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Socio-Economic and Cultural Determinants of Infant Malnutrition in Four Communities in Northern Cameroon.

by

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TABLE OF CONTENTS

I. Introduction

Objectives of the Study 1

Background to the Initial Ethnographic Phase of the Study 2

The Initial Ethnographic Study 3

II. The Northern Cameroonian Context around Maroua

The Environment 6

History of the Populations 9

The Regional Economy 12

Social and Political Organization 18

Ethnicity, Religion, and Modernization 20

III. The Communities and Their Populations

Introduction 23

The Environment 25

The Populations and Their Characteristics 27

The Local Economies 32

Patterns of Food Consumption 36

Social and Political Organization 38

Water and Hygiene 40

IV. Women

Variation in Occupations and Activities, and the Sexual Division of Labor 43

Social Position and the Family 46

V. The Matrifocal Unit

Pregnancy 48

Childbirth and Breastfeeding 49

Kinds, Forms, and Ages for Food and Water Supplementation for Infants 51

Weaning 59

Infant Care 60

Infant Health 63

Infant Development 64

Psychological Factors in Infant Development 65
"Modernization" and "Fulanization": The Effects of Health Care Programs and Other Influences 67

VI. Conclusions and Recommendations
The Bases of Infant Malnutrition 69
Implications for Further Study 73
Some Tentative Implications for Implementing Changes 75

Figures, Tables, and Appendices

Figure 1: Cameroon 7
Figure 2: The Field Sites 24
Table 1: Ethnicity of Male Head of Households from Village Census 30
Table 2: Religion of Male Head of Households from Village Census 31
Table 3: Infant Foods 54
Appendix 1: Available Foods 78
Appendix 2: Women's Activities 80
Appendix 3: The 130 Households in the Ethnographic Survey 81
Appendix 4: The 30 Households in Dogba 85
Appendix 5: The 30 Households in Gawar 87
Appendix 6: The 30 Households in Meskine 88
Appendix 7: The 30 Households in Mokong 89
Appendix 8: The Dogba Census of Households Relevant to the Study 90
Appendix 9: The Gawar Census of Households Relevant to the Study 95
Appendix 10: The Meskine Census of Households Relevant to the Study 98
Appendix 11: The Mokong Census of Households Relevant to the Study 100
Appendix 12: The General Census of Dogba Canton (including data by village district in survey) 102
Appendix 13: The General Census of Gawar Canton (including data by village district in survey) 103
Appendix 14: The General Census of Meskine Canton 105
Appendix 15: The General Census of Mokong Canton 106

I. INTRODUCTION

Objectives of the Study

The following report constitutes the anthropological component of a larger, multidisciplinary study of the factors surrounding maternal and infant nutritional and health status among populations in northern Cameroon. The larger study will begin in early 1984 and include nutritional and epidemiological and extended components.

The study is organized into two major phases. The initial phase, consisting of anthropological research, was carried out between March and October 1983 (a period in the field of six to seven months). The second phase calls for the initiation of nutritional and epidemiological studies that will furnish a basis for complementary research design and implementation. The ethnography indicates selected economic, social, and cultural factors that most directly contribute to infant nutrition and health. Rather than investigating the wide range of factors potentially affecting infants, the larger study can then focus on factors immediately significant to nutritional and health status. The multi-disciplinary study will continue over a year and a half until the middle of 1985.

This report provides a context for understanding the general and specific conditions in northern Cameroon that have emerged as important to infant nutrition and health in the course of the ethnography. The general northern Cameroonian context, the characteristics of the communities selected for the study and their populations, the status of women, and the specifics of maternal and infant care and feeding practices are examined below. The implications of the ethnography for the general study and for programs to improve maternal and infant nutritional and health status are also detailed. A socio-economic questionnaire that will be employed in the general study is one immediate result of the ethnographic research.

The ultimate objective of both the initial ethnographic research and the general study will be the improvement of maternal and infant nutrition and health in northern Cameroonian and other contexts. The study should affect existing programs in Cameroon as well as the design and implementation of

future programs. The research methodology and results also have implications for the design and execution of similar studies elsewhere.

Background to the Initial Ethnographic Phase of the Study

This study of infant nutrition and health in northern Cameroon is one result of the National Nutrition Survey conducted by the government of Cameroon with technical assistance from the University of California at Los Angeles (1978). One recommendation of this survey team was further long-term, longitudinal studies of specific regions of Cameroon with greater evidence of malnutrition and poor health (1978:20). A conference organized in 1979 in Yaoundé to review the results of the study and its implications also came to similar conclusions.

The Office of Nutrition at USAID subsequently responded to government of Cameroon requests to support a study of infant nutrition and health in northern Cameroon as part of their interest in problems of infant feeding and nutrition in rural and urban sectors of developing countries. Rural northern Cameroon evidenced a high degree of infant malnutrition, including marasmus, in the National Nutrition Survey (1978). The region was felt to merit intensive longitudinal study for national health and development priorities.

Discussions between representatives of the national research institution (D.G.R.S.T.) and the USAID Health and Nutrition Office in Yaoundé led to the visit of senior consultants in medicine (pediatrics) and anthropology in 1981. Warren Berggren and Gerald Murray (1981) established the research design and parameters for the study that have since served as the basis for all discussions and negotiations surrounding the research.

Berggren and Murray suggested an ethnographic study in several communities around Maroua in northern Cameroon as a necessary prelude to the longitudinal, inter-disciplinary study. This team visited the prospective field sites and developed a model for anthropological inquiry into infant and maternal nutrition and health in collaboration with Dr. Gladys Martin, the principal investigator for the project at the Center for Nutrition in D.G.R.S.T.

A series of papers and consultancies have further refined the research design and amplified the general plan for the study with nutritional and epidemiological components (Martin, June, 1982; Mock, July, 1982; Sanghvi, July, 1982; Martin, December, 1982). The final protocol for the ethnographic research was developed with the arrival of the field investigator, Thomas Price, and the senior anthropological consultant, Dr. Gretel Pelto, in March, 1983.

Dr. Pelto's report (May, 1983) established a model for a combination of survey and intensive ethnographic research over several months in the communities selected by the team in March. The ethnography contributes to the research design and the development of the socio-economic and cultural questionnaires. Research strategies and methodologies in the communities are also developed during the ethnographic inquiry.

Given the significance of prenatal and early infant malnutrition for subsequent child development, pregnant women and infants under two years of age were chosen for intensive study. The consultants on the study identified a number of domains particularly important to determining factors immediately contributing to the health and nutrition of the target population. These factors included: maternal nutritional beliefs and practices that affect prenatal infant development, breast feeding beliefs and practices, ages for the initiation of supplementation of infant foods, the kinds of foods available and used for infant supplementation, and practices surrounding weaning. The ethnographic study establishes the relationships between such factors and their immediate effect on infant health and nutrition.

The Initial Ethnographic Study

Price completed the initial ethnographic fieldwork and surveys over seven months from April to October, 1983. A locally trained Cameroonian anthropologist from the Institute of Human Sciences of D.G.R.S.T, Luc Mebenga, assisted during four months of the fieldwork (late May to August and October).

Consultations with Dr. Gladys Martin and Dr. Gretel Pelto, were held in Maroua and Yaoundé in the course of the field stay. Dr. Pelto visited Cameroon in March (9-23) and August (12-24), and Dr. Martin came to Maroua in March, May,

and October. Discussions focused on progress in the field research and design and scheduling of the general study.

