacts between the Mbuti and the Bantu and Sudanic speaking immigrants. No study to the present, however, has provided data for an analysis of these contacts in terms of subsistence.

Figure 1. The Ituri Forest of Zaire. The Ituri Forest is located in northeastern Zaire, just above the equator, and near the Ugandan border. The forest covers about 63,000 km^2, and is bounded by open savanna on the north and east. It is continuous with adjacent lowland forest to the south and west. Mbuti archers are restricted to the northern and eastern districts, while net hunters occupy the central, southern and western forest. The study area is located in the southern forest, west of the Biena River.

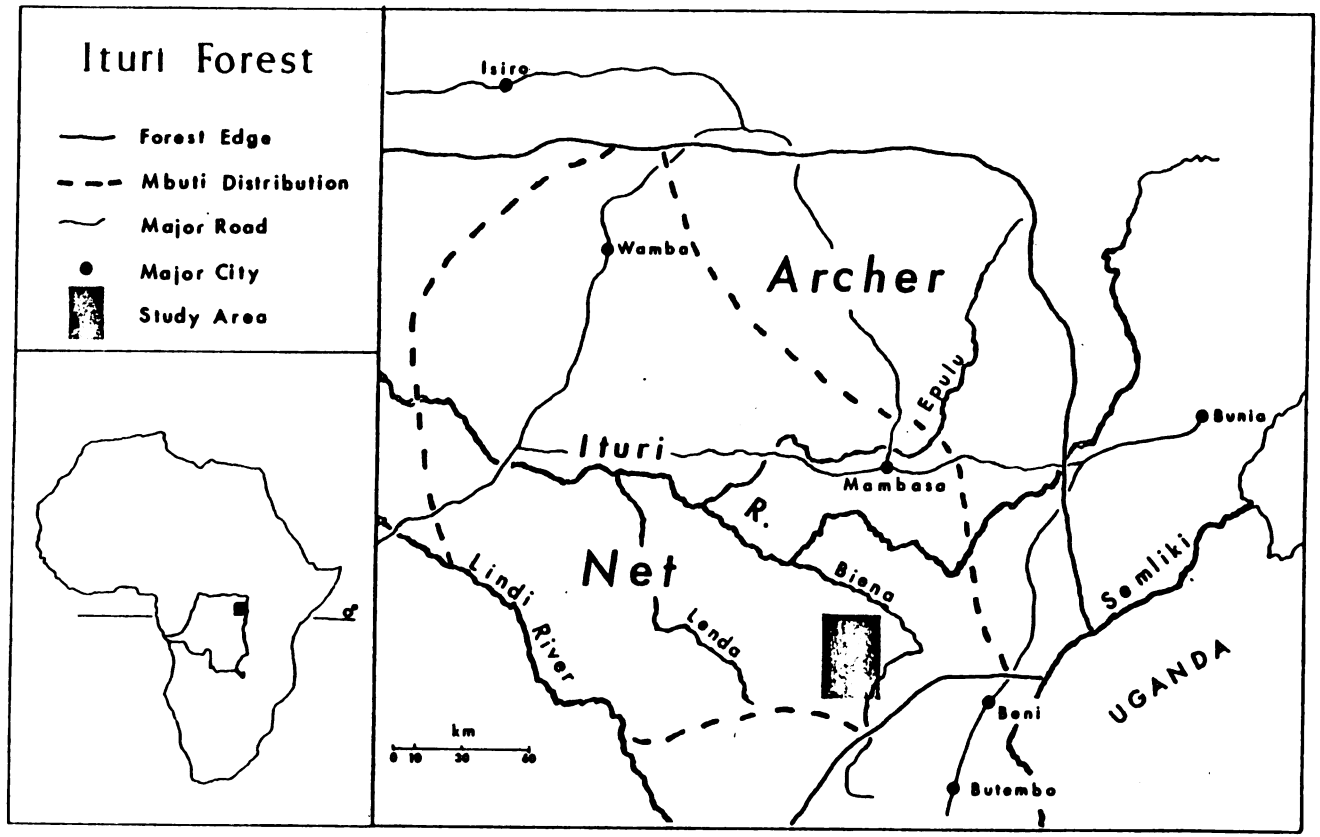
Ituri Forest
Forest Edge
Mbuti Distribution
Major Road
Major City
Study Area
Isiro
Wamba
Archer
Epulu
Bunia
Ituri
Mambasa
R.
Net
Lindi River
Londa
Biona
Semliki
UGANDA
Beni
Butembo
km
0 10 30 60

Figure 1.

Patrick Putnam, who lived for over a quarter century at Epulu in the Central Ituri Forest, reported that Mbuti subsisted in part on cultivated crops acquired from the local Bantu cultivators. He noted that the major economic division among the Mbuti between net users and archers was also a function of contact: Mbuti net users were associated with cultivators who manufactured and provided them with nets; while Mbuti archers occupied districts where cultivators had no nets but provided iron arrow heads instead (Putnam, 1948).

Putnam's only published observations are included in a single, brief article and do not address the question of why the Mbuti should depend upon domestic starch or why the hunting methods they used should be those of their cultivating neighbors.

Colin Turnbull also studied the Euplu Mbuti, visiting them on two occasions in the 1950's (Turnbull, 1965a, 1965b). Turnbull acknowledged the contact between Mbuti and Bantu; however, his studies emphasize ideological and social differences between the two cultures. These he felt were epitomized in what was essentially a spatial segregation: The Mbuti were basically forest people, while the world of their Bantu neighbors centered on the gardens. Turnbull assumed that the independence of the two cultural spheres was also associated with independent subsistence systems. He believed that the Mbuti were essentially hunters and gatherers, while village subsistence needs were met by and large through cultivation. He acknowledged exchanges of wild and domestic food between Mbuti and Bantu, but felt these were neither regular nor necessary for either side.

Only in recent years has Mbuti subsistence begun to receive attention. The work of Tânno (1976), Harako (1976) and Hart (1978)

among net hunters and archers in the eastern and southern Ituri, document that hunting is indeed an important element of Mbuti economy, but that gathering is relatively insignificant. Instead, these studies reveal that Mbuti actually subsist in large measure on cultivated foods which are acquired from the local agriculturalists, and even from itinerant meat traders (Hart, 1978).

The present thesis is an attempt to extend the conclusions of these latter studies into a more general analysis of the relationship of the Mbuti and Bantu through an ecological study of their subsistence. The first hypothesis to be treated is that the subsistence of both the Mbuti and the local cultivators actually constitutes a single system, based on the exchange of wild meat for cultivated starch, and that this system is mutually beneficial and enduring, as would occur in a single society.

Such a system would presume a certain spatial propinquity or regular contact between the Mbuti and the cultivators. Yet some Mbuti live on a long term basis in the remote forest without contact by local villagers. These Mbuti, however, are no closer to a presumed original hunting and gathering mode than are those living closer to settlement. Their subsistence too, I will maintain, is dependent upon the same flow of meat and starch. The second major hypothesis then is that the Mbuti living in the remote forest are permitted to do so because of a regular supply of starch brought to them by commercial meat traders oriented toward nearby markets.

CHAPTER II

METHODOLOGY AND STUDY AREA

Review of Literature

Ecological studies of subsistence have been a principal subject of both geography and anthropology. Thus it will be useful to place the present study in the context of earlier work in order to better clarify its methods, goals and assumptions.

Early studies of human ecology had over the years two major themes: In one the focus was on the effect of environment on humans and their society; while in the other, the opposite view was taken, emphasizing the effect of society on the land. These two perspectives have had somewhat different histories, but their various proponents have made contributions which continue to be important today. In particular, the works of anthropologist Julian Steward and geographer Carl Sauer can be singled out. Steward (1955) was instrumental in showing how environment could play a creative yet not deterministic role in ordering human culture while Sauer's works continue to be seminal today in emphasizing the degree to which all societies, even the most simple, can and do modify and transform their environmental setting (Leighly, 1963).

In recent years these two perspectives on human ecology--land affects man and man affects land--have come together into a single

focus in which society and environment are viewed as mutually interacting components of a single system (Grossman, 1977). This view has been specifically developed through application to studies of human ecology of the concept of "ecosystem" first developed in plant ecology. According to the geographer Stoddart (1965), the ecosystem concept is the means by which all elements of the interaction of society and environment may be brought together into a single framework of analysis. The societal and environmental components of an ecosystem exist in a structured relationship with each other, and in this way they organize the flow of matter through the system. The present study uses the ecosystem perspective to describe the relationship between Mbuti, Bantu and their environment. The emphasis is on the flow of resources involved in the production and distribution of subsistence commodities, and on the environmental impact of these activities.

A subsistence economy may be defined as one in which resources are acquired and consumed by a local population at the level of their own immediate needs for food, shelter and simple tools. Subsistence economies often entail exchange of goods, but even here, production is oriented toward meeting the necessities of livelihood rather than generating profit (Sahlins, 1971). Of course subsistence and profit-oriented market trade are only opposite extremes of what is really a continuum of different economic orientations which may be more or less "open" or "closed." In any case, the important distinction is whether the relationships of production and consumption are regulated by internal stabilizing mechanisms, as is the case in subsistence systems, or determined by outside demand (Nietschmann, 1973).

Ecological studies of subsistence, including this thesis, are faced with three important problems. First, the availability of subsistence resources must be determined. Secondly, the effectiveness of a subsistence strategy must be assessed. Thirdly, the problem of subsistence change must be considered. Each of these problems is discussed in the remaining paragraphs of this section in the context of the specific methodology with which they have been dealt with in the chapters which follow.

An analysis of subsistence must first identify food resources before their relative abundance or availability is determined. No culture considers all potential sources of nutrients food. There are distinct preferences which favor some foods over others, and all societies have taboos which exclude some items from consideration. Despite the great potential for variability, Dornstreich (1977) has identified three universal components of diet. These include a bulk source of calories, a source of protein and finally foods which increase the diversity of the diet and thus insure that requirements for vitamins and minerals are met. In this study the first two components, protein and calories, are the focus of attention.

The availability of food resources is not strictly a matter of inherent environmental potential. Technology and the social organization of subsistence play an important role. Nevertheless, with a given technology and culture, the capacity of an environment to provide particular commodities can be assessed. Dornstreich (1977) dealt with this problem in his analysis of a New Guinean subsistence system by defining resource areas, including both human-derived and natural habitats, and their associated exploitation activities.

Dornstreich's observations concur with the general conclusions of many subsistence studies: Food resources are not continuous in the environment but occur in discrete patches.

Patchiness may be a function of spatial or seasonal changes, or it may stem from the localization of resources in distinct "micro-environments" such as coastal beaches, abandoned plantations or fresh water swamps, as was found by Nietschmann (1973) for the Miskito of Nicaragua.

The description of the spatial and temporal parameters of resource distribution is an important first step; however, an understanding of the reliability or adequacy of these resources is also needed. This is encompassed in the concept of subsistence risk or uncertainty. Porter (1965) has developed this idea in the context of East African agricultural and pastoral systems. He found that variability in resource supply was primarily a function of climatic vagaries, especially rainfall. Porter pointed out that subsistence risk is averted through culturally mediated behaviors. Thus adjustment to risk is an essential element in the relationship of society and environment. Porter found that important means of adjustment included seasonal mobility, scheduling of subsistence activities, and a symbiotic relationship between herders and cultivators in which environmental uncertainties faced by one group were accommodated by resource available from the other. A symbiotic relationship based on the exchange of meat and starch is also an important way in which Mbuti and Bantu have averted uncertainties in the local resource base, as will be discussed in the chapters which follow.

Nietschmann (1973) in his study of Miskito subsistence has

broadened the concept of subsistence risk to include variability in the productivity of resources, measured by the rate of return per effort or time. Like Porter, Nietschmann is concerned with the spatial variabilities of resource supply, but Nietschmann has explicitly considered this in terms of the distance of resources from Miskito settlement. For the Miskito, important commodities, in particular meat, are often located at relatively great distances from the village. As distance from settlement increased, food procurement activities were focused only on specific resources which were both highly productive and entailed a minimum risk. Nietschmann found that despite a wide array of terrestrial and coastal fauna to choose from, Miskito subsistence has become centered on the most highly productive and assured commodities, in particular the sea turtle.

The uncertainty of meeting subsistence needs is the center of analysis of Mbuti and Bantu subsistence options taken up in Chapter IV. Here risk will be viewed in terms of the ability of a given habitat--forest or village--to provide the protein and calory components of the diet. The role of technology in reducing risk and increasing productivity will also be discussed. Finally, subsistence uncertainty will be linked to distance from permanent settlement. This latter will be shown to be a fundamental factor in ordering the interdependent subsistence system of the Mbuti and local cultivators.

A second problem faced by studies of human ecology is assessment of the interaction between society and environment. A number of studies, including those of Kemp (1971) and Dornstreich (1977) have had as their goal the mapping of the flow of matter and energy within the ecosystem. These are valuable in that they permit one subsistence

system to be compared with another. But the reduction of subsistence activities to a common unit of measure such as calories, does not in itself tell anything of the effectiveness of the interaction of society and environment.

One way that the relationship of society and environment has been measured is by the use of the concept of carrying capacity, first developed in the science of wildlife management (Ammerman, 1975). Though its meaning is sometimes only implied, carrying capacity may be defined as "the maximum level of population at a subsistence level which can be supported in an area with a given technology without 'environmental degradation'" (Nietschmann, 1973, p. 239). The implicit assumption in the use of carrying capacity is that interactions of society and environment are balanced, or in equilibrium, if population levels do not exceed the carrying capacity.

Street (1969) has criticized use of the idea of carrying capacity, pointing out that in general little effort is made to ascertain whether subsistence activities are leading to environmental degradation. Environmental change would be especially hard to establish if this was a long term process. In addition, Street points out that use of carrying capacity implies that subsistence systems are static when in actuality subsistence change has been the rule.

A second measure of the effectiveness of social and environmental interaction has entailed observations on the health and nutritional levels of populations under differing subsistence regimes. Potentially these are valuable indicators since they do not entail questionable assumptions of the long term stability of resource supplies or social process. On the other hand, good nutritional and

health data are hard to get. In many studies, samples are often small and the full range of seasonal differences are not always measured. Furthermore, it is important to distinguish between dietary intake and dietary need, which may vary by age or sex. Data gathered by anthropologists and geographers in the past have not always been reliable in this regard (McArthur, 1977).

Despite the difficulties of adequate nutritional studies, general qualitative observations of nutritional health and food intake can provide a perspective, even if limited, on the effectiveness of a subsistence system. Observations on Mbuti food intake are provided in this thesis in Chapter VI, and are one of several lines of evidence used to analyze subsistence change.

Because of problems with the concept of carrying capacity, and due to the difficulties of gathering good nutritional and health data, a number of observers have resorted to less precise standards in order to assess subsistence systems. Vayda and McCay (1975) for example emphasize cultural flexibility as a measure of the adaptability of a subsistence system. Clarke (1971) focuses on diversity as an indicator of effective social-environmental interactions. In his study of a New Guinea community, Clarke found that a decrease in the diversity of the local ecosystem led to increased labor demands and reduced dietary quality for the human participants.

In the studies of Nietschmann (1973) and Rappaport (1968) subsistence is analyzed in terms of the structures which regulate resource use, especially the social controls which schedule and limit the production and exploitation of food. This is also the tack taken in this thesis. Descriptions of the subsistence system of the Mbuti and Bantu

are provided in Chapter V. These include an analysis of how demand for meat and starch is controlled in exchange relationships which have developed through long term contacts between the two peoples.

While the potential for stability exists in such a system, it has never actually been realized for long. Indeed it is probably true that no subsistence system has ever been in static equilibrium. As Clarke (1971) has succinctly put it.

> No life system is stable in the sense that it is unchanging. Cultural behavior may act to counter balance environmental changes, but there is always net change in the system. Certainly, ecosystems as evolutionary entities are self-maintaining, but they are self-transforming, too. Rather than a homeostat, a gyroscope may be the suitable analogy for regulatory mechanisms in ecosystems (p. 202).

An understanding of the process of change in human ecosystems has been seen as the central concern of ecological geographers and anthropologists (Brookfield, 1973; Heider, 1972). For Waddell (1973), the ecosystem concept provides a diagnostic model for the study of change. Once linkages between society and environment are identified, changes in the flow and transformation of energy and resources may be recognized and their impact analyzed. Such an approach may be adequate some of the time, but change often entails the establishment of whole new systems of social and environmental interactions and not just modifications of the old.

A less formally defined method of dealing with change has utilized the concept of stress. Lea (1973) for example has pointed out that changes in ecological relations produce stress which is often most acute at particular junctures, such as activities related to food and diet. All subsistence systems have some mechanisms for dealing with stress including migration and the intensification of

resource procurement activities. The problem, however, is how far can these be stretched without breaking down.

Nietschmann (1973) also dealt with the problem of subsistence change in terms of stress. Among the Miskito, a major agent of change was the commercial exploitation of subsistence resources. Nietschmann found that this was leading to dietary change, increases in labor demands, emergence of social problems and tensions, and finally to a diminuation of subsistence resources. For Nietschmann and for others, the cause of stress is the impact of external demands on a local subsistence system. These produce maladaptive trends including destabalization, simplification and loss of local control over the ecosystem.

Chapter VI of this thesis takes up the issue of change in meat-starch subsistence relations in the Ituri Forest. Here, as among the Miskito, market trade is an important factor in modifying ecological relations,and change is viewed in terms of the same criteria as used by Nietschmann.

Yet while this methodology may describe change, it does not provide an adequate understanding of the origins of change or how changes are incorporated into the local subsistence system. Specifically, the assumption that change is a function of external forces intruding upon a more or less balanced system, may not be applicable to the case of the Mbuti and Bantu described below. An analysis of the changes engendered by the commercial meat trade shows that while these may be disruptive, they are not entirely imposed from the outside. Rather, the case will be made at the end of Chapter VI that external control over a local subsistence system is maintained, at least in part, because of inadequacies and limits in the former.

Study Area

The present study is based on observations made over a twenty-five month period in the Ituri Forest between April, 1973 and June, 1975 (Table 1). This included five months of general survey among Mbuti archers and net hunters, and a twenty month study of three Mbuti net hunting bands utilizing an approximately 800 square kilometer area between Mbunia and Biasiko in the southern Ituri Forest (Figure 1). Bantu groups on this study area included Kaheku (Bira), Pakombe and Nande.

Table 1. Research Itinerary, April,1973 to July, 1975

Dates	Orientation	Location
4/73-6/73	General survey, net hunting bands	South, West, Central Ituri
7/73-2/75	Intensive site specific study	Southern Ituri Study Area
5/75-6/75	General survey, archer bands	North, East Ituri

This study area was chosen because it was located at the edge of a region of higher population density and hence expanding demand for meat. This situation was felt to be fairly representative of conditions in other areas of the Ituri as well. An inspection of population distribution in the Ituri region shows that much of the forest is at present only lightly settled, most of it with fewer than three inhabitants per square kilometer (Figure 2). Adjoining the forest on the north,east and south, however, are districts which support some of the highest population densities in Zaire, in some areas exceeding

Figure 2. Population density in the Ituri region. In the area inhabited by the Mbuti (encompassed by a dashed line), population density varied from less than three inhabitants per km^2 to more than 20 inhabitants per km^2. Densely settled regions with urban centers border the forest to the north, east and southeast, while forest uninhabited by Mbuti and agriculturalists alike stretches to the southwest. Source: 1970 National Census of Zaire.

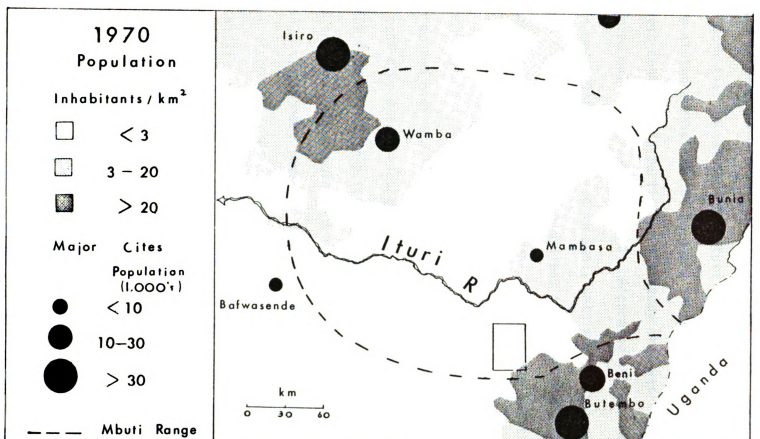
1970
Population
Inhabitants / km²
< 3
3 – 20
> 20
Major Cites
Population
(1,000's)
< 10
10–30
> 30
Mbuti Range
Isiro
Wamba
Bunia
Ituri R
Mambasa
Bafwasende
Beni
Butembo
Uganda
km
0 30 60

Figure 2.

100 inhabitants per square kilometer.

A brief history of population trends on the study area and its vicinity is necessary to put the present study into perspective. Population densities in the Southern Ituri Forest[1] were overall relatively low at the arrival of the Belgians in the first decade of the twentieth century. In particular the study area was lightly settled, occupied only by Pakombe and Bira. According to informants, populations were mostly scattered in small settlements at the time. Each village contained only a few families, though at least two settlements, one near Mbunia and one near Biasiko, were capitals of paramount chiefs and had larger populations.

After Belgians established control, a number of small gold mines were opened over the Southern Ituri. Several small roads were built and cash crop upland rice growing was initiated. Immigrants, mostly Nande from the densely settled highlands to the southeast, moved into the area, and populations reached their highest levels in the late 1950's, probably somewhat higher than those today, though more evenly dispersed. Yet despite these developments, the southern Ituri was still considered a remote region.

In 1960, the gold workings were abandoned and some of the Nande population, which had never become well established, left the area. The Simba Rebellion (1965-1970) forced an evacuation of the entire

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[1]The Southern Ituri Forest may be defined as the forest bounded by the Ituri River on the north, the abandoned Beni-Mambasa road on the east,the Lenda River on the west and the Etaitu Road on the south.

Information on the recent history of this area was obtained from old colonial maps, discussion with missionaries and interviews with villagers of the area.

Southern Ituri Forest. Even most of the Mbuti fled. Populations on the study area concentrated near Mbunia during the rebellion where government soldiers had an outpost. With the capture of the last rebels in 1970, the forest was reopened to settlement. On the study area, the Mbuti and the traditional forest Bantu, the Pakombe and Bira clans, returned to their homelands. Only a few Nande returned since the area was now devoid of any economic developments. Even the roads were overgrown and abandoned from Mbunia north.

At the time of the present research the study area supported a population of about 1400 to 1500 villagers. All but about 120, however, were concentrated in the southern quarter of the study area, mainly in the vicinity of Mbunia. In the north, only eight small settlements, averaging less than 20 inhabitants each, were scattered over an area of almost 600 km^2. Mbuti, whose total population was somewhat over 400, lived throughout the study area except in the vicintiy of Mbunia.

Populations in areas adjoining the study area to the south and east were mounting between 1973 and 1975, mostly as a result of the immigration of Nande from the Butembo-Beni area. The study area north of Mbunia was not directly affected at this time. The area had a bad reputation because of the rebellion, and was still considered remote. Even so, three new clearings were opened in the area by pioneering Nande settlers. There can be no doubt that the study area, particularly in the north, will be further settled in the future.

Most of my time was spent with the Mbuti. The locations of the three bands which were the principal subjects of this study are shown in Figure 3. Table 2 gives information on observation periods,

Figure 3. The Southern Ituri Study Area. Two features which distinguish the three study bands are size of band area, and proximity to permanent settlement. Band I ranged over the smallest area and was also located closest to dense agricultural population. Band III in contrast, occupied a much larger area, but this was all but uninhabited by cultivators. The area of Band II was intermediate between that of Bands I and III, both in size and proximity to settlement.

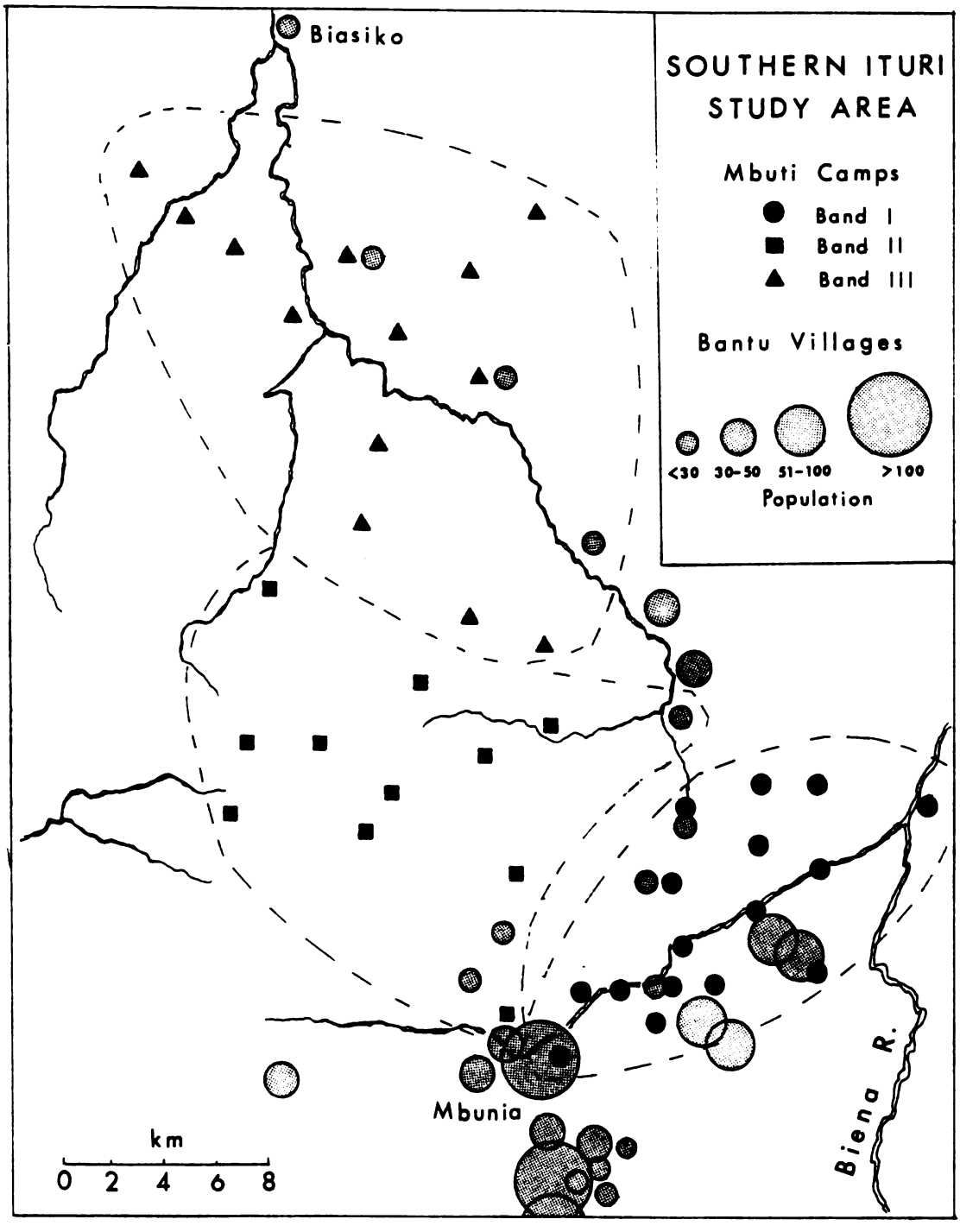

Biasiko
SOUTHERN ITURI
STUDY AREA
Mbuti Camps
Band I
Band II
Band III
Bantu Villages
<30
30-50
51-100
>100
Population
Mbunia
Biena R.
km
0 2 4 6 8

Figure 3.

approximate band size and the population density of agriculturalists on the band area. Actual camp sizes in all three bands were variable. Likewise, each band was composed of a number of clans. The three bands did not share any immediate kin or marriage ties, although there were more distant kin relations linking them. In any case, none of these Mbuti were strangers to each other.

Table 2. Mbuti Bands Studied on Southern Ituri Study Area, 1973-1975

Band	Contact Period	Approximate Band Size	Agriculturalist Density on Band Area (Inhabitants/km^2)
I	7/73-7/74 1/75-2/75	48	3.6
II	2/74-3/74 8/74	24	1.3
III	4/74-10/74	46	0.2

Differences in subsistence between the three bands relate to their proximity to agricultural settlement. Band I lived in an area where agriculturalist population density was highest, around 3.6 inhabitants per square kilometer. Band III at the other extreme, lived in the more remote forest where agriculturalist density was only about 0.2 inhabitants per square kilometer. Band II, for which I have less information, was situated in an area intermediate between that of Band I and Band III. Population density here was on the order of 1.3 inhabitants per square kilometer.

On the study area I attempted to maintain my contact with the Mbuti at the level of participant observer. I used no outside

interpreters, assistants, servants etc. I lived alone with the Mbuti in their camps, sleeping in the same temporary, leaf-covered dwellings (endu) they use themselves, often with another unmarried man. I ate the same food as the Mbuti--meat from the hunt, and other wild foods, and domestic starches (rice, cassava and plantain) which I purchased from villagers and traders. In general I maintained continuous residence in the camps for three to five weeks with a brief break in between in the village. I conducted most of my field work in Kingwana, a local version of Swahili used by Mbuti and Bantu in the area. I also learned to understand the languages of the Bira and Pakombe.

In addition to the Mbuti, I also established contacts with the Bantu in several of the local villages. A number of individuals expressed an interest and willingness in explaining to me various cultural practices as well as the history of the clans. Mwami Kisenge, at one time the Pakombe paramount chief, was an especially valuable informant and a good friend. His accounts, and those of others who so generously took the time to instruct me, indicated to me that some of the interactions between the Mbuti and villagers I will describe below have a long history indeed.

Data

Any study such as this which attempts to quantify on-going economic and ecological process is forced to deal with only selected interactions from among a wide array which may be potentially relevant. Even when a choice is made as to which components should be quantified, the totality of these can never be observed, and so samples of observations must be collected and extrapolations made

from these to other cases which are not observed. The problem with studies of subsistence is that rigorous standards in the collection of data often cannot be met. This then places limits on any inferences which can be made.

The bulk of data in this study falls into four categories: (1) Production of wild meat, (2) production of starch, (3) the exchange of wild meat and other commodities for starch, (4) diet. Of these four categories, two, the harvest of meat and exchange of commodities, were quantitatively measured.

The most complete data base is for meat production. Observations made on 240 hunts during the study period included among other measures the amount of time per hunt, the number of participants, and hunting success in number of game and kilograms of meat. Weights of meat were obtained with hand-held spring balances that were periodically calibrated with known weights. Hunting data were collected for all three study bands at a variety of locations ranging from village sites to camps in the remote forest (Table 3). These data provide a reasonably good basis for the discussion of the social and environmental determinants of meat production.

TABLE 3. Mbuti Net Hunting: Data Base

Distance of Hunting Camp from Village	Hunts		
	Band I	Band II	Band III
In village	72	--	12
1-5 km	52	--	10
> 5 km	35	26	33
Total	159	26	55

In addition to hunting, data on fishing yields and productivity were also gathered for Band I.

Production of domestic starch was much less thoroughly researched, a reflection of the fact that I spent most of my time with the Mbuti in their camps, and not in the village. A number of authors have pointed out that the major constraints in tropical subsistence systems fall on the procurement of meat protein rather than on the production of starch (Carneiro, 1970; Morren, 1977; Nietschmann, 1973). Observations on the study area suggest that in general surplus supplies of starch could be readily grown. Nevertheless, starch supplies were limited at times, especially in small settlements (two to three families) or where the villagers' labor was directed toward other activities such as gold panning or hunting.

Quantitative data on exchanges of meat and other commodities for starch between Mbuti and other groups are not as extensive as that on meat production. Exchanges were often difficult to measure because of the possibility of my interference in the transaction. In the village, many exchanges involved cooked food which were difficult to observe. If trade occurred in the hunting camps, four or five hunters might be involved in exchanges with as many traders at the same time, thus making it impossible to keep track of every transaction. For these reasons then, a tabulation of all transactions conducted by an entire band of Mbuti over a period of more than just a few days, was especially hard to get. I was able to measure exchanges following 85 hunts for all three bands, including 28 exchanges with local villagers and 61 with commercial traders (Table 4). From what I was able to see, though not actually quantify, I believe that these exchanges are

Table 4. Data Base for Observations on Meat-Starch Exchanges

Band	Camp Distance from Village (km)	Dates (1974)	Total Hunts	Total Butchered Meat (kg)	Local		Commercial	
					Number of Exchanges[a]	Meat Exchanged (Total Kg)	Number of Exchanges[a]	Meat Exchanged (Total Kg)
II	7	Feb. 29-Mar. 3	6	96	1	5.5	5	44.5
II	9.5	Mar. 3-Mar. 14	10	192.8	4	13.5	9	85
II	10	Mar. 15-Mar. 21	6	101	0	0	5	50.5
I	0	Apr. 4-Apr. 17	9	42.9	5	14.2	1	3
I	0	Apr. 5- Apr. 17	3	59	2	34.5	1	2
III	5	Apr. 19-Apr. 21	3	77	0	0	3	40.5
III	8	Apr. 27-May 8	9	225.5	1	9.5	9	99
III	12	May 9-May 14	5	67.5	1	8.5	2	7
III	9	May 15-May 17	3	107.5	1	8	3	31.5
I	4	May 31-June 7	7	104.3	2	11	5	40.7
I	5	June 8-June 11	3	61.7	1	2	3	18.7
III	0	June 21-June 27	5	160	3	13	5	72.5
III	4.5	July 4-July 12	7	263	3	14	7	120
II	8	Aug. 12-Aug. 15	3	71.5	0	0	3	33
I	0	Nov. 1-Nov. 9	6	34.5	4	8.6	0	0
Total			85	1664.5	28	142.3	61	648

[a]Equals number of hunts followed by exchanges.

a representative sample of the flow of trade which occured during the period I lived with the Mbuti. I attempted to gather exchange data for as many consecutive hunts as possible, and any series of observations of less than three hunts was not included. As can be seen from the table, exchanges in all three bands were tabulated; hunting camps close to the village as well as in the remote forest are represented.

Besides meat, other forest products and labor may be provided by the Mbuti for cultivated starch from the villagers as will be discussed more fully in a later chapter. Data on the hours of labor worked by the Mbuti for local cultivators are provided by a sample of ten consecutive days of records kept for Band I. The extent to which this sample can be extrapolated to a general discussion of the role of the Mbuti's labor in their relationship with the villagers will be discussed later.

Data on Mbuti diet and nutrition were not collected in this study. Figures on per capita consumption of meat and starch may be generated from data on hunting returns and meat-starch exchanges. These can provide a measure of dietary intake, but no measure of dietary adequacy. Observations on nutritional health presented in this study need to be verified by more complete information.

Terminology

The Mbuti live in small nomadic bands. In this thesis the term band will be used to describe collectively those Mbuti who customarily ranged over a given area of forest, even though they did not always remain together in the same camps all of the time. Mbuti camps are

characterized by their lack of prominent headmen. Living arrangements are flexible, but the basic social unit is the nuclear family. There is some tendency for extended families consisting of an older couple and some or all of their adult children and spouses to remain together, although camps containing members from a number of families and even clans are also frequent. In general, an individual Mbuti is more likely to associate with some people (near kin and spouse's kin) than with others, and to occupy some areas of forest rather than to range randomly from one band and one area to another. In this way band constituency is fairly consistent from one camp to the next.

There are confusing inconsistencies in the names applied to the Mbuti and other ethnic groups of the Ituri Region. In order to avoid adding to this, I have attempted to follow Colin Turnbull's usage as much as possible (Turnbull, 1965a). Thus, an ethnic group such as the Pygmies is termed the Mbuti rather than the BaMbuti, Bambuti, Wambuti, Mambuti, or any of several others. One exception here is that the term Bantu will be frequently used. This should be taken to mean any one of a number of groups who speak a language included in Greenburg's "Niger-Congo" group (Murdock, 1959), who have a long tradition of agriculture; and who migrated into the forest in historical times. On the study area these include the Bria, especially the Kaheku sub-group, the Pakombe and the Nande. The Bira are included in Murdock's (1959) grouping of "Equatorial Bantu," while he places the Nande with the "Interlacustrine Bantu." The Pakombe speak a language like that of the Keheku, but share other cultural and political features with the Nande. Indeed Moeller (1936) considers them to be an offshoot of the latter. All these people will

alternatively be termed "villagers" or "agriculturalists," following Turnbull, in order to distinguish them from the Mbuti.