Review of the criteria for site selection and site visits by the four investigators led to the final selection of four communities for the study in March. Dogba, Gawar, Meskine, and Mokong were determined representative of the range of conditions found in rural and semi-rural communities in the region of Cameroon surrounding Maroua. The environment of mixed plains and mountains, the kinds of economic activities, the mix of ethnic and religious groups, and the presence of traditional regional and national administrations and services characterize these communities and others in northern Cameroon. The potential sample size of infants and pregnant women in the four communities was also determined as adequate for the requirements of the epidemiological and nutritional studies.

To develop a detailed description of local conditions as well as an account of range of variation within and between communities, the investigators agreed to a combination of intensive ethnography and survey work. A community considered representative of most important (environmental, economic, social, and cultural) factors affecting infant and maternal health and nutrition--Dogba--was selected as the principal field site. Surveys were administered by enumerators periodically throughout the initial study in the other three communities to test range of variation and the actual representativity of the principal field site.

Enumerators were selected in the four communities to assist in the ethnographic and survey work: five enumerators (including two women) in Dogba, and four enumerators each in Gawar (one woman), Meskine and Mokong (one woman). An initial survey of the four communities identified a total of 603 households with pregnant women and/or women with children at the age of two years (24 months) or younger.

Anthropological investigation--including participant observation and key informant interviews--concentrated on Dogba. The general environmental and economic conditions and political and administrative organization of the community were likewise studied. Continuous residence in the community

permitted inquiry into important daily, seasonal, and intra-community variations and transformations.

A random sample of households in each community was selected for intensive surveying in Dogba and more general survey work in all four communities. Thirty households were selected in Dogba, Gawar, and Mokong, and forty households in Meskine. These 130 households furnish an adequate sample of the local range of infant sex and ages, household composition, ethnicity, religion, occupations, socio-economic positions, and other characteristics potentially significant to the study (refer to profiles of these samples by community in the appendix). As the general study will follow the universe of pregnant women and infants under 24 months in each community, these samples provide a sufficient number of households to isolate critical factors for future study.

The enumerators in Dogba worked over a period of five months to collect intensive survey data. The enumerators in Gawar, Meskine, and Mokong administered a series of five questionnaires. In Dogba, Gawar, and Meskine a final general survey of the communities in October yielded information on infant mortality, new births, and pregnancies in the households.

A tentative agenda for the ethnography was originally established by Berggren and Murray (1981) and subsequently refined by Martin (1982) and Sanghvi (1982). The responsibilities of the field ethnographer were carefully defined by Sanghvi (1982:10-12). The working list of domains relevant to the research with concommitant questions and hypotheses was developed during Dr. Gretel Pelto's consultancy in March 198[illegible] and in her subsequent report. Dr. Pelto, a nutritional anthropologist in the Department of Nutritional Sciences at the University of Connecticut - Storrs, brought considerable professional and field experience into her recommendations for fieldwork design and methodology. The combination of anthropological, nutritional, and medical expertise represented by the cooperation between Drs. Martin and Pelto assured the continuing inter-disciplinary character of the research.

The field ethnographer employed these agendas to form a research schedule during field work as well as to guide the direction and content of the

research. New domains and hypotheses for research emerged in the course of the ethnography and constituted the basis for much discussion during consultations between participants in the initial phase of the study. The final agenda for the general study will be developed on the basis of these results.

II. THE NORTHERN CAMEROONIAN CONTEXT AROUND MAROUA

The Environment

Great variation in topography and water availability are the dominant environmental features of the region surrounding Maroua in northern Cameroon (fig 1). Lying between 11° and 12° latitudes and 13° and 15° longitudes, the region has a "Sudanic-Sahelian" climate and flora. There are no major, permanent, open sources of water in the region. An annual average of 800 millimeters (32 inches) of rain falls between May and September, with the rains most heavily concentrated in July and August. Elevations vary between 1400 and 400 meters, with abrupt changes of 300 to 400 meters within a kilometer being common. Annual variations in total rainfall are important. Major differences in regional and temporal distributions of the rains are also common.

The local river beds (the mayo in Fulfuldé) originate in the Mandara Mountains and flow to the east and south. The rivers are dry most of the year, with water concealed from a few inches to a few feet below the sandy surfaces of their beds. In the rainy season, the levels of flowing water change dramatically with the brief torrential rains. The river beds are seldom flooded for more than one day, and often for only a few hours.

Temperatures annually average at 28° Centigrade, but there are important seasonal and diurnal variations. Distinct "cool" and "hot" seasons mark the annual cycles. The "cool" season from December to January has average mean temperatures of 26° Centigrade, while the "hot" season from March to April has average temperatures of 35° Centigrade. In most of the year, diurnal temperatures vary 10° to 15° Centigrade. The relationships between these variations in temperature and humidity dramatically affect human activity and health.