The terminology of this paper does diverge from that of Turnbull whenever local pronunciation rendered a form differently than his spelling would have it. Most important here is the Kaheku and Pakombe term bakbala (adjective kbala), which is given by Turnbull as bakpara (adjective kpara). In this case the distinction entails more than just spelling. Turnbull's observations of the kpara relationships at Epulu differ from the kbala relationships observed on the study area. These differences will be elaborated in later chapters. At this point, however, the kbala relationship may be defined as the affiliation of specific Mbuti males and their families with specific villager males and their families.

The term bakala which refers to the village partner of the relationship, appears to be of Bantu origin, although it is used by both Mbuti and villager alike. The form of the Kbala relationship, and its emphasis may vary. On the study area, the term was applied to a range of affiliations from alledged kin ties between Mbuti and Bantu families to a loose and casual association of individual Mbuti and villagers which was strictly pragmatic in scope and definition.

There are two unifying features of kbala relationships. First, the term bakbala refers only to regular residents of the study area whose livelihood is locally derived, or whose ancestral ties are to the immediate area. Thus, bakbala are distinguished from itinerant traders and unsettled immigrants. The second feature of the kbala relationship is that although it links specific Mbuti with specific

cultivators the contacts regularly act as conduits through which exchanges of material goods benefit broader social networks on either side. In this way, for example, meat received by a villager from his Mbuti partner is often shared with other villagers who are not bakbala of that Mbuti. Conversely, starch acquired by an Mbuti from his bakbala regularly provides for the subsistence of other Mbuti including those who do not share the same village ties.

CHAPTER III

OVERVIEW OF MBUTI--VILLAGE RELATIONS

Some understanding of the historical and cultural background of the Mbuti and Bantu is important in providing evidence for the antecedants of modern relationships. The observations provided here are not meant to comprise a complete analysis of what is really a complex situation. Rather, selected information will be presented to set the stage for the economic and ecological data to follow.

Information on the distribution and way of life of the pre-Bantu Mbuti is lacking since the Mbuti themselves do not keep legends of their past, and there have been no archaeological sites attributed to them. However, the common assumption is that these people were the original inhabitants of the Ituri and other central African forest areas (Murdock, 1959).

The Bantu do have oral histories, in some cases extending back to the period of the earliest migrations into the forest. It should be remembered that these accounts are not objective since they are recounted as a means of justifying the present, from the Bantu point of view. Nevertheless they can offer some insight, especially when interpreted with supporting ethnographical data. The information which follows is based on oral historical accounts I collected myself on the study area and in its vicinity, coupled with accounts of Bantu migrations given in Moeller (1936).

The Bantu inhabiting the Ituri and adjacent forests today, the Kumu, Bira, Ndaka, Pakombe, Pere and related groups, originally came from the open country to the north and east of the forest. They have inhabited the Ituri for only four or five hundred years (Moeller, 1936). The relatively brief history of these Bantu in the forest has sometimes led to the assumption that they are alien to the forest environment, that they fear it and know nothing of it.

This view actually exaggerates the truth. An inspection of the published ethnographies of Ituri Bantu groups (Van Geluwe, 1956, 1960) shows that these people have a widely based and detailed knowledge of the forest, and that they make extensive use of forest resources including food and medicinal plants. This knowledge of the forest was not necessarily obtained by contact with the Mbuti. Bantu groups such as the Pere and Kumu who do not have contacts with Pygmies still know and use forest resources. Indeed, the actual dependence of the Bantu on the forest resources is evidenced by their well developed and effective hunting technology including spears, iron-tipped arrows and the hunting net, all of which have been adopted by the Mbuti. Such technology would hardly have been developed by a culture alienated from its natural environment.

The fact therefore that some Bantu groups in the Ituri do not always extract forest resources for themselves does not lead to the conclusion that they are incapable of doing so. Instead, villager neglect of forest activities must be seen as a matter of choice, and it can be expected that forest resources which are either necessary or desireable to them are available through alternative means, as indeed will be shown to be the case.

In turning now to the early contacts of Mbuti and Bantu, it is important to realize that the Bantu migrations did not markedly disrupt the forest environment, at least in most areas. The early migrations entailed small numbers of people, sometimes just a single family, according to the legends, who dispersed widely over the forest. Even today, after generations of agriculture in the area, most of the Ituri Forest retains its primary aspect.

The historical evidence also indicates that the Mbuti were not over powered by what at first might appear to be a technologically superior economy. The Bantu did possess iron, but beyond that, the technological capacities of the two societies were quite comparable, and the Mbuti soon acquired iron tools anyhow.

Rather than a forceful subjugation of Mbuti by the Bantu, the histories of the agriculturalists recorded by Moeller suggest just the opposite. In these accounts conflict between Mbuti and the early villagers was frequent. The Mbuti, however, are often portrayed as the dominants, who forced the Bantu to abandon settlements and to move on.

Conflict arose in particular over the gardens. In one account I recorded on the study area of events at sometime in the nineteenth century, the Mbuti actually raided villages, drove off the villagers and took all the food. These "wars" led to starvation among both Mbuti and villagers alike, before they were discontinued and peaceful contact re-established.

The contemporary contacts between the Mbuti and those villager groups who have an extended history in the forest are encompassed in the kbala relationship. Mbuti provide their village bakbala with

forest produce, predominantly meat. Occasionally they supply labor in the village or gardens, and in the past they served as guerrilla fighters in feuds between village groups. In return for these goods and services, the bakbala provide the Mbuti with tools, clothing, tobacco and especially cultivated food.

Although material exchanges are a major feature of the kbala relationship, other aspects may sometimes assume prominence. For example the bakbala and Mbuti participate in a number of joint ritual events such as initiation ceremonies, and the eshumba. In many of these, the distinctive identity of the two cultures is emphasized. Thus, for example, in the villager eshumba, a ritual commemorating the death of a village lineage member, the Mbuti are recognized as first inhabitants of the land, and derived from the forest itself. Hence, the Mbuti have an affinity with spiritual forces, including the ancestral spirits, which regulate all of Nature. In my opinion, villagers view such affinity as an asset. I found that Mbuti participation was desired and even required for several village ceremonies.

From their side, Mbuti ceremony, including their own eshumba, called Amangole by Mbuti on the study area, emphasizes their spiritual and cultural autonomy. But villagers are not denied a role. In fact all Mbuti festivals take place at least at one point in the village where the cultivators are responsible for providing the starch staple for feasting.

A different interpretation of the kbala relationship has been given by Turnbull (1965a, 1965b). Turnbull saw the Mbuti and

village culture as essentially opposed, with each side sharing a mutually low opinion of the other. The Mbuti for their part exploited the village for whatever material benefits they could get, while the villagers continuously and overtly attempted to control the Mbuti, ritually and socially. This was epitomized for Turnbull by the village Nkumbi initiation (Turnbull, 1957).

Turnbull's description of the Nkumbi near Epulu differs from my observations on the study area. In a Pakombe scarification and initiation ceremony I observed three times, called Mbu or Molimo (this is not to be confused with the very different Mbuti ceremony of the same name described by Turnbull (1960) for the Epula area), Mbuti and village boys were initiated in pairs by both villager and Mbuti elders. In the Nkumbi, village males control events, but Mbuti participation is seen as vital to some of the ceremony. Although I never saw an entire circumcision, I learned by questioning that Mbuti and villager boys are initiated in pairs here as well. The villager explanation for these pairs reported by Turnbull was that Mbuti went first "to clean the knife." Explanations by Pakombe and Kaheku on the study area were not so derogatory. I was told that no man could go through life without an Mbuti partner, and that the same was true for the Mbuti, who needed the villagers. It appears then that this ritual, and perhaps Mbu as well may have an economic basis. In any case, with both Mbu and Nkumbi, I believe the Mbuti have been incorporated into what were originally Bantu ceremonies.

The divergence between Turnbull's observations and my own may be explained in part perhaps by the different conditions of our study

areas. Epulu was a growing roadside truck stop and government post, even in the 1950's. As a result, it attracted a wide range of people with entrepreneurial interests, who were not native to the area. The village population thus was not entirely constituted by people who could claim long standing associations with the particular Mbuti present. In addition, the era of Turnbull's study was marked by colonial pressure to increase the production of cash crops in the Ituri. Villagers were required to meet certain quotas and, logically enough, turned to the Mbuti for labor to help in this regard. These extra demands could have produced strains which would obscure or alter what might have been cooperative if not actually friendly relations between the ethnic groups.

My own study area was located in a roadless area and predominantly settled by Bantu whose lineages have a long history in the same area of forest. Although conditions were changing, and as will be shown the kbala relationship is vulnerable to change, there were nevertheless a number of villagers and Mbuti whose economic, ritual and social ties reflected, at least at the time, relations which would obtain under more economically stable, subsistence conditions.

The observations presented here are not complete, but they do illustrate that the distinctiveness of Mbuti and villager culture is mutually recognized by both sides alike, and indeed given prominence. The cultural differences, however, do not pose the two worlds in independent spheres. Despite the availability of uninhabited forest into which they could retreat, the Mbuti choose to remain in contact, maintaining a multi-dimensional relationship with the Bantu. The

differences between the two cultures which are emphasized are actually those which establish their essential complimentarity: the Mbuti roam the forest as hunters while the bakbala remain in the village as cultivators. That this has an ecological basis, and economic implications will be the subject of Chapter IV.

CHAPTER IV

SUBSISTENCE STRATEGY

The Mbuti have been depicted as independent, self-sufficient hunters and gatherers. The basic proposition of this thesis is that the economies of the Mbuti and their Bantu neighbors, the bakbala, actually constitute a single, mutually beneficial subsistence system. This implies that food resources are best exploited through the co-operation of both societies. Food sources immediately accessible to the Mbuti are in the forest where they can move around in their small camps. Food sources most available to bakbala are primarily in the gardens that they tend near the villages. The hypothesis to be tested here is that the preferred diet of villagers and Mbuti alike is based on resources which are found in both the forest and cultivated clearings, but not in either habitat alone.

What is meant by "preferred diet"? Both Mbuti and villagers share essentially the same concept of a good diet. This contains regular sources of both carbohydrate starch and animal protein. When intake of starch is low, Mbuti and villagers experience a condition they term njala, best translated as hunger. When animal protein intake is felt to be inadequate, the condition is termed ekbelu. Although there may be genetic and cultural differences between villagers and Mbuti which dictate the relative amounts of starch and protein

which are needed, both elements are universally recognized as essential. Thus when I queried the Mbuti why they did not choose to subsist on meat alone when it was abundant, they told me they would die of hunger if they did not also eat starch.

Although starch and animal protein are the staples, other foods, both wild and domestic are sought and eaten. Such foods, including insects, honey, and certain fruits and nuts, may be prized by Mbuti and villager alike. Yet they are considered only supplements to the diet, or as short-term substitutes for meat and starch when these are not available.

The Forest Subsistence Base

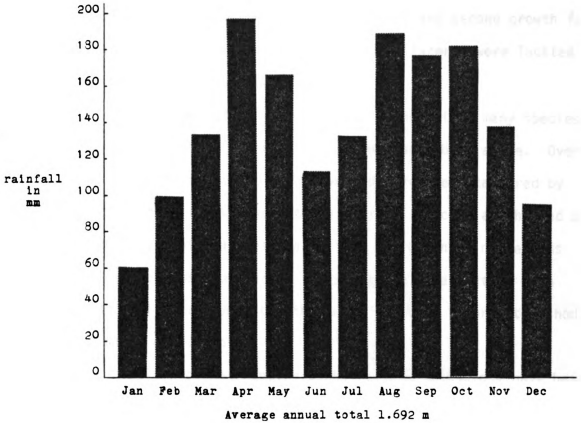
The question to be addressed with regards to forest food resources is the extent to which they alone can provide the starch and meat supplies of the preferred diet.

The availability and distribution of forest foods is closely tied to environmental variables including rainfall and habitat type. Total precipitation in the Ituri Forest ranges from about 1800 to 2000 millimeters, but everywhere exhibits a marked seasonality (Bultot, 1971). The twenty-five year rainfall record from Beni shows the pattern which obtained on the study area located about 60 kilometers to the northwest (Figure 4). Rainfall is generally high. No month has less than 60 millimeters. Rainfall peaks in April and August, and there is a distinct three month season of lower rainfall from December through February.

The common assumption that rain forests are highly diverse without dominance by any single species or group of species, does not hold

Figure 4. Monthly precipitation at Beni. The pattern here is the same as on the study area with peaks in April and August and a dry season from December through March.

Average Monthly Rainfall at Beni (Alt. 1,173 m).



Average annual total 1.692 m

Source: Bourlière and Verschuren. 1960. Exploration du Parc National Albert.

Figure 4

for most of the Ituri. Forest covering large areas is dominated by one or two species of leguminous trees which comprise over 80% of standing biomass (LeBrun, 1936). On the study area a species dominant Gilbertiodendron dewevrei (mbau) forest predominated over the northern two thirds of the area. A second distinct forest type without species dominance was localized on hillsides, mainly in the area of Band II. Finally, successional communities and second growth forest, important habitats for both Mbuti and villagers, were located wherever clearing had been undertaken.

The forest supports a wide array of animal life, many species of which are recognized as food by villagers and Mbuti alike. Over forty-two species of mammals, reptiles and birds were captured by Mbuti of the three study bands, and additional species are hunted and eaten when opportunity arises (Table 5). Various hunting methods were employed on the study area, including big game hunting with spears and small game hunting with dogs. The most important method, however, was the net hunt.

Descriptions of net hunting technique and technology have been provided elsewhere (Harako, 1976; Hart, 1978; Tanno, 1976; Turnbull, 1965a, 1965b). Briefly, the net hunt is a communal venture in which both men and women participate. Coiled lengths of netting, somewhat over a meter high and up to 100 meters in length, are carried from camp into the forest, generally, though not invariably by men and boys, to a hunting site which is located a variable distance from the camp. There the nets are uncoiled one after the other in a large semicircle, up to 1500 meters in perimeter, depending on the number of nets participating. Women and men then rig the top of the netting to saplings

Table 5. Animals captured by Bands I, II and III, 1973-1975

Common Name	Species	Mbuti Name	Average Weight (kg)[a]	Hunting Method[b]
		SMALL TO MEDIUM ANTELOPE		
Bates' Pygmy Antelope	Neotragus batesi	Amambosa	2.5	N
Blue Duiker	Cephalopnus monticola	Mboko	5.5	N
Bay Duiker	Cephalopnus dorsalis	Kuha	20	N,Sp
Red Duiker	Cephalopnus natalensis	Munje, Nge	17.5	N
Gabon Duiker	Cephalophus leucogaster	Seke	17	N
Black-fronted Duiker	Cephalopnus nigrifrons	Apangbanga	15	N
Water Chevrotain	Hyemoschus aquaticus	Amaboangi, Ahele	11	N,Sp,D
		SMALL GAME		
Giant Forest Squirrel	Protoxerus stangeri	Sangu, Mukoko	1	Sm
Flying Squirrels	Anomalurops beecrofti	Jeke		
	Anomalurus pusillus	Ambolo	0.1-1	Sm
	Idiurus zenkeri	Mputue		
Giant Rat	Cricetomys emini	Adoa	1	Sm
Brush-tailed Porcupine	Atherurus africanus	Njio, Njiko	2.5	D,N,Sm
Cane Rat	Thryonomys swinderianus	Esengi	3	D
Spotted-necked Otter	Lutra maculicollis	Esibi	3	D
Tree Hyrax	Dendrohyrax arboreus	Soka, Andua	3.5	Sc
Aquatic Civet	Osbornictis piscivora	Esele	1.5	D
Black-legged Mongoose	Bdeogale nigripes	Ndele	2.5	D,N
Marsh Mongoose	Atilax paludinosus	Kodokodo	3	D,N
Cusimanse	Crossarchus alexandri	Apandosi, Bolokbolo		D
Mongoose sp?	---	Bolokbolo	1	D
		BIG GAME		
Giant Pangolin	Manis gigantea	Tope	7	Sp
Bush Pig	Potamochoerus porcus	Ngea	45	Sp,D
Giant Forest Hog	Hylocnoerus meinertzhageni	Ekuma	60	Sp,D
Okapi	Okapia jonnstoni	Kalai, Mbote	250	Sp
Yellow-backed Duiker	Cephalophus sylvicultor	Kanyondo, Moimbo	45	Sp
Forest Buffalo	Syncerus caffer nanus	Njali	200	Sp
		PRIMATES		
Olive Baboon	Papio anubis	Babula	6	N,D
Owl-faced Monkey	Cercopithecus hamlyni	Ntito	4	N,D
L'Hoest's Monkey	Cercopithecus l'hoesti	Nsabia	3	N,D
Blue Monkey	Cercopithecus mitis		1	Sc
Red Colobus	Colobus pennanti	Amadjiako	5	Sc
Abyssinian Guereza	Colobus abyssinicus	Bolo	10	Sc
Chimpanzee	Pan troglodytes	Seo	1	D
		BIRDS		
Plumed Guinea Fowl	Guttera plumifera	Kanga	1	N
Black Guinea Fowl	Phasidus niger	Mbengbei	1	N
Latham's Francolin	Francolinus lathami	Lindi	.3	N
Nkulengu Rail	Himantornis haematopus	Agombi	.3	N,D
White-thighed Hornbill	Bycanistes albotibialis	Ngwa	1	taken in
Black-casqued Hornbill	Ceratogymna atrata			nest
various small birds	---	Teto (generic)		snare, sling
		REPTILES		
Horned Viper	Bitis nasicornis	Heli	1.5	D
Gabon Viper	Bitis gabonicus	Mboma	1.5	D
Tortoise	Kinixys erosa	Koti	0.5	-

[a]Average weights determined from field measurements reflect inclusion of both young and adult animals.

[b]Net (N), Spear (Sp), Dog (D), Scavenge (Sc), Smoked from burrow or den (Sm).

and secure the bottom to the ground. Several beaters, with the aid of dogs if they are available, drive any game from inside the perimeter toward the nets where other participants await in hiding to dispatch animals as they are caught. After a drive, the nets are quickly recoiled and the hunting party moves to another site where the nets are rigged again and the drive repeated, up to five or six times in a day, depending on the size of the hunt and the interest of the hunters.

Not all animals driven toward the net are caught. Small game, such as the giant rat and most mongoose and porcupines, either escape through the seven centimeter mesh, or slip underneath the netting. Larger animals, over 30 kilograms, readily break through the nkusa (Manniophyton fulvum) fiber cord. The net hunt is adapted to the capture of terrestrial mammals weighing between 2.5 and 25 kilograms, especially the five duiker species, Cephalophus monticola, C. dorsalis, C. natalensis, C. leucogaster, C. nigrifrons, the Pygmy antelope Neotragus batesi, and the water chevrotain Hyemoschus aquaticus.