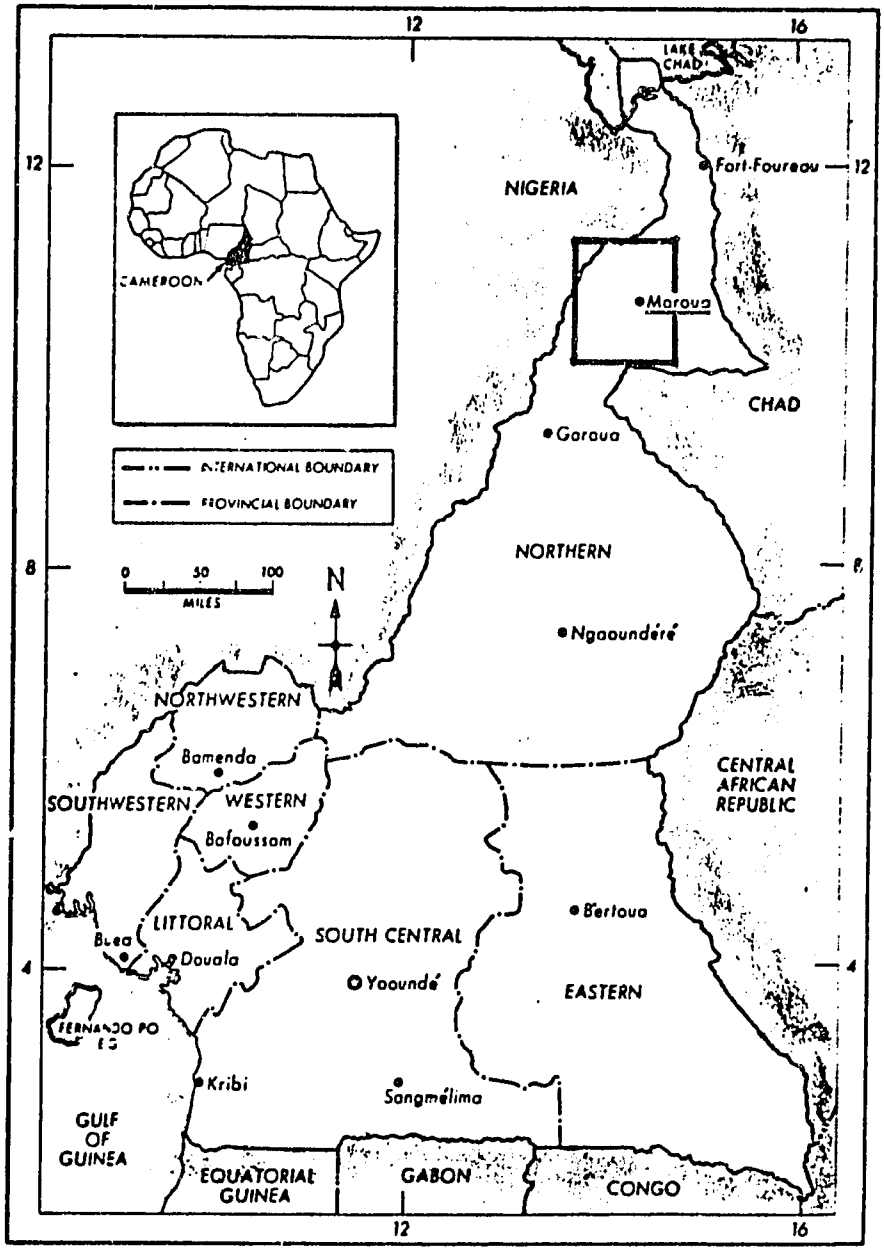

Figure 1: CAMEROON

The transition from plateaus and peaks of 900 to 1400 meters in the Mandara Mountains to the west to plains of 400 to 500 in the Diamaré and Bénoué to the east and south characterizes the relief in the 100 kilometer radius around Maroua. The river basins that originate in the mountains gradually widen to empty into these plains. The volcanic origins of the mountain system also yield a scattered series of peaks that surge abruptly from the plains far to the east of the Mandara range. The otherwise monotonous landscape of the savanna is thus transformed by these random appearances of volcanic rock.

The soils are generally mediocre in quality with limited organic matter. The ferrous soils of the mountains poorly retain organic matter, but the minerals in their clays support agriculture well when leaching from erosion is prevented. Use of the sands and clays of the plains depends on the local availability of water. Sandy areas on higher terrains far from mayos contain few plant nutrients and drain quickly after the rains. These areas are generally covered with grasses and bushes, and sometimes denuded, so that pastoralism rather than agriculture is practiced on these lands. Sandy soils closer to mayos and lower elevation retain moisture for longer periods after the rains and are thus used for wet season agriculture. Finally, the clay soils of depressions and alluvial plains remain moist well into the dry season and support the dry season sorghum crops.

A region once covered with light forest has been becoming increasingly Sahelian with human demand for local resources. Lands are leached and exhausted from agricultural use without adequate fallowing. Forested areas are decreasing from annual burnings of the bush and cutting of wood for fires, construction materials, and other uses. Man has radically impoverished the environment in the course of this century.

The distribution of human population and activities are thus conditioned by the local topography and water availability. Limited irrigation permits the cultivation of a few specialty crops in the dry seasons, but annual micro-variations in precipitation are the key determinants of local agricultural production. The availability of potable water depends on ease of access to sub-soil sources in the course of the year. Soil erosion and steep slopes have stimulated the development of terraced systems of agriculture in mountain

areas with high population densities. The range of pastoralism is determined by annual changes in the distribution of the few open sources of water in the region. These conditions order the tremendous human variety of northern Cameroon.

History of the Populations

The ecological diversity of the region has created conditions favoring the maintenance of tremendous heterogeneity in the human populations. Forty-three distinct ethnic and linguistic groups have been identified by specialists on the north (such as the Fulbe, Guiziga, Mafa, Mandara, Kapsiki, Fali, Massa, Vame, Podoko, and Bornu, to cite the names of only ten groups). Associations from trade, religion, or common government have often made relationships between groups more complex. The "refuge areas" in mountain peaks and plateaus have permitted a succession of groups to escape destruction or absorption by migrating or conquering populations in the plains. The groups have thus been associated, dis-associated, isolated, and sometimes re-associated by a succession of historical circumstances and adaptations to different micro-environments. Since the European conquest of the entire region, forces for unifying, mixing, and ultimately homogenizing these distinct groups affect the northern populations. Nevertheless, northern Cameroon still presents an extraordinary human and environmental mosaic.

The region has always been at the periphery of major African imperial, European colonial, and independence states. Urban residents of towns like Maroua have been working in frontier outposts among marginalized populations. Few resources and little talent have been available for local development.

Although the north had long served as a reservoir for slaves for African empires to the west, east, and north, the emergence of two new imperial powers in the 18th and 19th centuries brought the populations under direct state administrations in the plains or forced them to flee into the mountains to remain independent. The Wandala (or Mandara) kingdom in the north grew as a tributary of the Kanuri state on the borders of Lake Chad. Although a small kingdom, populations in the plains above Maroua were directed by a centralized administration inspired by Islamic civilizations. Mountain regions were

sometimes conquered, but most often held in some tributary relationship, to the Mandara state.

The migration of peoples for centuries from the west up the Bénoué River valley had dispersed populations throughout the north and pushed some into the heights of the southern tip of the Mandara Mountains. The arrival of Fulani-speaking peoples from the 16th and 17th centuries eventually foreshadowed more profound changes in the relationships between and the organization of peoples in the north. The emergence of a Fulani state among the Hausa of northern Nigeria in the late 18th century was followed by a rapid expansion of Fulani hegemony throughout northern Nigeria and up the Bénoué River and into northern Cameroon in the early 19th century.

A centralized bureaucracy governed by a Fulani elite was established in much of the northern plains including the region around Maroua. Fulani custom and language became dominant, as well as indicators of wealth and social rank. Pre-existing populations were subjugated by the new Fulani elites. As the call to a holy Islamic war (jihad) had guided and organized the Fulani conquest and the formation of state and administration, Islam became a unifying force for the empire. Fulani notions of racial and ethnic superiority and Islamic views of "pagans" (Habbé) allied to sanction the incorporation of the conquered peoples into a hierarchical and strongly stratified social system.

Populations remaining in the plains (like the Guiziga) were thus incorporated into a new system of social and political organization. The true Fulani remained a small minority and soon intermarried with the local populations. Upward mobility in the society implied assuming "Fulani" identity by adopting their customs and language, as well as Islam. Important forces for cultural and social homogeneity, and for the differential incorporation of other members of the population in a unified system, came to dominate the region.

Archeological evidence indicates that the Mandara Mountains had been inhabited for centuries, but peoples fleeing the new invaders moved up into the mountains immediately bordering the plains. The epochs of dispersion and ensuing isolation of these "mountain" peoples (the "Kirdi") created a complex

mosaic of distinct linguistic and ethnic groups. Local cultural traditions and forms of economic, social, and political organization differed radically from peoples of the plain. For instance, agriculture was based on the development and maintenance of a labor-intensive system of terracing.

The European conquest at the turn of this century eventually altered relationships between the northern populations. The colonial government certainly held the overarching political authority, but the regional and local Fulani politico-administrative system was generally incorporated into the colonial administration. Although the administration executed the orders of a new set of masters, Fulani hegemony over other local populations remained intact. Fulani continued to control northern economic and political affairs.

The colonial authorities and missionaries began to encourage the descent of bordering mountain peoples into the plains in the 1930s in order to manage and evangelize these populations better. One effect of the emigration was, however, to bring previously independent mountain groups under the control of the Fulani administration. Fulani controlled their access to land for agricultural or other purposes, their leadership, their legal and administrative affairs, and even the exercise of their custom and belief. For instance, in Dogba the site and time of "Kirdi" burials and funeral rites were dictated by the Fulani chief.

The independence government has still encouraged the resettlement of mountain peoples in the plain. Fulani have also continued to monopolize regional administration and local economy and politics.

Since the European colonization, Christianity has been growing as an important alternative form of social and cultural organization. Animists of mountain and plain, like the Mufu and Guiziga, have taken advantage of this alternative to Islam and "Fulanization" to improve their socio-economic position in the new order.

Extraordinary heterogeneity and tremendous social and cultural transformation thus characterize the history of the populations around Maroua. Families have experienced radical changes in environment, religion, ethnic identity, and

even mother tongue in a few generations. The Fulani, colonial and independence administrations have also increasingly incorporated these disparate peoples into a more unified social and cultural order.

The Regional Economy

Agriculture is the basis of the economy in the region around Maroua and the primary occupation of most of the population. In the plains further to the east, pastoralism becomes important for some families and eventually entire villages. Local manufacture is cottage and somewhat specialized for regional trade in markets.

Most non-agricultural occupational specializations are in administration and trade. Maroua, recently named a provincial capital, is the largest regional center with a population of 67,000 and has little industry, instead relying on handicraft production for tourism and trade, transport, and small service activities related to government. In the villages, even craftsmen like smiths, potters, and musicians usually also engage in some agriculture. The local Fulani aristocracy of royalty, administrators, Islamic clergy, and merchants are unique in their freedom from agricultural activity.

Sodecoton--the national cotton company--has the major local industrial facilities for cotton ginning and cotton oil processing from regional production. Few workers are employed in this heavily mechanized enterprise.

Given the great diversity in environment and society, there are important local differences in agricultural systems. A combination of wet and dry season cropping dominates in the Maroua region (the Diamaré plains). Terraced agriculture in the bordering mountains has degenerated as the populations have relocated in the plains yet remains significant moving higher and higher into the Mandara Mountains to the west.

Sorghum is the major staple crop of both wet and dry seasons. Sorghum is planted in association with peanuts, cowpeas, Bambera groundnuts, okra, hibiscus, and a little corn at the beginning of the wet season in May and June. Work is generally by hand with hoes and other implements, and the crops are harvested between September and November.

Cotton, the major local cash crop and source of income, is also cultivated in the wet season. Animal traction is, however, employed in preparing the fields, and the crop is treated with fertilizers and insecticides. Sodecoton has an extension service and infrastructure for transport and marketing that works closely with the regional and local administrations to insure the success of the annual harvest.

Several dry season crops are important in the region. Dry season sorghum ("karal") accounts for about 40% of the annual regional harvest of this key crop. Small sorghum plants are replanted from nurseries prepared at the end of the rainy season into special plots in low-lying areas of the plain that retain moisture well into the dry season. Harvest is in December and January. Onions are grown in small, irrigated plots for trade in regional and even national markets. Some cassava is also cultivated in similar terrains for local needs. Tomatoes, lettuce, and other local and European vegetables are grown by a few farmers in the "cool" season on land adjoining river beds for sale in weekly village markets and regional centers like Maroua.

Agricultural activity often reflects certain technical specializations and socio-economic status. Onions and dry season vegetables are grown only by a few farmers for market purposes. The technology for some kinds of production--such as plough and oxen for cotton field preparation and mechanized pumps for onion irrigation--are unavailable to most farmers or only available by rent. Differential access to land and technology affects individual and household production, and labor in kind or for wages on others' fields is common for farmers with fewer resources. For instance, in the plains the descendents of mountain peoples often own little land and must rent land for 10% of their annual harvest or supply labor on other fields. Annual production for household consumption and cash income thus vary tremendously by ethnicity and household.

There are differences in agricultural production and labor according to ethnicity. For instance, Fulani women do not work in the fields, though they often grow vegetables and other plants for house and market within the household compound. In the plains, Fulani cultivate Bambara groundnuts and mountain peoples cultivate cowpeas. Tobacco is grown in small gardens

surrounding the compounds by mountain groups. Mountain peoples also grow different varieties of sorghum derived from terraced or mountain slope agriculture that mature earlier and are harvested shortly after the rains.

Sophisticated, terraced agriculture lies to the west of the Maroua region (about 70 to 80 kilometers) and is not important in the communities selected for this study. These systems rely on a longer rainy season with more precipitation and a better distribution. Rapid changes in elevation on the steep, terraced slopes occasion variation in micro-environments permitting the cultivation of a greater variety of staple crops. Rice, sweet potatoes, potatoes, garlic, and millet are added to the meager variety of crops found in the plains. These systems were, as suggested above, less developed by populations on the edges of the plains and have considerably degenerated with their resettlement.

Systems of animal management differ according to ethnicity, occupational specializations, socio-economic status, labor organization, and local or seasonal environmental conditions. Chickens are the only animal universally raised and kept within the compound. (Their eggs, rather than being eaten, are generally allowed to hatch.) Ducks and pigs, and generally dogs, are not present within Islamic households, as these animals are considered unclean. Mountain and plain peoples raise all these animals within the village, and some mountain groups keep dogs for both hunting and eating. Guinea fowl and pigeons are semi-domesticated birds particularly popular among urban Muslims. Donkeys are beasts of burden and trade, and also serve for draft animals in the mountainous regions. Horses are expensive signs of status and prestige usually reserved to the rich and noble, especially to court members in the Fulani aristocracy.

Cattle, sheep, and goats are pervasive in rural areas. Cattle are owned by wealthier members of a community. These animals may be kept near the village in the rainy season, when sources of water and forage are abundant, but travel with experienced shepherds during the dry season. Shepherds are usually young Fulani pastoralists with native communities in the plains to the east who guard cattle, sheep, and goats of many owners in a common herd. Annual patterns of transhumance are bounded geographically and well regulated among

pastoralists. Older animals are sold to slaughterers for meat in the major regional urban centers and at the frontier with Nigeria. The high prices paid for beef in Nigeria stimulate important trade across the northern plains and mountain plateaus in Cameroonian and Chadian cattle from the east. Local availability of beef is thus limited, and prices are far higher, than could be expected given the relative abundance of local animals. Draft animals are available to other farmers for piece work in the rainy season on a cash or kind basis.

Sheep and goats are often kept closer to the household. Islamic families in the plain entrust some sheep and goats to the young men who also guard local cattle. Other families keep their animals nearer home and entrust their care with members of the household. Young, pre-adolescent mountain and plain children often guard family animals separately or together in areas surrounding their villages. In the more mountainous zones, the young shepherds may also keep animals closer to home after bringing in fodder from the fields. In the mountain and plain households, the animals spend each night in a shelter within the compound. Some communities in more rugged areas even keep and fatten a head of cattle within the family compound in a special structure for fattening until slaughter at an annual ceremony.