Net hunting contributed from 73% to 94% of the total meat supply captured by all three of the Mbuti bands (Table 6). This concentration on net hunting is interesting because the net hunt is an introduced technology of the Bantu, and is practiced by the Mbuti in the place of their indigenous hunting methods including the use of bows and poison arrows, and smoking game from holes in the ground or trees.

By becoming specialized net hunters, the Mbuti have in effect limited their hunting focus to only a relatively few antelope species, while leaving other potential sources of meat untapped. Primates for example occurred on the study area, sometimes abundantly, and they

Table 6. Contribution of Different Hunting Methods to Total Mbuti Meat Supply

Method	Band I		Band II		Band III		Total	
	kg	% band total	kg	% band total	kg	% band total	kg	% total
Net	4114	73	689	94	2450	88	7253	79
Big Game (Spear)	944	17	---	--	287	10	1231	13
Small Game (Dog)	387	7	37	5	30	1	454	5
Scavenge	142	3	2	< 1	13	< 1	157	2
Smoke out	16	< 1	---	--	---	--	16	< 1
Snare	20	< 1	8	1	---	--	28	< 1
Total	5623	100	736	100	2780	100	9139	100

were considered good food. Only a few Mbuti bothered to make bows and poison arrows to hunt monkeys, however, and of those that did, none killed any while I was present. Those monkeys which were acquired were either terrestrial species, or else arboreal species which were scavenged after they had fallen from trees and were found either dead or injured and unable to climb. Similarly, small game was regularly ignored though it was sometimes abundant. Only Band I turned to small game hunting, and then at locations where duiker populations were too low for efficient net hunting.

The Mbuti's concentration on net hunting becomes comprehensible, at least in part, when one considers its effectiveness. Figure 5 shows the weight of antelope meat taken by net hunting on consecutive hunts at three forest camp sites of the three study bands. Hunting success varied from one site to the next, and from hunt to hunt, but it is clear that no hunts returned without any meat, and that success was in general consistently high. Catches of four to five antelope, totaling 25 to 30 kilograms were standard for bands I and II at the two sites shown. At the camp site of Band III, located in the remote forest, catches totaling over 60 kilograms were not uncommon.

A number of factors act together to determine hunting success. When location is controlled for, success is positively correlated with the number of nets participating and the number of hours hunted (Hart, 1978). In other words, at a given hunting camp, there is a fairly consistent return in meat per net participating or per hour hunted.

It is this consistency, coupled with the fairly high success rate, which is the outstanding feature of the net hunt, and which distinguishes it from other hunting methods. Big game hunting

Figure 5. Meat production at three hunting camps. Hunting success varies, but the net hunt may produce consistently high yields of meat if game supplies are adequate.

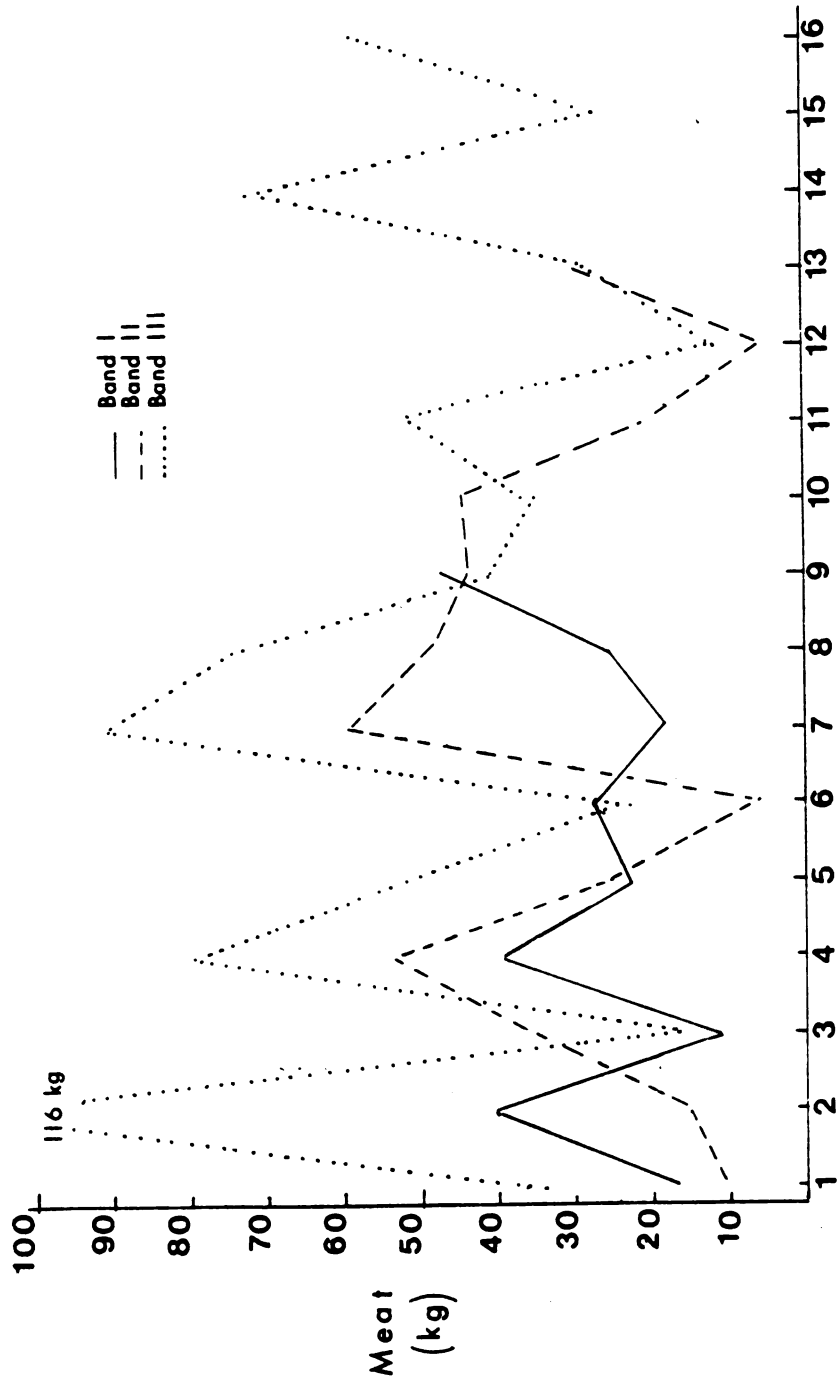

Band I
Band II
Band III
116 kg
Meat (kg)
100
90
80
70
60
50
40
30
20
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Consecutive Hunts

Figure 5.

produces large quantities of meat, but only a few individuals among the Mbuti hunted this way, and their success rate was low, on the order of 10%. Thus windfall kills of buffalo, pig and elephant were rare events. On the other side of the coin, small game hunting success rates were quite consistent, but here the total quantity of meat produced was low.

It is interesting in this regard to compare net hunting success with data compiled by Harako for archer Mbuti at Lolwa. Of 29 consecutive archer hunts, 14, or almost half, failed to yield any catch at all (Harako, 1976, Table 6). This inconsistent success rate should not be equated with an inadequate supply of meat, however. Harako calculated that on the average, the archers captured four kilograms of meat per day, a quantity he felt was not insufficient for the band.

Small antelope are found in all habitats on the study area and may be hunted by net in both rainy season and dry. However, they are not equally abundant everywhere. Table 7 shows that hunting camp location and hunting success, in number of antelope per hunt, are related. Eighty-four net hunts staged from camps located within one kilometer of an agricultural settlement produced 2.51 antelope on the

Table 7. Camp Location and Hunting Success.

Camp Distance from Village (km)	Net Hunts	Total Antelope	Antelope per Hunt
In Village	84	211	2.51
1-5	79	288	3.65
> 5	77	326	4.23

average. Seventy-nine hunts from camps one to five kilometers out were more successful with an average success rate of 3.65 antelope per hunt. Finally, seventy-seven hunts at camps more than five kilometers from a permanent settlement yielded yet more meat again, with an average 4.23 antelope per hunt. These calculations are based on hunts from all three bands under a range of hours and with varying numbers of participating nets. These variables vary randomly in each of the three distance categories and thus do not produce a systematic effect on the calculations. The conclusion to be drawn here then is that antelope populations are relatively higher in the remote, unpeopled forest, and lower in the area of permanent settlement. Although no statements have been made regarding the nutritional adequacy of these different levels of meat supply, it seems reasonable to conclude that protein can be readily acquired from the forest.

Meat, however, comprises only half of the preferred diet. The adequacy of wild supplies of starch must still be tested. Table 8 lists 38 edible wild plants which I recorded gathered and eaten by the Mbuti of the three study bands. In addition to these, I also recorded 35 varieties of fungi, most gilled Agarics, gathered and eaten. Of this diverse assemblage of food plants, however, only the wild yams (Dioscorea spp) and the mbau nut can be considered bulk sources of starch.[2] All the other species are either fruits, or oil or

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[2]It seems likely that several species of wild yam are eaten. The specific epithets were not known, however, since no specimens were collected in the field. In the following account, the observations can be taken to apply to the wild yams in general. I would like to acknowledge the assistance of M. Bemelmans of Bunia, Zaire in identifying these and the other plants in Table 8.

Table 8. Forest Plants Eaten by Mbuti on Southern Ituri Study Area, 1973-1975

Mbuti Name[a]	Family	Genus and Species	Habitat[b]			Status[c]	Part Utilized	Preparation
			Mbau	Hill	Suc			
Abakalibu	Burseraceae	Dacryodes sp	R	U	R	Inf	fruit	boiled
Bea	Mimosaceae	Pentaclethra macrophylla	R	R	R	Inf	seeds	oil extraction
Binjeke	?	?	R	R	R	Inf	kernels	?
Biseke/Ebambu	Annonaceae	Anonidium mannii	R	?	?	Inf	fruit	raw
Ebo	Gutiferaceae	Mammea sp	R	R	R	Inf	fruit	raw
Esele, Ebute, Tou	Simarubaceae	Irvingia spp	U	?	R	Staple	kernels	roasted
Ekakela	?	?	R	?	?	Inf	kernels	brewed drink
Enjali/Ndali	?	?	R	?	?	Inf	kernels	brewed drink
Esengi	Anacardiaceae	Antrocaryon sp	R	U	R	Inf	kernels	roasted
Ilinda	Sapotaceae	Gambeya sp	U	U	R	Inf	fruit	raw
Liko/leko	Sterculiaceae	Cola acuminata	U	U	R	Staple	seeds	raw, brewed drink
Mabondo	Palmae	Raphia sp	R	C	U	Staple	sap	fermented drink
Mbau	Caesalpinaceae	Gilbertiodendron dewevrei	C	R	R	Staple	seeds	boiled, roasted, fermented

[a]Names in Bila and Pakombe languages.

[b]Habitat: mbau forest; hill forest; successional communities. (C) common; (U) uncommon; (R) rare or absent; (?) status unknown.

[c]Status of food plants in diet: (Staple) presumed dietary staple in pre-agricultural times; (Inf) infrequently eaten.

Table 8. (Continued)

Mbuti Name	Family	Genus and Species	Mbau	Hill	Suc	Status	Part Utilized	Preparation
Mbe	Burseraceae	Canarium schweinfurthii	U	U	R	Staple	fruit	boiled
Mbombo	Moraceae	Myrianthus arboreus	U	C	C	Inf	fruit	raw
Usa/Puisia	Moraceae	Treculia africana	R	?	?	Staple	seeds	roasted
Esemu	?	?	U	R	R	Staple	seeds	roasted
Koka	?	?	?	?	?	Inf	fruit	raw
Aduaka Kisombi Konjo Tumba	Dioscoreaseae	Dioscorea spp	R	C	U	Staple	tubers	soaked then boiled in two waters
Maya/Mpambo	Apocynaceae	Landolphia nine spp	C	R	R	Staple	fruit	raw
Enjei	?	?	?	?	?	Inf	kernels	roasted
Edia/Edia	?	?	U	?	?	Staple	tubers	roasted
Tobe/Ngaso	?	?	U	?	R	Staple	seeds	roasted
Mbagu	Solanaceae	?	U	U	C	Inf	fruit	brewed drink
Ntoto	Zingiberaceae	Aframomum spp	U	U	C	Inf	fruit	raw

protein producing seeds and nuts, with the exception of the raffia palm (mabondo) which yielded wine.

Most species of wild yam can be harvested in any month of the year, although tubers are best during the dry season. Patches of wild yams were limited to the hill forest, and to some second-growth, but in both habitats they were highly localized. Furthermore, wild yams are all but completely absent from the mbau forest, and so unavailable to Mbuti living there.

For these Mbuti, such as Band III, mbau nuts could be and sometimes are an alternative source of starch. The mbau is a mast fruiting species so that all the trees in an area synchronously produce a vast crop of nuts. The abundant seed fall may begin as early as June and last until November. During this time the preferred preperation of mbau nuts was to gather soft, fermented nuts from rain puddles on the forest floor after the tannins they contained had been leached out. The nuts were then mashed and steamed in leaves. A few seeds were eaten boiled or roasted as well.

Once mbau nut fall ceases, the seeds quickly sprout or rot, and by December, are completely unavailable. Thus while the mbau seed provides abundant starch, it is strongly seasonal, being limited to at most only five months of the year. Furthermore, observation of nut fall in 1973 and 1974 suggested that mast fruiting varies from year to year and may be small in some years.

It should be clear from the above discussion that starch sources in the forest are limited. Dioscorean yams are the only species which are continuously available, but these species are absent from large areas of the forest. This is good evidence that the preferred diet

of today's Mbuti, containing both meat and starch, can not be met by an exploitation of forest resources alone.

A question arising from this conclusion is what did the original Mbuti hunter gatherers subsist on if wild starches were inadequate and if agriculturalists had not yet arrived in the area and provided supplementary food. This problem is important, but direct evidence for its answer is lacking since there are no purely hunter-gatherer Mbuti today. The basic hypothesis would be that Mbuti did not continuously inhabit all the areas they occupy today. Presumably Mbuti distribution would have been correlated originally with the distribution of wild yams or another comparable wild food of high caloric value. Mbuti then occupied forest where these were not available only after the agriculturalist invasions. This is actually suggested in some of the legendary histories of the Bantu on the study area. Both the Pakombe and Kaheku accounts stated that their ancestors entered what is now the study area from forest east of the Biena River, accompanied by Mbuti, and that they found the area uninhabited.

A second problem, more germane to this thesis, would take issue with conclusions based on the definition of "preferred diet" given above. A diet of meat and starch may be seen as best by Mbuti today, but it is not the only diet possible to them, and indeed may not have been their diet in earlier times. Mbuti know of a wide array of wild plant foods, so a contrary argument would go, and from among this diverse assemblage they would certainly be able to muster enough foods to subsist through lean seasons. Diversity of food base has already proven to be a key adaptive trait in hunting and gathering cultures such as the !Kung and G/wi San (Bushmen) who also face

seasonal variations in food supply (Lee, 1972; Silberbauer, 1972).

Such an argument raises serious questions and demands further examination. Before undertaking this analysis, two key assumptions must be stated. The first is that the wild foods given in Table 8 are a fairly complete sample of the total potential array, or at least that all the important staples are represented. The second assumption is that wild food distributions today are not so depleted as to give an erroneous idea of their original abundance and extent.

The first assumption is probably met since I expressed active interest to the Mbuti in all wild foods, and they took time to show them to me, or to describe them, even if they did not collect them. With regards to the second assumption, most of the data on wild foods were collected in primary forest on the northern portion of the study area where permanent settlement was low and exploitation of wild foods by the Mbuti was generally light. Nevertheless the Mbuti reported that one staple food, the mabondo palm tapped for its wine, had been extirpated from this area through human activities. The fact that the Mbuti made mention of the loss of the mabondo, but not of other species, despite my inquiry, suggests that the distributions of most wild foods on the study area today were not undergoing rapid change, and that their present distributions and abundances are fairly representative of original conditions.

Among the wild plant foods in Table 8, most species were eaten only infrequently. Many of these were rare, semi-toxic when consumed in large quantities, or just low in overall food quality, as was the case with some of the fruits. Only nine genera can be considered potential food staples in pre-agricultural times and are indicated

on the table. These foods shared a number of similarities: 1) They are prized as nutritious if properly prepared. 2) They are either seasonally or spatially abundant and can be collected in large quantities. 3) They are all gathered regularly today to supplement agricultural produce in the diet.

Figure 6 shows the seasonal distributions of these staples on the study area from June, 1973 through February, 1975. Honey, termites and grasshoppers are also included since they were important food items as well.[3] It is clear that most wild foods are restricted to well defined seasons, and that these seasons may be rather variable from one year to the next. Most importantly, the majority of the species are only available during the rainy months, from June through November, and are all but entirely absent during the drier months from December through March.

The same pattern of limited availability during the dry season is apparent with the edible fungi (Figure 7). Only one species of fungus was available in each month from December to February, and no mushrooms at all were collected in March. Mushroom diversity and abundance peaked in April and August, with the peaks in rainfall.