Cottage industries concentrate on simple manufactures and food processing and preparation for local sale. Basketry, cordweaving, and hut and enclosure building are among the almost universal crafts. The production of metal implements, pottery, stone mortars, decorated gourds and calabashes, and cotton cloth are individual specialties. The preparation of processed foods (like dried okra, sesame butter, salt loaves, and peanut oil) and prepared foods (like beignets, non-alcoholic drinks, roasted peanuts, and Bambara groundnut paste) are individual specialties of women for sale. The brewing of millet beer and the distillation of alcohol (argi) are sources of income for some animist and Christian women. Services like barbering, tailoring, and music-making are individualized specializations. Many crafts do not require long apprenticeship and are exercised within the household for internal consumption. A limited degree of specialization by sex, age, household, and ethnicity produces the variety of local goods found in the community. A few activities like tailoring and smithing require apprenticeship and may be

hereditary. There is, however, great individual mobility in the society, and the development of caste distinctions found in the former imperial centers of the Sahel to the west are weakly developed.

The local economies are pervasively monetarized. Exchange of local manufactures and agricultural goods are generally in a market setting and monetary. Agricultural labor is often paid by piece work. Manufactures and imported goods like cloth, sugar, coffee, soap, rubber sandals, medicines, and school supplies figure prominently among merchants' wares at weekly markets and in small shops. However, cash availability to individuals and households vary tremendously. Fulani landowners, Muslim merchants and employees of the national administration (like primary school teachers and agricultural extension workers) spend money readily on market foods, imported foods and manufactures. Descendents of mountain peoples of non-monetarized traditions and limited access to land or other sources of income and resources have little money to spend. Average weekly purchases may be limited to some dried fish, vegetable oil, and salt from the sale of a few hundred francs CFA ($.75) of sorghum to a Muslim wholesale merchant in the market. All four communities in the survey will evidence this degree of economic and income stratification.

Each community participates in one or more local weekly markets whose size varies according to its rank in the regional market structure. The market is divided into distinct sections for sale of animals, grains, legumes, major manufactured goods, smaller manufactured items, processed foods, drinks, meats, millet beer, fresh vegetables, and specialties (such as kola-nuts, iron implements, leatherwork, and bicycle repair). The combination of cement and iron sheds, local shelters of wood and thatch, and open-air bargaining define a spot for intense activity from late morning through late afternoon each week. The sounds of market transactions and conversation carry as a muted rumble to far distances in rural areas. The regular organization and tranquility of commerce are ensured by agents of the local chief who assign spots to traders for fees from 25 to 100 Francs CFA ($.06 to $.25) and survey market activity.

Larger villages sustain daily markets that correspond to the size and location of the center. A smaller range of the produce and manufactured goods

available at the weekly markets are sold by a few local merchants and older women in the community. Small villages may host only a few traders in the mornings, or limit trade to activities between households.

Weekly markets are the center of regional trade and communication in the rural areas. Agriculturalists sell household agricultural products and manufactures in order to purchase other goods from the region available at the market and foreign manufactures. Local men trade in products like millet and animals, while the women carry on most trade in vegetables, legumes, and foods processed in the households (like sesame butter and roasted peanuts). Such sale and exchange brings in a small income or variety of goods to the agriculturalists' households.

Trade in speciality, regional, or manufactured goods is carried on by petty and wholesale Muslim merchants. Onions, garlic, salt, indigenous medicines, beads, and a wide range of other goods are sold by itinerant merchants who specialize in a few items (like onions, garlic, and tomatoes) or related items (like beads, jewelry, and makeup). These petty merchants detail a small number of low-cost goods by following the weekly markets dispersed through the region taking place on different days. A merchant may then participate in a circuit of distinct markets for six or seven days each week.

Other merchants specialize in more expensive, manufactured goods like cloth and bicycle parts. These merchants also sell related items and travel with weekly markets.

Wholesaling or retailing merchants come into the rural markets to provision local urban centers, national and international trade, and annual stockpiling of indigenous foodstuffs. Staples including sorghum, cowpeas, peanuts, and Bambara groundnuts are purchased after the annual harvests for storage and future sale in distant centers. The stockpiled staples are also often resold in the same rural areas during periods of annual shortages during the agricultural season and just before harvest (between June and September). Animals are traded for religious festivals like Ramadan and Mohammed's Birthday (Tabaski or Al-Fatr) and urban consumption.

Some occupational specialists handle slaughter and sale of meat, leatherwork, smithing, and tailoring. Some men fry or grill meat for sale and immediate consumption by other males. Women offer processed foods and non-alcoholic drinks from sheltered stalls, while millet beer is offered in a corner of the market at "taverns" of thatched hangars for shade with wooden benches.

Even in small villages, almost invariably one or two wealthier Muslims sell some goods out of their homes. They also hold other positions in the community, such as members of the chief's court or village headman, and trade in basic items including sugar, coffee, cheap cloth, matches, kerosene, thread, wheat flour, and canned fish. Older women also often engage in detailing of these kinds of goods on non-market days. The largest villages include shops with a much greater variety of goods open day and night, and merchants who trade in urban centers and neighboring countries.

Social and Political Organization

The basic social-cultural unit of organization and authority in all the northern societies is a household directed by a senior male. A household includes co-resident kin by descent and marriage as well as adopted children, occasionally household laborers, and "visitors." A single household appears as a cluster of huts, buildings, granaries, and other structures around a common living and working space. The cluster of structures and space is often surrounded by a mud wall or woven thatch fence. The Fulani and Muslim households enclosed by high mud or concrete walls with a unique entrance are the most dramatic examples.

Reference to a houshold or compound is always based on the actual or putative head of household. The head of household is the head of a minimal segment of a patrilineal group related to other similar units within the community and often between villages. Membership in a particular household is defined by relationship--by descent, marriage, or other critera--to the household head. These relationships are still a basic determinant of status in the community.

The significance of patrilineal descent groups differs according to ethnicity and religion. A male dominated domestic sphere remains the basis of Fulani society. For instance, the Fulani compound (saare) is always identified as

the "saare of (name of head of household)." Islamic proscriptions and the requisites of Fulani state organization eliminated associations by larger groups of patrilineal kin (clans). Kinship remains key in ascribing status and sometimes occupation, but is no longer central to district, village, or regional social and political organization. In the mountain communities, the same patrilineal groups have remained the organizing principle of village and community life.

The household unit would appear large and male dominated, but such a unit is really the normative ideal in these societies. Male kin are often absent due to long-term labor migration, to distant cities, seasonal or periodic movements for work, and death. Women kin move in and out of the household to live and labor with other kin or family friends when young, or following (re)marriage, separations, and divorce when adult. The growth of competing male siblings in the household often eventually leads to fission of the family into many units. Finally, increasing individualization, urban migration of young males, and poverty now leave the rural old, handicapped, and single, divorced, or separated mothers with little or no male support.

Households are grouped into village districts or villages (jawro'en) according to size and political history. In larger jawro'en, there are often smaller units organized according to ethnicity or other factors directed by a council of elders and distinguished local males. The jawro'en are directed by a chief and village council. Chief positions are not hereditary and selection depends on a democratic selection by the assembled village heads of households. The chiefs settle local disputes, collect taxes, monitor agricultural practice (especially for cotton), and the orders of higher authorities.

The Canton chief (lawan) commands a group of jawro'en. For instance, the lawan of Dogba commands 63 jawro'en. Important lawan are surrounded by a court of officials and dignitaries exercising special duties like tax collection, guest receptions, leading local prayers and religious festivals, and representing plaintiffs and defendents in the local courts. Members of the court are appointed by the lawan. Powers of the lawan include commanding a local police, judging and sentencing in the local court, imposing legal sanctions like prison labor and fines, and overseeing the collection of taxes

and cotton cultivation. Unlike the jawro'en leaders, the lawan are appointed by higher authorities (the laamiido).