Based on the above data, the dry season in the forest clearly emerges as a time of limited food availability. The only species which can be collected at all during this time are a few

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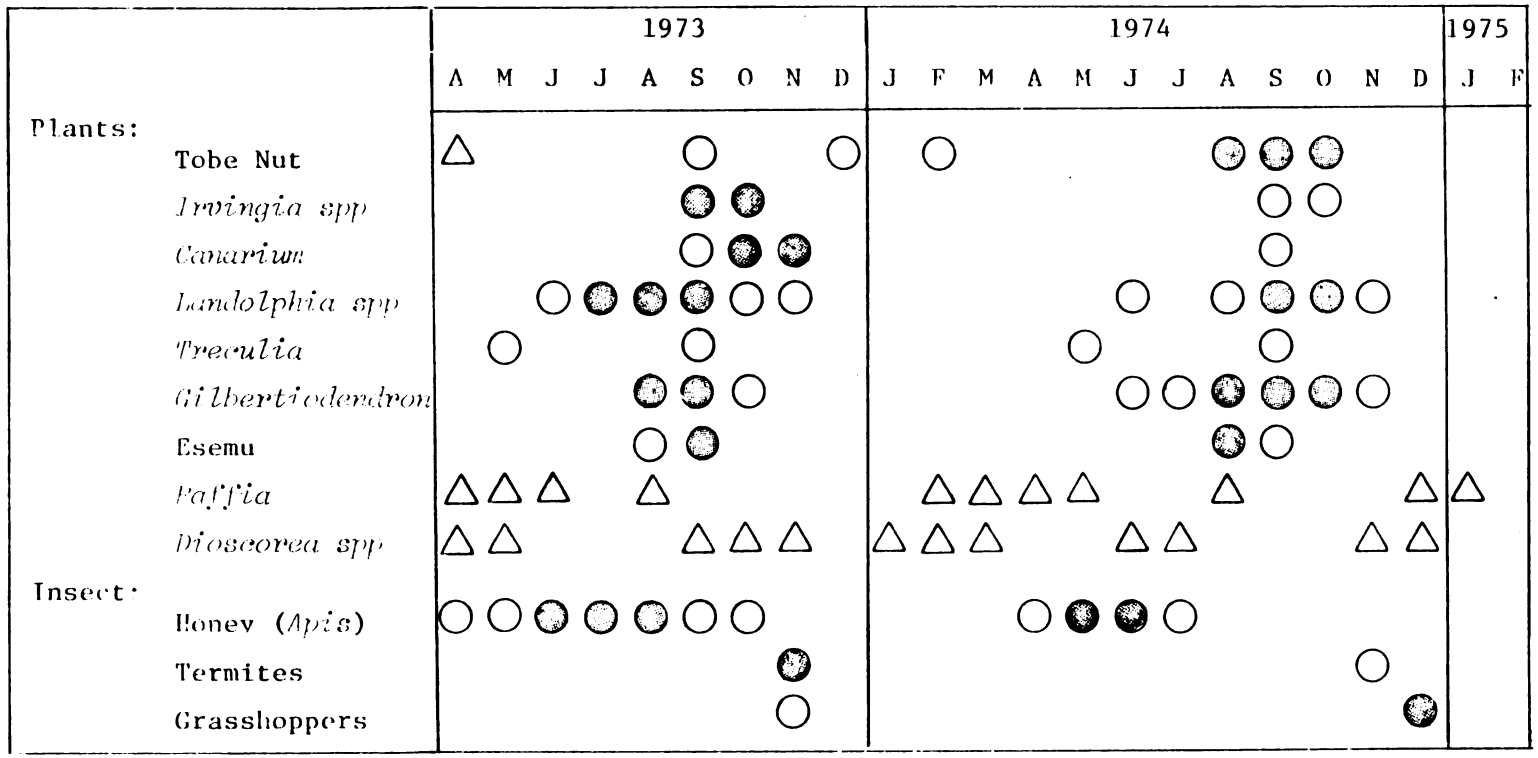
[3]Other animals or animal products which were irregularly collected include three species of lepidopteran larvae, the grubs of the large palm beetle (Coleoptera), fresh water crabs, tortoise eggs and birds eggs, and the honey from nine species of stingless honey bees (Meliponinae). Terrestrial snails (Achatina) are an important food to Mbuti in other areas of the Ituri. These snails occured on the study area, but were not considered food by the local Mbuti.

Figure 6. Seasonal availability of staple wild foods. Most wild foods are seasonal in distribution, and their seasons vary somewhat from one year to the next. In general, however, most species are available from May through November. In contrast, the dry season, from December through March, is a period of dearth, with all but two species generally unavailable.



Abundant: Eaten once or more per week, or large quantities present.

Scarce: Eaten less than once per week and in small quantites.

Present: Abundance not assessed.

Figure 6.

Figure 7. Seasonal availability of edible fungi. Peak mushroom availability coincides with the passage of the Inter Tropical Convergence in April and August. As with other wild foods, mushrooms are not available during the dry season, December through March.

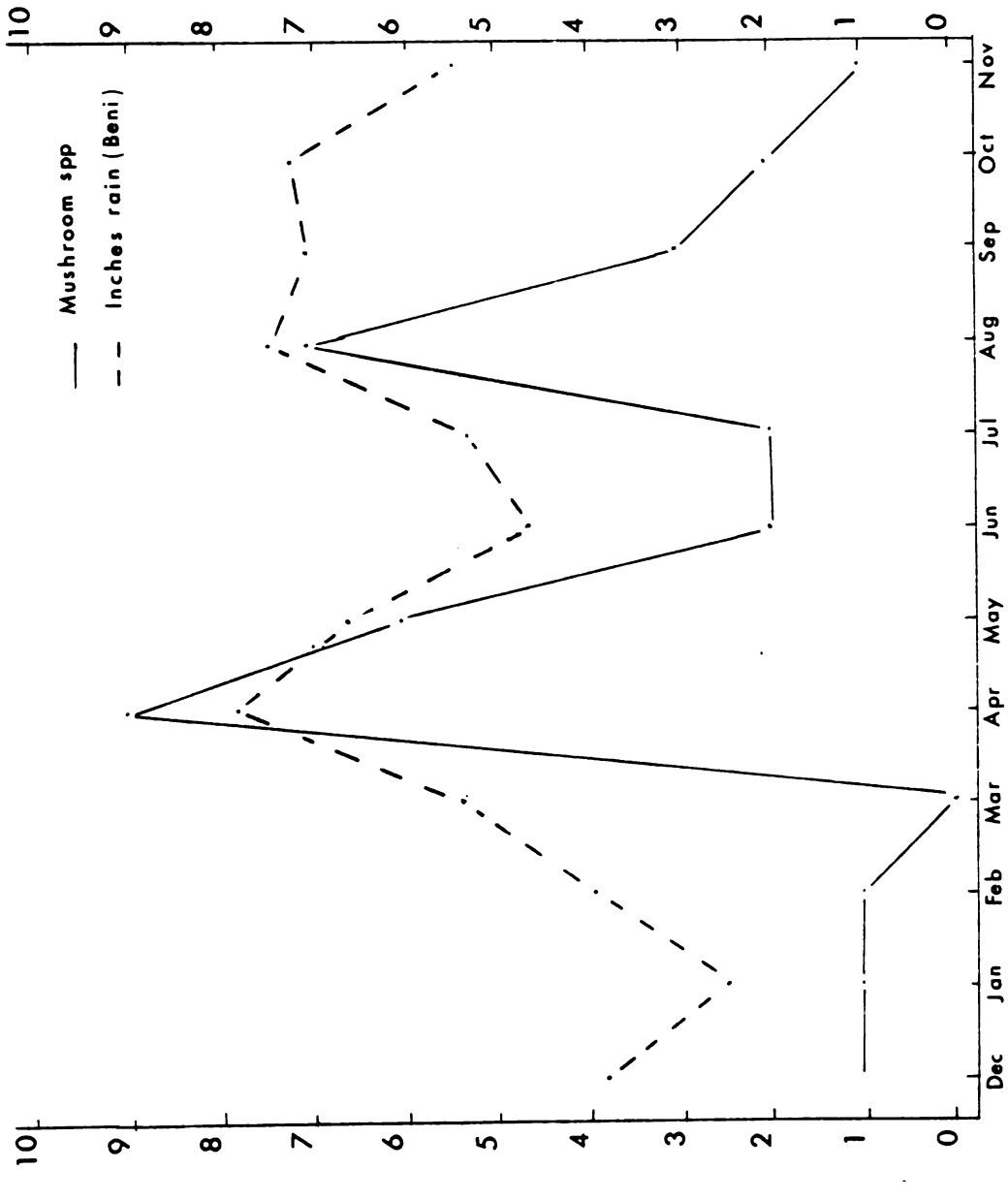

Mushroom spp
Inches rain (Beni)
0
1
2
3
4
5
6
7
8
9
10
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov

Figure 7.

mushrooms, mabondo wine--which could hardly constitute the staff of life--and the dioscorean wild yams, which have already been discussed. Thus the conclusion reached earlier in the discussion of the meat-starch diet can be extended to a more broadly based hypothetical hunter-gatherer diet as well. In other words, whether the Mbuti seek just meat and starch, or a more diverse subsistence base, there are still several months of the year during which they would have to rely on the uncommon wild yam as their only subsistence staple besides meat.

These observations on the importance of the wild yam are supported by data collected by S. Bahuchet on another Pygmy group, the Bayaka, of the Central African Empire (Bahuchet, 1972, 1975). Among the Bayaka, yams are a staple during the dry season; however, in the Central African forests other staple foods are also available at this time including honey, Gnetum leaves (which did not occur on the study area, or at least were not recognized as food) and some Irvingia nuts. Thus the dry season is not as lean a period here as it is in the southern Ituri Gilbertiodendron forest.

This digression on wild foods has led away from the specific subject of the availability of starch in the forest environment. Nevertheless it has served the point of emphasizing that in the southern Ituri, supplies of this commodity, now deemed necessary for survival by Mbuti and Bantu alike, are naturally limited. In terms then of the preferred diet, we may conclude that the forest provides only one of the two basic components, meat, and that for people living in this environment, the source of starch must come from elsewhere.

The Village Subsistence Base

The same question can be posed of subsistence options in the village that was applied to forest resources in the preceding section: That is can the villagers in their clearings provide themselves with a meat-starch diet which is adequate by their own standards?

The major food resources of the agricultural clearings are, of course cultivated crops. Table 9 lists twenty-three domestic plants cultivated on the study area, with notes on seasonal aspects of their culture and the time from planting to harvest. Eight of these species are cultivated and eaten in such quantities as to constitute staples. The other crops provide supplemental sources of food or else stimulants, spices, or raw materials for other uses.

Of the staple crops, all but corn, beans and the oil palm are bulk sources of starch. Many of these species may be planted or harvested at any season, and are thus available all year round. Several staple species, including the sweet potato, may yield two or three harvests per year.

Cultivation methods and the sizes of plantations varied on the study area, and yields of staple starches were highly variable as well. The recently immigrated Nande, who predominantly settled in the area of Mbunia, were the most diligent agriculturalists, and regularly produced surplus yields. Nande agriculture supported a weekly market at Mbunia, and provided rice for a commercial hulling plant located 35 kilometers to the south. The Pakombe, and the Kaheku clan of the Bira, the other major ethnic groups among the cultivators, practiced in general a less intensive system of cultivation than that of the Nande. Nevertheless they too produced some surplus,

Table 9. Domestic Plants of the Southern Ituri Study Area

Cultigen	Botanical Name	Plant to Harvest (months)	Seasonality
	STAPLES		
Beans	Phaseolus vulgaris	3-4	wet (plant)
Cassava	Manihot esculenta	9-24	none
Cocoyam	Xanthosoma sagittifolium	4-6	none
Corn	Zea mays	3-5	wet (plant)
Oil Palm	Elaeis guineensis	60+	none
Plantain	Musa paradisiaca (var.)	18	none
Upland Rice	Oryza glaberrima	5	dry (harvest)
Sweet Potato	Ipomoea batatas	3-4	none
	OTHERS		
Beer Banana	Musa paradisiaca (var.)	18	none
Cannabis	Cannabis sp.	3	none
Coffee	Coffea spp.	60+	none
Egg Plant	Solanum melogena	4-5	?
Gourd	Lagenaria spp.	?	none
Lemon	Citrus limon	60+	none
Papaya	Carica papaya	?	none
Peanuts	Arachis hypogaea	5	dry (harvest)
Peppers	Capsicum spp.	3-5	none
Sorghum	Sorghum bicolor (var.)	5-6	?
Squash		4-5	?
Sugar Cane	Saccharum officinarum	?	none
Taro	Colocasia esculenta	6-12	none
Tobacco	Nicotiana tabacum	3-5	none
Yam	Dioscorea cayensis/rotundata	12-18	dry (harvest)

though not enough to regularly market. Only in the tiny, scattered Kaheku settlements in the northern third of the study area were supplies of domestic starch severely limited. Several of these settlements were only newly established at the time of the study and so plantings were necessarily small. In other cases, however, the villagers were spending their time hunting and trapping, or panning gold instead of cultivating gardens, while relying on purchases of starch from passing meat traders to fulfill their needs. These cases clearly illustrate that a trade-off exists between productivity of agriculture on the one hand, and participation in other economic activities including hunting, on the other.

In turning to the availability of meat, the village emerges as a habitat in which this subsistence staple is in relatively low supply. Domestic stock, even chickens were not common. Only a few villagers owned goats, and none owned pigs. Domestic animals were not slaughtered except on ritual occasions and thus did not provide a regular source of meat.

Game did occur in the vicinity of the village clearings, and the gardens even attracted concentrations of animals which would not have occured naturally. For example, primates, especially baboons, were sometimes so abundant that their depredations in the gardens posed a serious threat to subsistence. In addition, wild pigs, porcupines (Atherurus), mongoose, and various rodents also favored gardens or successional habitats.

Despite this potential, the actual supply of meat captured in or near the villages and the gardens was low. No villagers owned guns or even bows and arrows, so that primates were completely

unexploited except for an occasional catch made in an arboreal snare. Terrestrial snares were regularly placed by villagers in the gardens and adjoining second growth. These did produce meat, at least soon after a village clearing was opened. Over the four or five years or more that a village is located at the same place, however, the constant trapping pressure effectively reduces game in the vicinity. Indeed, it has already been shown that the success of net hunts staged from camps in a village was lower than for camps even a few kilometers out. In essence, growing hunting pressure, as population density increases in an area, all but overwhelms the beneficial effects on game populations which stem from the increased area of garden and second growth habitats. Thus many villages in the forest, including all in the southern third of the study area, would face a very real meat shortage if they were dependent only upon the game in their immediate vicinity.

Lowered game populations, and hence lowered supplies of meat may be one factor contributing to an active interest in fishing on the part of villagers and Mbuti in the southern half of the study area. Fishing techniques varied, and included use of hook and line and fish traps, as well as netting (ntala) and stream poisoning. Stream poisoning was generally a communal endeavor, demanding participation of at least 20 people to assure success. Labor inputs were thus high, and although a relatively large catch was usually assured, per capita productivity was low (Table 10). Furthermore, poisoning and ntala netting both were limited to the dry season from January to April when water levels were down. During most of the year therefore, fish were relatively unavailable.

Table 10. Estimates of Labor and Catch in Selected Fishing Methods[a]

Method	Average Number of Participants	Labor input[b] (man hours)	Output (kg fish)	Productivity (kg fish per man hour)
Sibo net & poison	24	492	50	.10
Ntala net	5	15	6.5	.43
Hook & line	1	5	.4	.08
Trap	1	2	.3	.30

[a]Data Base: January 15 to April 15, 1974, fishing trips of villagers and Mbuti in area of Band I.

[b]Excludes time spent in manufacture of nets and traps.

The fact that fishing would be attractive at all, given the labor demands and the low productivity, is further evidence that animal protein in general is limited in the village setting. Indeed the festive atmosphere associated with stream poisonings is a celebration of what is for the villagers a rare abundance of fresh protein.

In summary, this chapter has shown that where the village lacks meat, the forest has it in abundance, and what the forest lacks, namely starch, the village is often able to produce in surplus supply. Thus it would appear that an optimal subsistence strategy would entail exploitation of resources in both habitats. It will be shown below that this has been done through a division of labor along ethnic lines. Mbuti provide meat from the forest, while the villagers provide starch from their gardens. In both the forest and village, however, the productivity of subsistence resources is not unlimited. Production is

determined by the amount of labor which can be provided, and with the production of wild meat there is a further constraint in the amount of hunting the game populations can withstand. The recognition and respect of these inherent limitations by both Mbuti and villagers is necessary if they are to maintain a viable and enduring exchange relationship. This will be the subject of Chapter V.

CHAPTER V

THE KBALA EXCHANGE SYSTEM

Chapter IV established the ecological basis of an interdependent subsistence system linking the Mbuti hunters who provide meat from the forest, with local Bantu cultivators who produce starch in village gardens. Food consumption patterns of Mbuti and agriculturalists support the contention made in Chapter IV that the preferred diet includes foods available from both the forest and the village, but not from either habitat alone. Over the study period, the Mbuti's total food intake consistently comprised 60% to 80% agriculturally produced starches by weight. Observations made in villages within the ranges of the three study bands showed that for the agriculturalists, all but a small percentage of total animal protein intake was wild game meat, and that much of it was acquired from the Mbuti.

The mere fact that Mbuti and villagers consume a significant portion of foods produced or provided by the other does not in itself imply systematic interdependence. Indeed legends of the local Bantu of their early contacts with the Mbuti suggest other alternatives. One account I heard, related a description of a silent barter between the two peoples. In this story, the Mbuti came into the gardens at the edge of the village clearing and left meat at a spot where the villager could find it. Then the Mbuti retired without contacting

anyone. The villager found the meat in the gardens, took it, and in its place left bananas and salt. Then he too left. The Mbuti returned, found the trade goods a satisfactory exchange, took them and left more meat. And so the system went on in which neither party ever saw the other. If such a silent trade ever occured, it never survived to be observed by anthropologists in this century.

Stories are also told giving a very different picture, one of exploitation. One account, heard twice on the study area, is that of the so-called "corn wars" in the eighteenth or nineteenth century. During this time, so the legends go, Mbuti repeatedly raided the villages of the Bantu, drove off the agriculturalists and appropriated all the cultivated food. Their gardens disrupted, the villagers began to starve. Finally they retreated east across the Biena River, back to the country from which they had originally come. After they left, the Mbuti too began to starve until, the legends state, the villagers returned and peaceful relations were re-established.

Colin Turnbull's account of Mbuti-Bantu relations at Epulu suggests that exploitation was the common underlying theme here as well (Turnbull, 1965a, 1965b). He reports that bonds between individual Mbuti and Bantu were ephemeral and irregular. Furthermore, instead of a system of trade, theft and expropriation often prevailed. Finally, even when exchanges did occur, they reflected attempts to maximize resource gain by one side over the other without reference to the long term stability of resource flow.

In this chapter, evidence will be presented to show that the relations between Mbuti and Bantu <u>bakbala</u> on the southern Ituri study area today are not exploitative. A system of subsistence

interdependence exists that is supported by diverse social ties and economic exchanges. The first hypothesis to be tested then is that Mbuti--bakbala relationships, hereon called kbala relationships, are enduring and that they are intentionally maintained by Bantu and Mbuti from generation to generation. A second hypothesis is that these contacts do not lead to the exploitation of one side by the other, but rather that a system of exchanges occurs in which both sides mediate their demands so that the resource base of neither is threatened.

The Long Term Stability of Contact

The number of shared cultural features of Mbuti and specific kbala ethnic groups indicates that there have been sustained contacts between Mbuti and agriculturalists for many years. A basic unity of hunting technology has been mentioned and will be returned to again. Other shared cultural traits are evidence that the ties between the two peoples go far deeper than the material or technological level.

Mbuti on the study area did not possess their own language, but habitually spoke a dialect of the languages of their Pakombe and Kaheku bakbala. This situation does not appear to be unique to the study area. Other researchers including Putnam felt that the original Mbuti language has been lost (Putnam, 1948). Only Schebesta has made any claims for the existence of such a tongue, called Efe (Schebesta, 1952). His claims, however, remain to be substantiated by linguists. Whatever the case here, my own observations concur with those of Turnbull (1965a) that the Mbuti use a number of different languages corresponding to those of the village ethnic groups with whom they have

had traditional contact, but that they speak these with their own distinctive accent and intonation.

It is significant in this regard that on the study area, few Mbuti spoke or understood Kinande. Nande have lived on the area, especially in the vicinity of Mbunia for the last 40 years. Yet even today, Mbuti do not have regular contact with most Nande villages. This is the case despite the fact that Nande villages are located at no great distance, especially for Band I, and is all the more surprising given the higher productivity of Nande agriculture, and hence greater supply of starch. Few Mbuti among those of Band I considered Nande among their bakbala, and there was a general mistrust on the part of both parties whenever irregular contacts were established.

There were, however, indications that this situation was changing. Nande for their part were extending their agricultural frontier further north into the forest of the Pakombe and Kaheku. Several Nande families in these outlying pioneer settlements were beginning to attract regular visits from the Mbuti. Also several younger men in Band I told me that they could understand Kinande, though they never deigned to speak it.

What is important in these observations is that shared language does seem to be an indication of close and regular contact between Mbuti and agriculturalists, and that without this common bond, relations may be restrained or even nonexistant. Furthermore, the establishment of shared language does not happen quickly, so that even two generations has not been long enough in the case of the Mbuti and Nande on the study area.

In addition to language, evidence from genetic studies also

argues for long-standing contacts between Mbuti and local Bantu groups. Gene markers, considered to be typically Pygmy are shared to some extent by neighboring Bantu populations, at least among western Pygmy populations (Cavalli-Sforza, 1971, 1977). These same studies indicate that the presence of individuals of intermediate height among both Pygmy and villager societies suggests that intermarriage among these peoples, which occurs to some extent today, also occured in the past.

The social and economic implications of intermarriage are as important as the strictly biological. In all but four of thirteen villages on the study area with which I had the most contact, there was at least one marriage between a village male and an Mbuti woman (Table 11).[4] Furthermore, all the local ethnic groups among the cultivators were involved in cross-cultural marriages, including one exceptional Nande man who had three wives in residence in Mbayahe, one of whom was Mbuti.

Table 11. Marriages between Mbuti and Bakbala on the Study Area

Village	Band Area	Ethnic Groups	Population	Mbuti-Bantu Marriages
Masange	I	Pakombe	25	1
Makotokoto	I	Pakombe	12	1
Mbunia	I	Pakombe, Nande	312	1
Matuna	I	Nande	10	0
Kaa	I	Kaheku	48	1
Mbayahe	I	Nande	80	1
Masenze	II	Nande	20	0
Biasiko	III	Kaheku	20	1
Esela	III	Kaheku	15	1
Bokoka	III	Kaheku	9	2
Mangubo	III	Kaheku	25	1-2
Makusi	III	Kaheku, Pakombe	25	0
Ituli	I	Pakombe	10	0

[4] I knew of no marriages between an Mbuti male and a village female, although Mbuti suggested that female children of mixed marriages occasionally married Mbuti men.

Whether or not offspring of mixed marriages become settled agriculturalists or nomadic hunters varied, and some seemed to establish themselves in the nebulous middle ground in between. What was clear, however, was that children of a village father and an Mbuti mother inherited the rights and responsibilities duly accorded any member of the villager's patriclan, irrespective of their subsistence orientation. This did produce difficulties at times when mixed offspring were brought up with a strong Mbuti influence, as often happens since Mbuti wives may spend a good deal of time with their own families, who are usually in the forest.

The case of Manala, a Pakombe elder of Masange, and his son Alafu, will illustrate the point. Manala's only wife had been Mbuti, and Alafu was his eldest son. Manala was of the same lineage as the Pakombe paramount chief and he had the ritual duty of making certain sacrifices and performing on the sacred drum for important ritual events. These duties were hereditary, and during the course of my stay I came to learn of the difficulties Manala had in imparting the proper knowledge and training to his son Alafu who spent most of his time in forest hunting camps with his Mbuti kin.

The implications of Mbuti-Bantu unions extend far beyond the few couples involved. Marriages create ties between whole families that cross generational lines and impart a network of mutual responsibilities that have economic repercussions. The Mbuti's demands for village starch, and the bakbala's requests for forest produce or labor are often couched in terms of kinship responsibilities. These terms were applied with a certain degree of freedom, especially on the part of the Mbuti. The same villager could be addressed with one kin term at

one time then with a different one at a later time which biologically, was incompatible with the first. Often it appeared to me that the real relationships were not fully known by anyone. Yet the bakbala, though they sometimes ridiculed the Mbuti's lack of sophistication in tracing kin ties and maintaining geneologies, rarely contended the fact that somehow they were related. Indeed if somewhere at some time a kinsman had married an Mbuti, the relationships might be real.

The point of this discussion is not to minimize the differences between Mbuti and Bantu cultures, but rather to show that contacts between the two need not be ephemeral or unstructured. In fact, a multi-faceted relationship can be expected to develop when the same Mbuti and bakbala and their forefathers inhabited the same area for the last several generations at least.

A Non-Exploitative System of Exchanges

The second hypothesis to be examined in this chapter is that the kbala relationship is not exploitative. In other words it avoids exploitation through the tempering of demand in proportion to supply. What this means is that the bakbala do not demand meat when it is not forthcoming while the Mbuti on their side avoid depleting the agricultural supplies of the villagers. Like any system of trade, however, the kbala system is dependent upon a surplus of commodities. In this case,however, these can be readily produced without direct coercion by one side or the other.

Increased production of domestic starch by the bakbala has been made possible through successive introductions of new crops into the forest. When the Bantu first arrived in the Ituri area, their major

cultivated starch was the banana (plantain). The banana is well-adapted to forest agriculture, and it has a certain cultural prominence for many village groups, being the subject of legend and ritual. Later crops of American origin including corn and sweet potato arrived in the Ituri area after the migrations of the Bantu and perhaps not until the 18th or 19th century. These additions increased both the diversity and level of production of the forest shifting agriculturalists; while still later additions of upland rice and cassava enhanced these systems even more.

Today, cassava is the dominant crop over much of the Ituri. Yet it has been cultivated widely over the forest only since the advent of colonial rule in the early 20th century (de Greef, 1916). No other starch crop is both so readily cultured and so productive as cassava. Cassava can be grown with a minimum of labor even on relatively poor soils. It is fairly resistant to disease and pests, at least on the study area. Tubers may be harvested as early as nine months after planting, or they may be stored in the ground for up to twenty-four months. Perhaps no other crop has had such an impact on the kbala relationship as cassava.

Meat production on the part of the Mbuti has already been mentioned in Chapter IV. Mbuti adoption of Bantu hunting technology, especially the hunting net, was shown to have increased their hunting efficiency over traditional methods of archery with poisoned arrows.[5]

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[5]It is interesting in this regard to point out that adoption of Bantu tools has affected Mbuti exploitation of other forest foods as well. There can be no doubt that the importance of honey for the southern Ituri Mbuti is tied to the use of iron axes forged by local

I will show in the next chapter that continuous production of large surpluses of meat demands consistently higher inputs of time and labor. However, production of small surpluses, at less regular intervals, as is needed in the kbala system of exchanges, can be readily accomplished without undue strain on the Mbuti. Net hunting does not demand special skills as does big game hunting; thus an entire camp may participate in rigging nets and driving game, including children, women with infants and older people. The overall pace of most net hunts is leisurely with regular regroupings called bimba at which time tobacco or food it shared and there is opportunity for conversation and relaxation. Indeed, the net hunt may be as much a center of the social life of an Mbuti camp as it is the focus of subsistence.

Where resources are limited, a sustainable system of trade can not meet excessive demand. In such a situation, excessive demand would be exploitative and undermine the resource base. Evidence that demand is not imposed beyond the limits of ready supply lends support to the claim that the kbala system of exchanges is not exploitative.

On the part of the local village bakbala, demand for meat is limited to what is felt can be provided, and no attempt is made to increase the flow of this commodity beyond the subsistence level.

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village smiths. Few of the 35 hives I saw exploited could have been opened without the aid of an axe. Often the store of honey was located some distance from the opening of the hive. In such cases, entrance to the hive could only be had by cutting through the living wood of the tree. It is not known whether the Mbuti used stone axes before they had access to iron, but if they did, these would not have been as efficient. Contemporary Mbuti honey gatherers often opened two or more hives in a day. In addition, they readily cut down large trees which contained hives otherwise inaccessible by climbing. It is hard to imagine this occuring on as large a scale without the use of introduced iron tools.

An inspection of actual exchange data will illustrate how this is accomplished. Table 12 presents daily figures on meat and labor inputs provided by 35 Mbuti of Band I (20 adults, 15 children under 12) in return for cultivated starch over a ten day period in April, 1974. During this period the Mbuti were camped at Masange, a Pakombe village of about 23 inhabitants. Thus, starch supplies were close at hand, but hunting was less productive. The Mbuti hunted on all but two of ten days, but six hunts yielded less than four kilograms of meat each. Only one net hunt, on April 13, when the band left early in the morning and went far into the forest, produced a large catch. The general lack of surplus meat did not prove to be an immediate hardship to the Mbuti as they substituted mushrooms and fish to some extent in their diet.

The Mbuti did provide some meat to the bakbala, but this amounted to only 17 kilograms over the ten days, and if the exchanges following the exceptional net hunt of April 13 are excluded, only 3.5 kilograms of meat was exchanged during the period. Despite this small quantity of meat, the bakbala nevertheless provided starch on every one of the ten days.

When meat was not available, the bakbala accepted other forest commodities including mushrooms (provided by the Mbuti on two days) and fish (provided once), or sometimes they sought Mbuti labor for tasks in the garden and village. Yet even these demands were moderate. Over the ten days, the Mbuti worked only a total of 74 man hours for the bakbala, which averaged less than one half hour per adult per day. The basic assumption on the part of the bakbala is that eventually the Mbuti will return to the forest hunting camps and

Table 12. An Example of Mbuti-Bakbala Exchanges

Date	Total Meat From Hunt (kg)	Masange			Other Villages	
		Mbuti Input		Kbala Starch (kg)	Mbuti Input	Kbala Starch (kg)
		Labor[a]	Meat[b]		Labor[a]	
4-4	2.5	11	0.5	6.3		20
4-5	0.5			2.0		
4-6	--	12		4.5		
4-7	1.2	22		14.2		
4-8	2.5		0.5			32.5
4-9	7.8		1.5	2.0		
4-11	--	24		18.8	3	2.0
4-12	1.0	2		10.8		2.0
4-13	24.0		13.5	20.4		
4-14	3.5		1.0			94.5
Total	43.0	71	17.0	79.0	3	150.5

[a]Manhours

[b]Kilograms

that meat will be available then in greater supply. Only when this does not occur, does the relationship become strained.

The Mbuti for their part have several means of averting possible exploitation of the agriculturalists. Most important here is mobility. By changing camp locations and the size of camps, Mbuti also shift the context of their dependency on village starch. Band I, for example, inhabited 16 camp sites over a ten month period from 1 July, 1973 through 20 May, 1974. The duration of each site use varied from less than a week to over nine weeks, but the average stay was 3.7 weeks. Although the Mbuti maintained contact with the bakbala throughout this entire period, they were able to acquire the starch they needed from eight different villages, as they moved from the vicinity of one to another. Even when actually camped in a village, as was the case at Masange in April when the data in Table 12 were collected, the Mbuti visited four other villages in fulfilling their starch needs. In the case of the Masange data in Table 12, 64% of the starch consumed by the Mbuti over the ten day period came from bakbala other than those at Masange.

By maintaining simultaneous contacts in different villages, the Mbuti are also able to take advantage of brief periods of abundance of seasonal produce. During rice harvest, for example, (January-March), I found that nearby Mbuti converged on a village on the morning that one of the fields was to be cut. They assisted in gathering the heads of grain then remained for the afternoon feast, "to help eat the rice too" as they put it.

Another tactic the Mbuti use to reduce their demands on village agriculturalists is to plant gardens of their own from time to time.

These gardens were small, and provided for only about 10% to 30% of Mbuti starch needs. Their distribution shows that their purpose is to buffer dependence on bakbala gardens in specific situations which might otherwise result in excessive strain.

Mbuti gardens were planted at eight sites on the study area from 1973 through 1975, and included locations in the areas of all three study bands (Table 13). Garden sites included camps to which Mbuti regularly returned on their nomadic rounds. It is noteworthy that most of these sites were locations where bakbala themselves had already established a clearing. Thus the primary forest had been cut, and even if second growth had completely overgrown, as is the case when clearings are abandoned, it was easier to clear again than to cut primary forest. This may be one reason why such sites are chosen by Mbuti for their own gardens.

The location of Mbuti gardens vis à vis sites of active kbala settlements provides evidence that the two are seen as complementary to each other from the perspective of Mbuti starch needs. Five of the eight Mbuti garden sites were located in clearings inhabited by the bakbala, while three sites were situated at varying distances from 4.5 to 7 kilometers from a village. No sites were located in the forest from 1 to 4.5 kilometers from a village, although camp sites and even abandoned village clearings could be found in this area.

The reason for this distinctive distribution is suggested by a consideration of the limits Mbuti can regularly travel in order to acquire garden foods from the bakbala. In general I found that Mbuti could leave a camp in the morning, walk to a village, visit with

Table 13. Cultivation Sites of Study Bands

Site	Band	Distance to Village	Mbuti Cultivation '72	'73	'74	'75	Staple Crops
Masange	I	in village	-	-	+	+	cassava, corn, beans, plantain, cocoyam, sweet ptotao
Makotokoto	I	in village	-	+	+	+	cassava, plantain, cocoyam
Nyoaka	I	in village	-	+	-	?	cassava, sweet pototo, cocoyam
Buchanga	I	4.5 km	-	-	+	+	cassava
Ngbou	II	5 km	+	+	-	+	cassava, corn
Madudwanje	III	7 km	+	-	-	-	cassava
Bokoka	III	in village	-	-	+	+	cassava, plantain
Esela	III	in village	-	-	+	+	cassava

and/or work for the bakbala, harvest cassava, plantain or other starch, then carry the load, which may weigh up to 30 kilograms, back to camp, all in one day, only if the camp was located five kilometers or less in a straight line distance from the source of village food. This is not to say that the Mbuti do not sometimes travel farther from camp to village. These longer trips, however, were not undertaken on a regular basis, and sometimes required an over night visit. Although this is not considered a hardship, it becomes impractical when trips are made to the bakbala's gardens every three to four days, as is often the case.

By locating gardens in the clearings of active kbala villages the Mbuti have acted to enhance the role that Bantu gardens play in their subsistence. The Mbuti's own small gardens in no way meet their subsistence needs at present, but they can provide an alternative source of starch from time to time if for some reason it is not readily forthcoming from the bakbala.

By planting gardens at some distance into the forest, the Mbuti have extended the effective range of their hunting activities. Starch crops the Mbuti can collect from such gardens can alleviate to some extent the need for frequent trips to the village for food.

Gardens at camp sites at intermediate distances between the village and the distant forest would not be an efficient expenditure of labor under the Mbuti's present situation, and this is probably why they do not occur. Campsites at intermediate distances are readily accessible to the village, so Mbuti gain no advantage by locating their own gardens here as opposed to the village itself. Nor would gardens at intermediate distances be advantageous to more

remote camps since they would be almost as far as the village gardens, yet offer no major source of starch.

The Mbuti's approach to agriculture also shows that they do not consider their gardens to be equivalent to those of the bakbala. The Mbuti are not particularly attached to their gardens, and indeed frequently abandon them as conditions affecting the flow of starch change. This is shown by the history of planting at the eight sites in Table 13. At none of these sites were gardens continuously planted from 1973 through 1975, although the Mbuti camped at each of the sites at least once every year. The shifting status of gardening was mostly associated with changes wrought by the development of commercial meat trade on the study area, and not by the bakbala, as will be discussed in the next chapter. Nevertheless, the flexibility of the Mbuti's approach to food production is clear evidence that for them it is only one of a number of options with which to acquire starch.

By and large Mbuti gardening is a casual affair. Sometimes small plots barely three meters on a side were located right in camps and represented no more than modifications of and additions to stands of feral cultigens. When new clearings were undertaken, the Mbuti simplified the process as much as possible. If special equipment including hoes and machetes were not available, the Mbuti made do with whatever suitable tools they had on hand including digging sticks and the removable blades of their spears.

The Mbuti generally did not burn their clearings, but planted after they had cut out the undergrowth but before felling larger trees. Although this method might appear to be disadvantageous to

young crops, it was actually well suited to the Mbuti's simultaneous dependence on hunting. Brushing undergrowth and planting are readily accomplished tasks. The young crops are able to sprout and begin to grow at the same time the heavy work of cutting the larger trees is gradually undertaken as time permits.

The Mbuti regularly abandoned their gardens after planting, even if they intended to return to harvest at a later date. For this reason cassava is a favored crop among the Mbuti since it produces better than the other crops under untended conditions. Leaving untended gardens presented no problem if the same Mbuti were likely to be the next visitors at the site. Some of these sites, however, were not used exclusively by a single band. For example, once I observed Mbuti of Band III harvest a few cassava tubers from a picked over patch at Madudwanje which had been planted by members of another band. Although this might have been an exceptional behavior, the individuals who had originally planted the crop did not complain of this as theft, to my knowledge. In this respect the Mbuti treated their gardens in something of the same way they did many wild food sources, most of which are not regarded as the exclusive property of a single individual.

Other evidence suggests that the concept of ownership of the land and its crops is not highly developed among the Mbuti. For example, few Mbuti protected their gardens with charms and fetishes to ward off thieves or evil spirits, as do most of the Bantu. Nor did the Mbuti make supplications to ancestral spirits for a good harvest, or give tribute to the local Bantu lineage head in acknowledgment of his ritual authority over the land, as do all <u>bakbala</u>.

All together these observations indicate that for the Mbuti, food production is but one component in a subsistence system which links them as nomadic producers of meat to the bakbala, sedentary producers of starch. This chapter has shown that ties between these two peoples have a long history and are maintained today, at least in part, by cross cultural marriages and fictive kin ties. Exchange relations between the two cultures which seek to meet the subsistence needs of both, are not exploitative. Yet such an interdependent subsistence system cannot be expected to have functioned unaffected by outside events in the past, just as it cannot be insulated from change in the present. The following chapter will discuss one such change, that of a commercial meat trade.