The laamiido commands a group of lawan. The organization of authority and administration parallels the lawan, but the powers and resources of the laamiido and his court are greater and more elaborate.

The jawro'en, lawan, and laamiido and their councils and courts are the legacy of the Fulani hegemony over the north in the 19th century. The centralized hierarchy of the Fulani administration was incorporated into the colonial government. The independent, small groups in the mountains were organized on this model to allow more effective administration and control. The French colonial government established a new regional and provincial authority to replace the Fulani imperial administration.

The laamiido are grouped under sub-prefectures, which are grouped into prefectures. Administration and government services are organized following these hierarchically arranged divisions. Sub-prefectural centers thus contain police stations, customs offices, dispensaries, regional rural training centers, agricultural extension stations, secondary schools, and other facilities. The sub-prefectural authorities disseminate the orders and services from the national and regional governments through the local authorities and directly to the local populations.

Ethnicity, Religion, and Modernization

The populations in the Maroua region can be divided into three categories: mountain, plain, and Fulani peoples. Each category combines several distinct cultural, ethnic, and linguistic groups according to common characteristics. Membership in the categories is changed by individuals and families for occupational, marital, and social status reasons. Inter-marriage between the groups is now common, especially in larger villages and urban centers.

The mountain peoples are related linguistically, though most of their languages are mutually unintelligible, and reside in the mountains and plateaus of the Mandara Mountain range. These groups remained independent of Fulani authority in their mountain strongholds sustained by terraced

agriculture and protected by fortified compounds of stone. Political and social organization was on a small scale and simple, based on kin relationships between adjacent families often co-resident on the same mountain. Traditional religions and systems of belief were observed by the kin groups. The Mufu, Mafa, Hina, Kapsiki, Mada, Zulgo, and Muyengey are the major groups in the region around Maroua and into the Mandara Mountains to the immediate west.

Many peoples of the plain did not move into the mountains with the Fulani conquest in the 19th century. Although subjugated by the Fulani and incorporated into their state, these groups retained their own languages and custom. Most of their members did not convert to Islam. Fulani language and belief had important effects, nevertheless, and intermarriage or improved socio-economic status often occasioned adopting Fulani language, religion, and custom. Plains peoples also maintained ownership and rights to some of their lands. The Guiziga and Guidar are the plains peoples in the Maroua region.

The Fulani actually include many other Islamic peoples in the north, and many people of mountain or plain descent, who have converted to Fulani ways and Islam. The Mandara, Kanuri, Kotoko, Hausa, and Shuwa Arabs are traditionally Islamic peoples often present in small numbers in larger villages and as entire communities in the larger urban centers. Intermarriage with fellow Muslims of other backgrounds is common, and Fulani is the language used between these peoples. In the Maroua region, Guiziga conversion to Islam, intermarriage with Fulani and other Islamic peoples, and apprenticeship in predominantly Muslim occupations (like trade and butchering) led to many individuals and families becoming Fulani within one or two generations. Other mountains and plains peoples moving into Fulani dominated areas also tried to adopt Fulani identity. The egalitarian ideals of Islam, the lack of a highly institutionalized system of caste stratification, and the small size of the original Fulani population permitted the rapid transformation of individuals from other groups into "Fulani."

Although the assumption of Fulani identity has remained the most pervasive model for gaining power and wealth, the French conquest considerably nuanced the position of the Fulani elite. French education and language became an

alternative way of raising the standard of living by entering the colonial military and civil service or providing services to the colonists (as cooks, gardeners, guards, and other special occupations). The peoples of mountains and plains readily went to the colonial schools or entered into service occupations. Nevertheless, the Fulani also attended the new schools and kept firm control of the local economy and society as members of the colonial administrative system.

Christian missions--both Catholic and Protestant--also began vigorous campaigns for conversions among these animist populations. Islam and Christianity thus compete for the peoples of the plains, while the mountain peoples have accepted Christianity over Islam. Conversion has increased literacy, levels of education, and subsequently access to professions requiring European language and technical skills. Given the continued Fulani dominance of regional administration with independence, even well-educated Christians have remained in inferior positions in government and enterprise. In addition, they must compete for available positions with better educated people from southern Cameroon. Adherence to Christianity and movement to regional centers has also weakened barriers to marriage within and between mountains and plains groups.

Individual social and ethnic mobility thus remains based on adherence to a Fulani, Islamic model. Even traditional animist leaders in the mountains distant of Fulani control have adopted Fulani dress, housing, custom, administrative and political organization, and ultimately Islamic religion as enviable models for an elite. Aspiring local merchants and administrators often follow suit. Fulani dominance of northern and national politics have continued to reinforce the strength of the model. European models for improved status appeared too distant to the local populations in comparison to the Fulani example, and the Christian missions have proved weak in supporting their adherents.

Urbanization and labor migration to other regions of Cameroon and northern Nigeria have brought the populations into greater contact and increasingly monetarized the economy. Christianity and Fulani culture and society have proved unifying forces for the disparate ethnic and linguistic groups. The

diversity and singularity of the once isolated or marginal mountain and plain non-Islamic societies has been increasingly affected by transformations since the colonial conquest. The centralization of northern administration and the consistently favored status of Fulani and Islamicized groups have contributed to make a "Fulani" model of culture and society dominant. Certainly groups or individuals adopting "Fulani" character are differentially accorded status in the society, but the pervasive influence of the model is inescapable. Even the persistence of traditional antagonisms between Islamic and non-Islamic groups are mitigated by continuing Fulani dominance.

III. THE COMMUNITIES AND THEIR POPULATIONS

Introduction

The four communities selected for the initial ethnographic and eventual general study are diverse and thus representative of conditions affecting the populations of northern Cameroon. Dogba, Gawar, Meskine, and Mokong exemplify the range from isolated rural to semi-urban centers, from densely nucleated to dispersed settlements, from extreme ethnic and linguistic heterogeneity to virtual homogeneity. The economies include the regional varieties of subsistence agriculture and crops, forms of specialized agriculture, pastoralism, crafts production, commerce, and bureaucracy. Social and political organization are dominated by the Fulani or Fulani models. Animism, Islam, and Christianity are differentially represented in each community. Access to medical and health facilities, government services, and "modernizing" influences also vary significantly. These four communities present a good model for identifying prevailing conditions affecting infant nutrition and health in this region of northern Cameroon.

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The ages of the communities differ. Meskine is originally a Guiziga, and subsequently a Fulani, center established around 1800. Gawar was founded as an outpost for Fulani administration and settlement in the upper Mayo Louti river valley in the early nineteenth century. A combination of Adventist missionary encouragement of colonization of the plain by mountain peoples and the installation of a Fulani administration subject to the laamiido of Maroua created the circumscription of Dogba in the 1940s. Mokong is a cluster of Mufu villages regrouped in the course of this century by the colonial and independence regional administrations.