CHAPTER VI

THE COMMERCIAL MEAT TRADE

Observations on the kbala exchanges in Chapter V permit two predictions on Mbuti settlement patterns. First, one would expect that up to a certain point at least, denser populations of agriculturalist bakbala would also support denser populations of Mbuti, providing that larger populations of villagers produce larger quantities of starch, and, just as importantly, that supplies of wild meat remain adequate. A second prediction is that Mbuti would regularly inhabit an area of forest extending out about five kilometers or so from the settlements of the bakbala. Movements deeper into the forest might also be expected, but these would occur perhaps at seasons of wild food abundance, or would be associated with the establishment of small satellite gardens by the Mbuti in order to meet, at least in part, their starch needs. In any case, one would not expect Mbuti to inhabit on a continuous basis, forest which was remote from established village starch supplies.

An inspection of the map of the study area showing the ranges of the three study bands (Figure 3, page 22), indicates that at least one of these predictions might be met. Band I, ranging over an area where agricultural settlement was highest, had the greatest average band memberships of all three bands, yet the smallest band area. The

second prediction, that Mbuti do not continuously inhabit forest remote from village agriculture does not hold, however. Mbuti of Band III continuously inhabited a forest where the population density of kbala villagers was only 0.2 inhabitants per square kilometer. Furthermore, most of the kbala settlements in this area were small and thus did not provide a stable source of starch. In effect, the Mbuti of Band III transacted virtually no meat-starch exchanges with bakbala for months at a time.

These observations on Band III do not negate the conclusion established above. The Mbuti of Band III, and other Mbuti continuously inhabiting remote forest, are not doing so because they are dependent only upon hunting and gathering of wild foods to meet their subsistence needs. On the contrary, these Mbuti subsist on the same diet dominated by meat and domestic starch as do the Mbuti such as Band I who live in more settled areas. The domestic starch in the diet of Mbuti in the remote forest does not come from the bakbala, however. Rather, starch flow into this area is made possible by the recent development of a commercial trade in wild meat. Entrepreneurs, oriented toward markets in more densely settled areas on the periphery of the forest, make their way deep into the forest, right to Mbuti hunting camps, where they promote the production of surplus meat which they then buy and carry out.

The first hypothesis to be examined in this chapter is that those Mbuti living in the remote forest, beyond effective contact with the bakbala, are dependent upon a continuous supply of domestic starch brought to them by commercial meat traders. A second hypothesis is that the commercial trade is not like the kbala exchanges,

but instead entails ephemeral contacts between Mbuti and entrepreneurs which are exploitative.

Dependency on Commercial Trade

I have already described the commercial meat trade in the southern Ituri Forest (Hart, 1978), and the following brief summary of its history is taken from this earlier publication. Toward the end of the colonial era, in 1958 or 1959, entrepreneurs, called bachuuzi (literally middlemen), from developing towns and cities near the forest began to penetrate the southern Ituri along the roads and foot paths, looking for sources of wild meat which they could sell in the population centers. These middlemen were a varied lot, including women from the villages near the forest as well as young men from such cities as Bunia and Beni, out for adventure and a fast profit. Most traders, though Zairois, were really foreigners to the forest and the Mbuti. In the beginning they established themselves in the villages, and like the bakbala awaited there the arrival of the Mbuti with meat for sale.

According to informants, the Mbuti did not readily respond to commercial overtures at first. As nomads, they had no interest in accumulating material possessions, and they could already get everything they needed from the bakbala. If anything, they looked on the traders as part of the kbala system. This presented the traders with a problem. They were not interested in the small quantities and wide variety of forest products the Mbuti often brought to the bakbala. Instead, they wanted to purchase as much meat as they could carry out on their backs. Whereas the bakbala were content to wait for the Mbuti to come to the village with goods to exchange, this was

not a satisfactory arrangement for the traders. Thus they began to pack their wares right into the Mbuti's forest camps. There they could offer cassava flour and rice in exchange for meat as an alternative food supply to the bakbala's cultivated produce.

The Simba rebellion put a temporary halt to all commercial activities in the late 1960's. When the forest was safe again in 1970, however, traders returned in numbers. In 1973, I found that they had reached most of the camps in my study area, even those in the remote forest. In 1975, at the end of the study, the commercial meat trade was of growing importance and spreading to influence new bands in the northern and western Ituri.

A number of features of the commercial meat trade indicate that without this source of food Mbuti occupation of the remote forest would not occur. Indeed the Mbuti themselves recognize their need for market foods by what they say about them. Traders they say "help us out"with food, and that without starch they would be hungry in the forest. The importance of the starch is further evidenced by the fact that the Mbuti resist attempts by the traders to replace starch exchanges with a greater focus on currency. A trade based on currency would of course be easier for the traders since it would obviate the need to pack in heavy loads of flour and rice. Mbuti will exchange surplus meat for currency when they have enough starch for their immediate needs; however, they will not take currency over food if they are hungry.

The Mbuti recognize the importance of starch foods in their diet and the role that meat trade plays in providing these. Thus the net hunt, kuya, was sometimes referred to as a hunt for cassava

flour, kuya ya sembo, a basic starch staple acquired from traders.

Customs regulating the division of commercial starch foods are not as prominent as are those controlling the division of meat. Even so there are a number of ways by which this commodity is distributed so as to insure everyone gets something to eat. One of the most important is the custom of a communal meal eaten daily by all males in the hunting camp, at a central hearth. Particular pieces of meat such as the heads of larger antelope are designated to be cooked by the men at this hearth. Cassava flour or rice is cooked by spouses or female relatives of hunters who acquired the starches through trade that day, and portions are provided to the central hearth for common consumption.

Distribution of starch foods is also assured on the side of the females. Though each woman has her own hearth at which she cooks, women often cook together and invariably eat together. Certain pieces of meat are designated as women's food, including some choice internal organs. Starch foods are cooked in large volume and shared from one hearth to another. Often as well, pieces of meat cooked at the communal hearth are given by the men to the women at the same time they bring bowels of starch food.

The importance of starch foods is also recognized by the traders who give these to the Mbuti on credit even when meat is not immediately forthcoming. The traders never gave out money, beads, soap, clothing or other accessory trade items without immediate return in meat. Yet they were forced to treat their starch goods in an exceptional manner because they were necessary to the Mbuti.

On four occasions, twice with Band II and twice with Band III,

I was with the Mbuti in a remote forest camp when there were no traders present and the nearest productive gardens of the bakbala were from seven to twenty kilometers distant. In the first case with Band II, traders had left only temporarily to replenish their stores of rice and flour. The Mbuti, who were camped in hill forest at the time, subsisted for two days on wild yams which grew in the area. On the third day several Mbuti left early with meat, for the village, 9.5 kilometers distant and returned in the evening with cassava tubers. On the fourth day the traders were due back, and although they had requested aid in carrying the heavy loads of food, none of the Mbuti went out to meet them en route. The second occasion when Band II was without a supply of domestic starch occured two weeks later. Then the trading party which had been with them, left without intention of immediate return. In this case, the day after the departure, the band left their forest camp, seven kilometers from a village and moved to the first camp they had recently occupied, at 9.5 kilometers from the village. There they spent two days eating yams and drinking palm wine from trees they had tapped nearby. They then returned to a camp site only five kilometers from a village.

The two cases of Band III also show that Mbuti can subsist for at least a time in the forest without domestic starch. In these instances, the Mbuti went for a week each time between trading parties, eating only mbau nuts, honey and meat, without any complaint of njala. They were glad to see cultivated food when it arrived, however.

In all four of these cases Mbuti were in the forest when there were adequate, even abundant wild starches available. I have no observations on how Mbuti fared in the Gilbertiodendron forest during

the dry season when there is essentially no wild food here but meat. Nor did I ever encounter a case where Mbuti chose to subsist on wild foods alone when domestic starch was available. In any case, these incidents do show that even if Mbuti are ultimately dependent on domestic starch, this dependency is not so rigid that they can not alter their subsistence patterns from time to time to meet contingencies as they arrive. In the context of their dealings with commercial traders, this flexibility is important as it confers on the Mbuti some ability to blunt what is essentially an exploitative system of trade.

Commercial Trade and Exploitation

A dependency on commercial trade in the remote forest can be seen as offering the Mbuti the benefits of a regular flow of starch in an area where this food would otherwise be unavailable to them in the context of the kbala exchanges alone. Thus from this perspective the two systems, commercial and kbala, function in the same way, as a source of cultivated food. In other ways, however, these systems of trade are fundamentally different.

In the first place, contacts between Mbuti and commercial traders are ephemeral in the sense that both sides know that the relationships are limited in time and may never be re-established. This is in sharp contrast with the kbala relationship where the two sides inhabit the same area of forest and have had dealings with each other for generations. A second major difference is that commercial trade is not oriented toward subsistence, as are kbala exchanges, but is directed by the traders toward the production of larger surpluses of meat for sale in the market. This section will provide evidence that the

commercial meat trade is exploitative in the sense that it is geared toward immediate profits of the traders and that there is no internal flexibility to modify demand in response to a decrease in resource availability.

That the commercial system is oriented toward immediate profit can be shown by the presence of traders only where supplies of meat are abundant and by the establishment, by the traders, of exchange rates which decrease the value of meat relative to the trade starch.

Mbuti in all three study bands had at least some contact with commercial traders over the 20 month study period (Table 14); however, the degree of contact varied. The area of Band I contained only one camp location in a total of sixteen where traders were continuously present during periods when the site was occupied. Three additional sites were irregularly visited, that is traders were sometimes present. Twelve of the sites had no commercial trade contact at all. With Band II there is an increased presence of traders.

Table 14. Commercial Contacts among Study Bands

Band	Regular Trade	Infrequent Trade	No Trade
I	1	3	12
II	5	3	2
III	13	0	0

Camps at five locations supported regular contact, while an additional three had infrequent contact. Only two locations were never visited by traders during the course of the study. Band III, living in the

remote forest, had the most contact with market traders. At every one of 13 camps recorded for this band, traders were present on an almost continuous basis.

The differing associations of traders with the three study bands is correlated with the density of permanent settlement on the band area (refer to Table 2). Band areas where population density was high, as in Band I supported few traders, while unsettled areas such as that of Band III attracted more. Permanent settlement and hunting success are inversely related as was shown in Chapter IV.

Table 15 establishes the relationship between good hunting and regular commercial trade more directly. In all three bands, hunting success was highest at camps where traders were regularly present.

Table 15. Hunting Success at Camp Sites

Band	Average Hunting Success (kg meat/hunt)		
	Camps With:		
	No Trade	Infrequent Trade	Regular Trade
I	4.0 to 15.6	14.9 to 24.1	20.5 to 38.6
II	?	16[a]	16.8 to 23.8[b]
III	none	none	25.6 to 51.6

[a] Success recorded for only one camp.

[b] Success recorded at only two camps.

The trend from low success at camps with no trade to highest success where it occurred is best shown by the data for Band I. Camps with

no trade averaged only 4.0 to 15.6 kilograms of meat per hunt. Camps with infrequent trade had higher yields, while the highest yield was asoociated with the camp where trade was regular.

Large surpluses of meat are not the only factor which encourage traders to establish contacts with Mbuti at more distant forest sites. When camps are less than five kilometers from a village the Mbuti can readily use the gardens of the bakbala as a source of food. In camps beyond this distance, the commercial traders have an effective monopoly on exchanges. This is readily seen by data in Table 16, where of 43 Mbuti hunts at camps 0 to 5 kilometers from a settlement, 20 or 47% were followed by kbala exchanges for starch. On the other hand,

Table 16. Camp Location and the Context of Meat Trade

Camp Distance (km)	Total Hunts	Kbala Exchanges		Commercial Exchanges	
		Hunts Followed by Exchange	% Total Hunts	Hunts Followed by Exchange	% Total Hunts
0-5	43	20	47	25	58
> 5	42	8	19	36	86

only 8 of 42, or 19% of hunts from camps locations more than five kilometers from a village, were followed by kbala exchanges. On the side of commercial trade, 86% or 36 of 42 hunts from the distant camps were followed by trade of meat for starch. It is also significant that of the 43 hunts closer to the village, 25, or 58% were followed by commercial exchanges. This suggests that even when Mbuti are within effective visiting range of the bakbala they will often

deal with the commercial traders who are present in camp rather than travel to the village. Thus not only does commercial trade replace kbala exchanges in the more remote forest but it may also be competitive at close camps as well.

Fixed rates of exchange of meat for starch established by the traders are further evidence that this trade is oriented toward fast profit. Table 17 shows the type of game, and the cuts of butchered meat commonly acquired by the traders from the Mbuti, and their trade value in terms of currency, rice and cassava flour from 1973 to 1975.

Table 17. Commercial Exchange Rates, 1973-1975

Game Type	Market Meat	Weight (kg)	Equivalent Rates of Exchange[a]		
			Currency (Z)	Rice (kg)	Cassava Flour (kg)
Small Antelope	Gutted Carcass	1.5-3	.30	2.1	3.9
Med. Antelope	Front Quarter	1-2	.20	1.4	2.6
	Hind Quarter	1.5-3	.30	2.1	3.9

[a]Average weights from four traders.

In exchanges for flour or rice, traders carefully weighed out measures using metal drinking cups of a type in common usage everywhere in the Ituri region. According to traders the fixed rates for meat were established after the Simba rebellion and are maintained by tacit collusion among trading parties. In any case there is little effort on the part of traders to out bid each other for the Mbuti's meat. Whatever meat the traders do get assures them a large profit. Several

spot checks in markets around the forest, during the study period, showed the price of wild meat there running five to ten times the amount paid for it in the forest by the traders.

The traders' attempts to fix the price of meat clearly distinguishes their form of trade from the exchanges of the bakbala. In the kbala system the value of meat and starch is flexible and a function of relative availability. Thus when meat is scarce and starch abundant, as is often the case in a village, the value of meat relative to starch is high. Similarly, when meat is more abundant, its value is lower. In the commercial system on the other hand, starch is always a scarce commodity. Even if meat supplies become low, the price for starch remains the same, and the Mbuti must then work harder to get what they need to eat.

These differences between the commercial and kbala exchanges translate into very different flows of meat as is shown in Table 18.

Table 18. Meat/Starch Exchange Rates in Commercial and Kbala Trade

Context	No. Exchanges	Meat Traded (Kg)	Starch Received (kg)	kg Meat/ kg Starch
Commercial	71	387	805	.48
Kbala	20	62	380	.16

In 71 commercial exchanges the Mbuti provided an average .48 kilogram of meat to receive one kilogram of starch. This is three times more meat on the average than what was needed to acquire a kilogram of starch from the bakbala.

The question is what happens to commercial exchanges when meat becomes scarce. In the kbala exchanges, as discussed in Chapter V, other forest produce, or sometimes labor can be substituted for meat when it is not available. Since the relationship between Mbuti and bakala is enduring, what is not provided at one time may be provided later. In this way Mbuti subsistence is assured through times of dearth while the bakbala are in a position to take advantage of fortuitous surpluses whenever they arise.

The commercial meat trade is not as flexible. A trader's time with the Mbuti is limited to a short period determined by the rapid deterioration of the preserved meat. Traders dry and smoke surplus meat over slow fires while they are in camp and this is one reason why they prefer carcass meat over organs since the former is easier to handle. Even with the best care, smoked and dried meat may only be kept for two weeks at most before it begins to loose market value. Given these conditions, traders can not wait indefinitely for the Mbuti to provide meat. Nor can traders make use of mushrooms, tortoise eggs, honey, cola nuts or any of a number of other products Mbuti do provide the bakbala. Each trader needs meat and needs it fast and if, in their view, it is not forthcoming they leave.

This does not mean that traders never give out starch without meat. Hunting has its ups and downs even at the best sites, and the Mbuti must have starch whether they have meat to trade or not. Since the Mbuti do not always return credit in meat this has led to complaints by traders that they have been cheated and exploited by the Mbuti. In a few cases fights between Mbuti and traders have errupted over this issue (Hart, 1978). What is significant for the sake of

the argument here is that relations between Mbuti and traders are often tense, and all the more so when traders' demands pressure the Mbuti to increase supplies of meat beyond the point of ready availability.

Tension is but one consequence of the commercial relationships. The Mbuti hunting process has also been affected. Finally there is evidence that the antelope population, the meat resource itself, is being diminished over the entire study area.

Net hunting, as pointed out in Chapter IV is the most productive of all hunting methods available to the Mbuti. Net hunt yields are positively correlated with both hours of hunting and number of nets participating. Thus it would be expected that under commercial pressure for increased meat production, the Mbuti would concentrate on net hunting over other methods and increase both the duration and size of their hunts. Data for Band I (Table 19) shows that this has indeed occured. The number of net hunts per week, the number of hours per hunt and the percentage of nets participating were all increased during periods when traders were present relative to times when they were not.

The size of Mbuti settlements also reflects the impact of commercial trade. Figure 8 shows the size of net hunting camps of Band I during the entire study period. Camp size ranged from fewer than ten adults with three nets, to large camps of almost 50 adults of six different clans, commanding 15 nets. Large camp sizes occured both when traders were present as well as when they were absent; however, large camps tended to occur when traders were present, and, more significantly, small net hunting camps never occured when traders were

Figure 8. Sizes of net hunting camps of Band I, July 1973-February, 1975. Camp sizes ranged from 10 to 50. Camps where commercial traders were present were consistently larger than those where they were absent. Larger camp sizes are associated with larger net hunts which are more efficient at producing large quantities of meat demanded by traders.

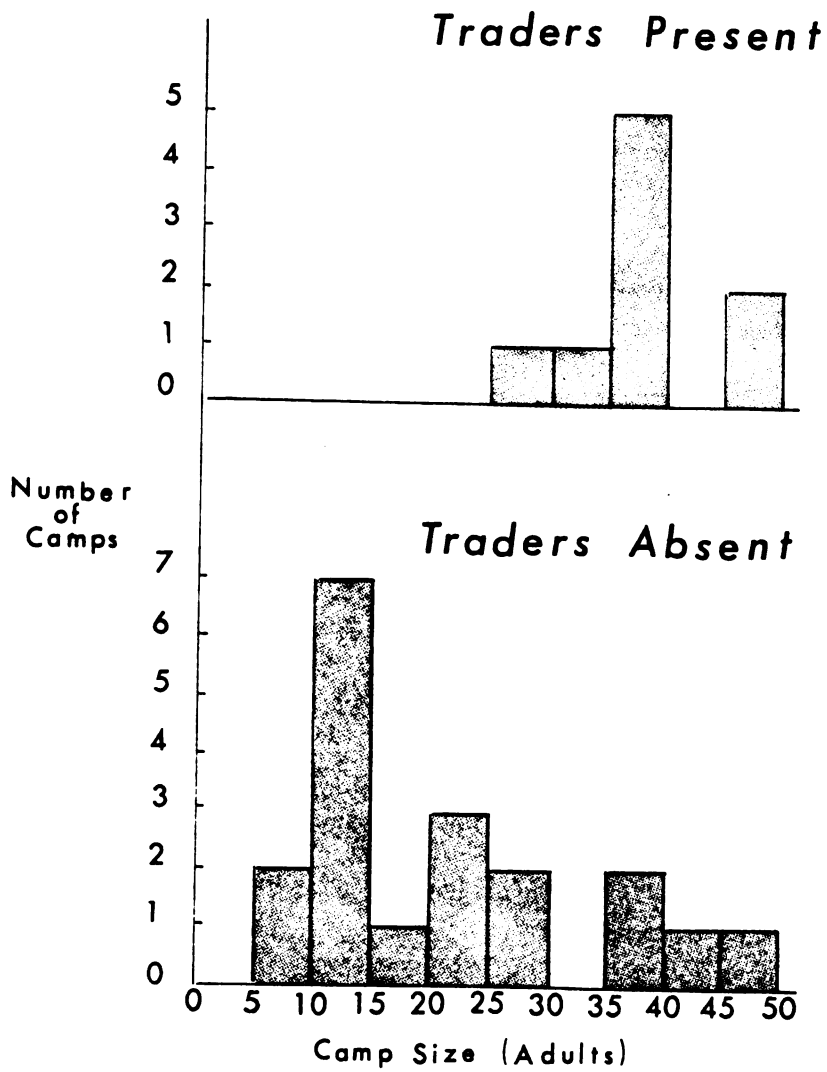
Traders Present
5
4
3
2
1
0
Number of Camps
Traders Absent
7
6
5
4
3
2
1
0
0 5 10 15 20 25 30 35 40 45 50
Camp Size (Adults)

Figure 8.

Table 19. Net Hunting Tactics of Band I in Commercial and Non Commercial Contexts.[a]

Status of Camp	Total Days[b]	Hunts	Hunts per Week	Percent Available Nets Used per Hunt	Hours per Hunt
Traders Present	61	51	5.9	85 s.d. 13	6.9 s.d. 1.5
Traders Absent	81	47	4.1	71 s.d. 18	5.4 s.d. 2.0
Significance Level[c]				.05	.05

[a]Data for hunts between July 21 and December 23, 1973.

[b]Excludes 14 days during which I was absent.

[c]t test for difference between sample means.

present.

These observations on camp size call into question Turnbull's assumption that large camps are the norm of net hunting bands (Turnbull, 1965a, 1968). It appears from the example of Band I that in fact such camps are not a necessity for net hunting but represent rather a specialized endeavor oriented toward the production of surplus meat for trade.

The long-term effect of commercial hunting on game populations is not clear. In the short term, decreasing hunting success over the study period suggested that commercial hunting is leading to a diminuation of game supplies (Hart, 1978). Mbuti now hunt harder and have extended their hunting on a continuous basis into the remote forest, into areas which would have been natural refuges in the context

of the kbala exchange system. The undermining of game populations even if on an immediate level, is further evidence that a commercial meat trade in which demand for meat is unchecked, can not constitute the basis of a sustainable system of exchange.

In summary to this point, Chapter VI has shown that the commercial trade in wild meat has affected all Mbuti on the study area to varying extents. This trade is fundamentally different than the kbala system of exchanges, even though both entail the exchange of meat for starch. The Mbuti's contacts with commercial traders are ephemeral and exploitation occurs from the perspective of both sides. Market hunting has forced the Mbuti to intensify net hunting which also threatens populations of antelope. The traders' use of starch to coerce increased meat production threatens Mbuti subsistence; while the Mbuti's manipulation of traders' credit strains the relationship even more.

The question is why should the Mbuti live in the remote forest where they are dependent upon commercial trade, rather than in areas where there are agricultural settlements with opportunity for kbala-type exchanges. The available data do not permit this problem to be dealt with in detail here. Nevertheless there is some evidence to suggest that Mbuti accept the opportunity to trade with commercial entrepreneurs because this is the best option they have under some conditions. These conditions include on the one hand limited forest resources in the southern portion of the study area due to growth of agricultural populations, and on the other hand limited starch resources in the north due to decline in agricultural populations.

Regarding the first condition of limited starch, several

observations suggest the hypothesis that the bakbala and Mbuti, living in the south of the study area, exclude other Mbuti groups from participation in what is already a saturated system. In other words, Mbuti such as Band III occupy the northern, unsettled areas because present resource levels in the south can not support further exploitation.

Several pieces of evidence lend support to this hypothesis. First, villagers in the southern third of the study area did not consider themselves bakbala of Mbuti further north. Only one settlement, Kaa, located near Mbunia, welcomed members of Band III. Other villagers in this area felt Mbuti of Band III were strangers and not to be trusted.

A second piece of evidence is suggested by the sometimes hostile attitudes taken by the Mbuti living in the south in Band I toward Mbuti of Band III. Two incidents where this emerged indicate that the issue may be a matter of limited forest resources. On two occasions in 1973 and 1974, when small groups of Mbuti from Band III camped in the area of Band I, Mbuti in the latter band told me that this was a case of trespass and that there would have been a fight if they had encountered the violators. Nothing ever came of these threats,but these were the only references I ever heard of trespass. Trespass was not an issue when members of a band adjoining Band I, with whom they shared some kin ties, utilized these same contested camp sites.

Finally, observations on food intake and nutritional health also provide a perspective on the adequacy of resources. In general, the nutritional health of both Mbuti and villagers appeared to be

good everywhere on the study area. I identified no obvious cases of malnutrition. Muscle condition, and skin and hair tone were generally good. I suspected that internal parasites, hook worms and round worms, were frequent, but the effect of these was not immediately obvious,except possibly for bloated stomachs on some children. The Mbuti did have problems with rotting teeth, but this may have been due to their consumption of large quantities of honey during some seasons.

Food intake among Mbuti and villagers was variable, but a general trend in the villages, especially in the south, was that meat protein was in short supply. The data on meat-starch exchanges at the village of Masange discussed earlier (Table 12) clearly show the limited availability of meat. The total population present at the time, including 29 adult Mbuti and 25 adult villagers[6] together had only an average 80 grams of butchered meat (includes bones) per capita per day. Furthermore, the exchange data show that the Mbuti kept most of this. Masange was located about eight kilometers north of Mbunia. From what I saw, the data on meat consumption at Masange were typical for villages in this area of the forest. If, however, population growth continues near Mbunia, as it seems it will, meat supply may become more limited in villages like Masange.

Given the limitations on meat supplies near villages in the south, Mbuti could be expected to periodically move into the forest where this resource is more assured, even though starch supplies

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[6]Individuals over the estimated age of 12 were considered adults. The population figures count children between about two and 12 as one half adult; while infants under two were not counted.

would be more costly in the case in which they are brought to the camp by traders. It is interesting in this regard that Mbuti of Band II sometimes solicited parties of traders to join them in the forest. They did this by making their intentions of moving to a hunting camp known to villagers, and it appeared word got around in this way. In addition, they encouraged traders who visited them to return. The bakbala of Band II were concentrated in Mbunia and adjacent villages, an area where game populations were very low. The hunting range of Band II included forest northwest of Mbunia. Many camps were too far to be readily accessible to the village gardens, and so the presence of traders would be advantageous.

The second reason for Mbuti involvement with traders concerns the limited starch supplies in the northern portion of the study area. The agricultural settlements of the Kaheku in this area were scattered and small, with little surplus garden produce for the Mbuti. Indeed, some of the villagers themselves rely on purchases of starch from meat traders as was mentioned earlier. On several occasions, when Band III was camped at the settlments of Esela (population 12) and Bokoka (population 8), I observed bakbala ask the Mbuti to give them some of the rice and flour they had acquired from the traders. This reversal of roles in the kbala meat-starch exchange system was exceptional, but it does serve to emphasize the flexibility of these exchanges in the face of limited subsistence resources.

It should be remembered that areas adjacent to the northern portion of the study area were more settled before independence in 1960, than at present. At that time, when the old Kenia-Biasiko road was functional, with villages located along it, the Mbuti, such

as Band III certainly had more ample sources of starch. The present dearth of domestic starch in this area must be seen as a result of the retreat of settlement percipitated by the closing of a rice hulling plant at Kenia and Protestant mission at Biasiko at independence, followed by the Simba rebellion. Resettlement of the forest in this area since the end of the rebellion in 1970 has not yet occured.

Data on Mbuti meat-starch intake in the northern portion of the study area indicate that meat supplies in this area are probably adequate. Even when traders take a large portion of the supply, there is still generally enough for Mbuti needs. For example, meat consumption by Mbuti of Band II was measured over a 26 day period in February and March, 1974, when one to three traders were present most of the time. Hunting success during this period was not especially high, averaging only 18.1 kilograms of butchered meat per hunt; however, trading was heavy, and entrepreneurs acquired almost half the supply. Even so, per capita meat consumption by adult Mbuti (see footnote 6) averaged 375 grams per day. Starch intake, all of it rice or cassava flour from the traders, averaged 400 grams per adult per day during the same period. This compares with an average 800 grams of starch per capita per day which was available to the Mbuti of Band I when they were located in the village of Masange (Table 12).

Although the above data and observations are not conclusive in themselves, they do suggest that it would be mistaken to assume that Mbuti-bakbala relations are always effective in meeting the subsistence needs of both sides. In this sense then, the commercial meat trade, though originating from external forces, can not be considered completely independent of the local relationships between Mbuti and

villagers. Thus Mbuti and villagers are not just victims of commercial exploitation. Rather limitations in local subsistence resources, engendered on the one hand by population growth and on the other hand by population decrease, produce conditions in which commercial trade may sometimes provide the best of immediate subsistence options. In this way Mbuti participation in market trade is understandable, even though commercial hunting threatens the game resources upon which it depends. Similarly, the trend for villagers to forsake reciprocal exchanges with the Mbuti and replace these with the commercial, fixed prices may be seen as a logical response to a system in which traditional economic controls are no longer effective.

CHAPTER VII

PERSPECTIVES AND TRENDS

The major findings of this thesis may be summarized as follows:

1. Mbuti Pygmies and Bantu have coexisted in the Ituri Forest for four or five centuries, each with his own subsistence focus. That of the Mbuti is the forest. That of the local Bantu (termed by the Mbuti, bakbala) is the agricultural settlement.

2. Both Mbuti and bakbala share a common concept of a good diet that contains both meat and starch. Subsistence resources for this diet occur in both the forest and the village, but not in either environment alone.

3. The forest can provide surplus supplies of one essential commodity, meat, but is low in sources of starch. Conversely, the village has starch, but supply of meat is often low.

4. The dichotomy of forest and village constitutes the ecological basis for a mutually beneficial system of exchanges in which Mbuti provide meat while bakbala provide starch. Demand is limited in this system, and both sides modify their behavior to maintain the relationship. Exchanges are mediated by fictive kin, and marriage ties. These and other features promote stability and allow both sides to accommodate variations in the availability of commodities.

5. This evidence is in contradistinction to Turnbull's view in which Mbuti and villagers are seen as independent societies. Rather than independence, there is actually a complex and interdigitated system of interrelationships linking the two ethnic groups. Within this system there are some areas in which the two cultures are well separated while in other areas there is a good deal of integration. In this sense, then, Mbuti and villager society may be said to constitute a single interdependent system.

6. At the same time the Mbuti are involved in another system of exchanges: the commercial meat trade. Unlike the local villagers, the motive of the commercial traders is immediate profit. Hence, they seek to maximize the flow of meat out of the forest. Demand for increased meat production has put a strain on the Mbuti and is leading to a decline in the supply of wild game resources as well.

There are a number of ways of viewing the relationship between Mbuti and villagers which have not been explored here, including psycho-political issues of dominance, subordination, and power. The focus of this thesis has been ecological and economic. Material exchange had been the center of analysis. While this does not obviate other relations or interpretations, considerable material reciprocity has been observed.

An ecological analysis provides a useful view of the Mbuti-bakbala relationship as one which developed where both meat and starch were available in sufficient quantities over an extended period of time. Under these circumstances, both sides would be

expected to evolve a long-range view on exchanges. This would obivate the necessity for immedate reciprocations when the supplies of meat or starch were temporarily scarce.

This system, however, is not isolated. Outside interference can affect relative availability of subsistence commodities either by diverting them, depleting them, or by redirecting the labor used to produce them. Any of these effects can undermine the ability of Mbuti or bakbala to produce the surplus of meat and starch which constitute the basis of their interdependent subsistence economy. In such instances, the Mbuti-bakbala relationship may persist in an altered form or alternatively, new ties may be established with outsiders.

The diversity of Mbuti exchange relationships, both with bakbala and with outsiders, which exist in different geographical areas of the forest today are evidence of the variety of circumstances which can impinge on subsistence.

The commercial meat trade described in this thesis is only one example. In this case subsistence resources are redirected out of the forest to neighboring population centers.

There are also growing population centers within the forest itself, at Mambasa, the Mbau-Oicha area (north of Beni), Wamba, and other sites. Mbuti living in the remnant forest near these towns are unable to provide sufficient supplies of meat for exchange since game populations have been reduced through habitat alteration and hunting pressure. Mbuti here acquire some cultivated foods by taking

on regular wage employment and, to an increasing extent, through gardening themselves. But there are also complaints by townsfolk that Mbuti steal from the gardens, and bring nothing from the forest in return. This suggests that even in their altered circumstances, the Mbuti are still oriented in some degree toward their former reciprocating types of exchanges with the bakbala. As Mbuti increasingly are prosecuted in court for thievery, as has occurred at Mambasa, one can expect their transformation from hunters to cultivators will proceed with rapidity.

The fact that change need not entail the establishment of new relationships but rather shifts in Mbuti's alliances with their traditional bakbala, is suggested by Turnbull's observations of strained relations between the two at Epulu. Although Turnbull provides little specific data on trade or exchange, a number of his observations suggest that there may have been demands for increased supplies of meat. He reported villagers in the forest from time to time, seeking meat to buy. Furthermore, his observations of relatively large net hunting camps in all but a few months of the year would indicate high meat yields were important to the Mbuti. In addition, at this time in the colonial era, Belgian authorities were pressuring villagers in the forest for increased production of cash crops, including cotton. Not only did this lead to demands for Mbuti labor, but production was oriented away from surplus crops important to traditional exchanges.

The Mbuti-bakbala relationship has also been dynamic through time. The "corn wars" have already been mentioned. In this case exploitation by Mbuti of kbala gardens threatened starch supplies and brought emnity between the two peoples. The era of ivory trade in the 19th and early 20th centuries provides another interesting historical example. During this period, ivory became more important than meat as a vital forest resource to the bakbala. According to accounts I heard, the bakbala were pressured by Arabized middle men (Baungwana) and later in the 20th century by Belgian officials, to provide large volumes of ivory for trade. Although some bakbala became elephant hunters themselves, most turned to the Mbuti in the forest to acquire this resource. From descriptions of the ivory stores controlled by some of the paramount chiefs of the Pakombe and Bira, it was clear that large numbers of elephants were killed, most of them by Mbuti with spears provided by the bakbala. Individual Mbuti gained distinction for killing two, three, or even more elephants in a single day, and stories of their exploits persist to the present. The Mbuti elephant hunting specialists which has so captivated Western imagination, may well have been one of the Mbuti's first ventures into market hunting.

Hunters need not exploit game populations beyond their own immediate needs. Yet because of their skills, and their location in wild areas where game is abundant, they are in the position to become the suppliers of meat and other resources which may be coveted by many, but accessible to only a few.

For example, the Native Americans of the boreal forest of Canada were transformed from subsistence hunters and fishermen to the specialized producers of skins for outside populations (Leacock, 1954). Similarly, the Miskito Indians of Nicaragua have increasingly shifted their turtle hunting to accomodate larger markets (Nietschmann, 1973). One of the most interesting perspectives on the role of hunters and collectors of wild products is that provided by Fox of the so-called hunter gatherers of India (Fox, 1969). Fox argues convincingly that the cultural systems and land-use practices of these societies are not examples of an ancient way of life, but rather are structured by the role these people play as provisioners of specialized products for a much wider economic system.

This appears to be the route some Mbuti are taking as well. As their economic horizons widen, the subsistence base of Mbuti becomes increasingly narrowed. This trend is not recent. Originally the Mbuti, wherever they lived, were relatively isolated hunters and gatherers and their subsistence must have been diverse, including both a wide array of meat as well as wild plant foods and insects. With the arrival of the Bantu, and the evolution of the interdependent kbala subsistence system, the Mbuti's use of forest resources began to focus on products needed in their relationship with agriculturalists. The transition to market hunting described in this thesis is really no break with the past. Rather it may be seen as an intensification of past trends brought about by greater demand on ever smaller wild areas.

The commercial meat trade on the study area has no future as it is now practiced. Game populations can not sustain unlimited demand

and so the system must collapse. But this is not to say that Mbuti culture will also disappear. The Mbuti's relationships with other groups have shown flexibility in the past, and there is no reason to believe they will not continue in this way in the future. Indeed, as the southern Ituri study area is further settled in the north, commercial trade may give way to more balanced kbala-type relations where starch is more available and meat, although sufficient for local needs, is not abundant enough for commercial purposes.

Yet adaptability has limits as well. Evidence presented in Chapter VI suggested that Mbuti fare best in areas where populations of agriculturalists are also present, but where these populations are neither too sparse for effective production of domestic starch, nor too dense, in which case forest resources would be reduced or eliminated. This latter is a very real possibility in some areas of the Ituri, and indeed has occured in other areas of Central Zaire and Rwanda where Pygmy populations such as the Tsua and Twa are also found. The Tsua and Twa have intermarried with the Bantu and although they retain to some extent their own cultural heritage their independence has often been curtailed. This has not yet happened in the southern Ituri study area where the Mbuti can exercise choice in their contacts with outside populations because they still retain command over valuable meat resources.

The critical variable in the end, as Turnbull first pointed out, will be the continued existence of the forest itself. Once this environment is transformed, the Mbuti will have no choice but to adopt a more generalized, agriculturally oriented subsistence. This will

necessitate, however, far more fundamental adjustments than those needed to accomodate even the commercial meat trade.

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