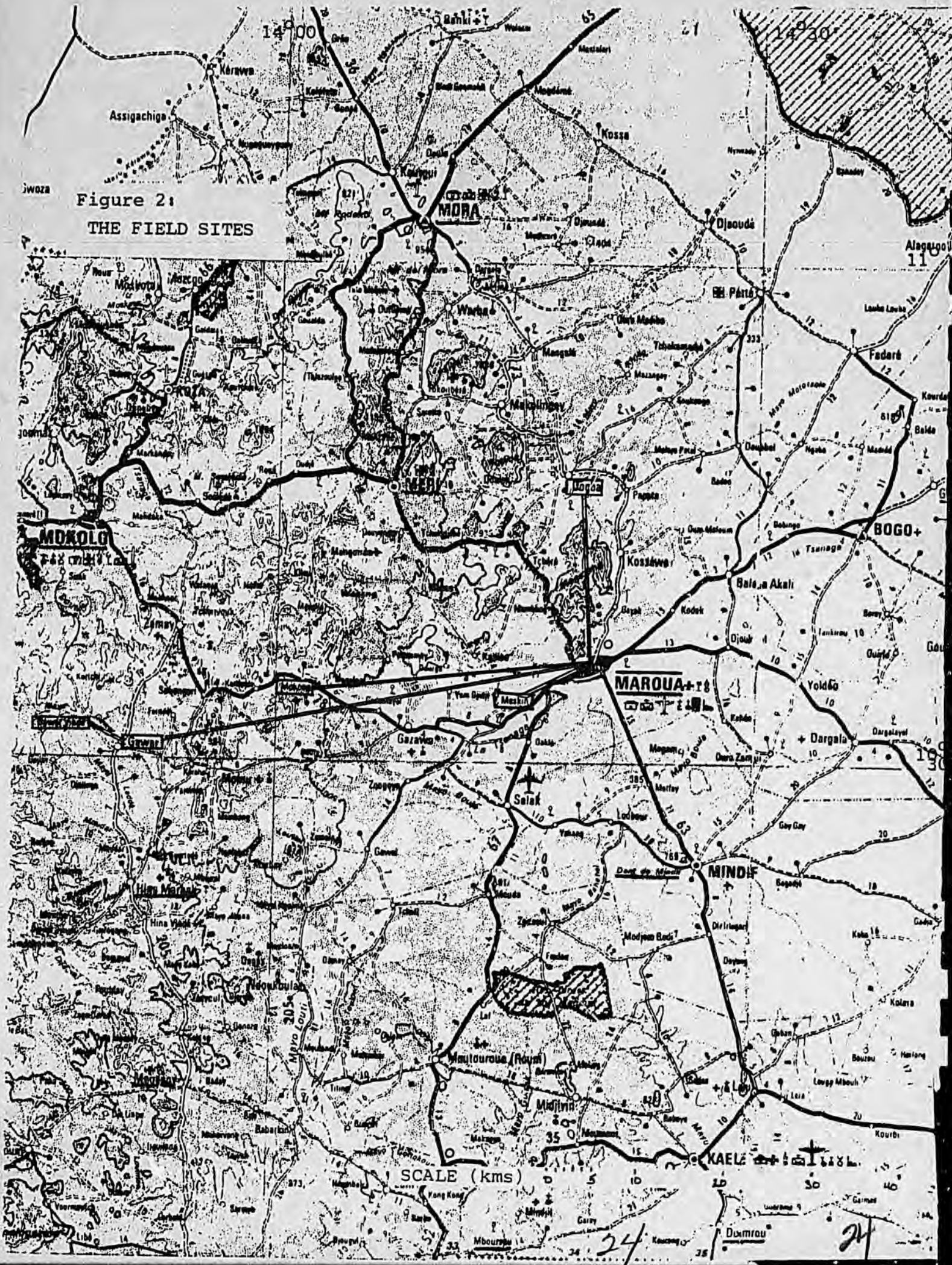

Figure 2:
THE FIELD SITES

All of these centers were subject to Fulani central authority in Maroua until administrative reorganization during the colonial period. Only Dogba remained attached to the traditional Maroua authority, while the other centers were broken up into distinct administrative units (cantons) directing and managing a group of villages. The villages also relied on different administrative centers. Dogba and Meskine became part of the Sub-Prefecture and Prefecture in Maroua, and Gawar and Meskine part of the Sub-Prefecture and Prefecture in Mokolo.

The Environment

The communities are situated in similar environments. All four are on the edges of mayos in plains and river valleys abutting peaks or mountain chains. Villages are dispersed along the mayos that readily offer sources of potable water in all seasons. Low places in the plains and on the borders of the river beds furnish agricultural opportunities in the dry season. Mokong is exceptional, however, being nestled in a narrow river valley pressured by steep slopes dotted with the terracing and habitation typical of mountain occupation. Annual rainfall varies between 750 and 850 millimeters, with the least precipitation around Dogba and the most around Gawar and Mokong.

Water is most abundant in the low plains and sandy river beds adjoining Meskine and Dogba. The rocky clays around Gawar often make local seasonal lack of water availability acute, and thus occasion longer and more arduous trips for water (but still one to two kilometers). Households perched on the steep slopes encircling Mokong rely on water fetched from the valley below. Women's and girls' daily labor includes scaling steep slopes with heavy, earthenware pots for transporting water balanced on their heads. In all of the communities, the clear waters of much of the dry season are eventually replaced by well and stream waters opaque with silt and debris from the low water-tables and sudden floods of the dusty winds of the late dry season (the harmattan) and the rainy season.

Access to transport and major urban centers do vary tremendously. Meskine has become an extension of Maroua, while some of the villages around Gawar are virtually isolated in the rainy season.

The center of Dogba is scattered along the margins of the Mayo Raneo at the foot of Mount Dogba. The village is at an elevation of 397 meters on the edge of the vast plain stretching east to Lake Chad. The volcanic cone of Mount Dogba rapidly rises to 617 meters to the immediate northwest. The Mayo Motorsolo lies a few kilometers away to the southeast. Sand and clay soils are interposed in the undulations of river margins, river beds and depressions, supporting a mixture of wet season subsistence and cash crops, dry season sorghum, and irrigated crops. The high water table in the area permits easy access to river bed and shallow well water. Sahelian vegetation and lower precipitation give a sparse appearance to the landscape, but also mark the beginnings of important pastoral activity. The village is accessible in all seasons and only about 25 kilometers north of Maroua by a combination of paved and earthen roads.

Meskine is also in the midst of the Diamaré plains around Maroua. The village is at an elevation of 417 meters on one of the largest seasonal rivers in the region, the Mayo Tsanaga. Settlement is heavily concentrated along the edge of the flood plain of the mayo, extending almost continuously into Maroua a few kilometers to the northeast. A string of peaks to the immediate east make the general topography appear similar to the area around Dogba. The wide flood plain of the Mayo Tsanaga, the combination of sand and clay soils in depressions and plateaus, and the extensive distribution of the high annual watertable make this area ideal for irrigated agriculture and fruit trees. Production of vegetables, onions, and fruits are exceptional for this area. A mix of wet and dry season cultures are practiced in the terrains to the west.

The rich agricultural potential and close proximity of Maroua make Meskine much wealthier and more cosmopolitan than the other communities. Onion, fruit, European vegetables, and other crops are grown in abundance for sale and trade. An important community of wealthy merchants dominate the central districts of the village, profiting from geographical position to carry on their trade from offices in central Maroua.

The villages in the canton of Gawar are dispersed on a plain among several tributaries of the Mayo Louti. Gawar Garré (Center) at 582 meters encircles a volcanic peak of 708 meters. The surrounding villages of Gawar Vindé,

Louguéré Haoussa, and Wouro Ita are within an eight kilometer radius on the plain. Although annual precipitation is greater than in Dogba and Meskine to the east, the narrow mayo beds and impermeable soils make sources of potable water scarce and unproductive by the end of the dry season. Irrigated agriculture is thus impossible, but the alluvial clays sustain wet and dry season cropping. Vegetation is more lush than in the Diamaré plain, and the unoccupied spaces between mayo beds well support pastoralism. Gawar Garré is only 34 kilometers from a major regional administrative center (Mokolo), but the poor quality of the road and the lack of constant traffic make the village rather isolated during the rains. Gawar Vindé and Louguéré Haoussa are accessible only on foot behind vast, muddy depressions and river gulleys in this season.

The narrow valley of the Mayo Goudoulou defines the limits of human habitation around Mokong. The river bed elevation of 522 meters changes rapidly to between 800 and 850 meters in the mountains to the north and south. The flat surfaces and borders around the mayo are heavily cultivated, but terraced agriculture is still prevalent on the steep slopes. The mayo merges into the Mayo Tsanaga and the Diamaré plain a few kilometers to the east and disappears into a series of tributaries in mountain valleys and passes ascending into the plateaus of the Mandara Mountains to the west. Mokong is directly on the axis of the recently paved road linking Maroua and Mokolo. Maroua is now only a thirty-minute drive forty kilometers to the east. Only one year ago the road was poor and seasonally almost impracticable.

The Populations and Their Characteristics

Dogba, Gawar, Meskine, and Mokong are all both village (garré wuro) and cantonal political and administrative centers. The respective cantonal populations are: Dogba, 7,752; Gawar, 2,995; Meskine, 9,161; and Mokong, 3,590. (These general populations for the cantons are based on statistics gathered between 1978 and 1981 by the census bureaus of the Sub-Prefectures of Maroua and Mokolo.) For instance, Dogba canton incorporates 62 or 63 villages and village districts (undistinguished in Fulfuldé as jawro'en) including the central Dogba village district (Dogba Garré). The eight jawro'en selected for study in Dogba canton are clustered around and include Dogba Garré and had a total population in the 1979-80 census of 1,602 persons. Each sample only

represents a specific sector of each canton (see below for further examination of local political organization and the implications for the study sampling) and of the potential universe of each canton.

The universe of infants to the age of two years (24 months) and pregnant women was identified in each community in March and April of 1983. A total of 599 infants were found between Dogba (220), Gawar (110), Meskine (200), and Mokong (69). A total of 143 pregnant women were distributed between Dogba (47), Gawar (22), Meskine (55), and Mokong (19).

The infants and pregnant women were in 603 households in the four communities. A household is a unit of kin, affines, and other members co-resident in a compound owned by the common kin (see below for further explanation). Households can thus be multi-generational, polygynous, and include guests, visiting kin, foster kin, and even seasonal laborers. There were 214 households identified in Dogba, 109 in Gawar, 203 in Meskine, and 77 in Mokong.

These households suggest important variations in ethnic composition between the communities. In Dogba and Gawar, the combination of Fulani and Guiziga groups constituted less than 40% of households with mountain groups comprising the majority. In the two communities, the Guiziga only represented 11% of all households, with the Fulani 26% and 22% in Gawar and Dogba respectively. No mountain group dominated in either community, with the Mafa in Gawar (16% of the total universe) and the Mulkiyu in Dogba (10% of the total) the largest separate groups. The distribution of these groups between village districts and villages in the cantons is uneven. In the canton of Gawar, Louguéré Haoussa is predominantly Fulani while Wouro Ita is heavily Guiziga. In Dogba, Quartier Dogba Garré is strongly Fulani and Quartier Mission Adventiste strongly Mafa, Mulkiyu, and Mokiyo. Members of common ethnic groups tend to form common settlements and concentrations of population.

In Meskine, only three groups were statistically significant. The Fulani were 40% of the universe, the Guiziga 31%, and the Mufu 15%. The Mokong sample was almost homogeneous ethnically, with 96% of the household heads Mufu.

The Fulani and Guiziga were thus differentially represented, with the Mufu only a significant portion of the sample that was virtually homogeneous in Mokong. The mountain populations found in the other communities are indifferently designated "Mufu" by the Fulani in Dogba. For the purposes of this study, the social, cultural, and historical similarities between these populations also inspires their categorization as a single entity.

The religious profiles of households in the universe also change between the communities. Gawar and Meskine were heavily Islamicized, with 47% and 59% of the respective household heads self-professed Muslims. In Dogba, Muslims represented 33% and in Mokong only 22% of household heads. Animists figured strongest in Mokong (64%), then in Dogba (48%), Gawar (43%), and last Meskine (only 34%). Christian influence was clearly in the minority everywhere, but strongest in Dogba (18%), followed by Mokong (14%), Gawar (10%), and Meskine (7%).

The ethnicity and religion of the head of household and infant's father are here emphasized as most important for identifying maternal status. Women generally adopt their spouse's religion, language, culture, and ultimately ethnicity. Conflicts lead to separations and divorce, with the infants returning to the man's family. The woman lives with her spouse's family in their household and is thus governed by their rules of behavior, morality, and beliefs. The extent of this dominance includes influences of the paternal female kin on infant health and nutrition beliefs and practices. For instance, mountain or plain women from animist backgrounds marrying Fulani or other Islamic spouses adopt Fulani religion, language, custom, dress, and practice. The women and their offpring are progressively "Fulanized." Women reside in their husbands' home, in villages sometimes distant from their natal families. The social position and wealth of their husbands, and their relationship to husbands' female kin and co-wives, determine their new position in the community. Women may return to their natal households after separation and divorce, but their position remains low and at best ambiguous until remarriage. "Single" status for women seldom persists for even women past childbearing age.

Table 1: Ethnicity of Male Head of Households from Village Census
Total Number of Male Head of Households: 620

Babour	1	
Baguirmi	1	
Banana	1	
Boudoum	1	
Choua Arab	1	
Dimeo	7	
Djelin	1	
Djouvour	1	
Douroum	3	
Fali	1	
Foulbe	164	(26% of total)
Foutak	2	
Gadala	4	
Gawar Hossere	8	
Gitim	1	
Gova	1	
Goudoul	2	
Guemzek	1	
Guiziga	103	(17% of total)
Guoyang	5	
Hina	1	
Kapsiki	4	
Kera	1	
Kola	2	
Loulou	2	
Mabai	1	
Mada	20	
Madagamza	1	
Mahamai	1	
Mandara	8	
Matakam	25	
Mebain	2	
Meri	1	
Mokio	12	
Moufou	128	(21% of total)
Moulgour	8	
Moundang	2	
Mousgoum	1	
Moutouroua	1	
Mouyang	11	
Nbana	3	
Nbele	1	
Nbidme	1	
Ndougour	1	
Ngoumba	1	
Nguelbada	7	
Oudloume	1	
Sara	2	
Sirata	14	
Tara	1	
Tassai	1	
Tchere	2	
Tchouvouk	2	
Tourou	1	
Wazan	1	
Zidime	3	
Zilin	1	
Zoulgo	10	
?	3	

Table 2: Religion of Male Head of Households from Village Census
Total Number of Male Head of Households: 620

Muslim	302	(44% of total)
Christian	80	(12% of total)
"Animist"	300	(44% of total)

The Local Economies

The economies in all four communities are basically agricultural, as evidenced in the overwhelming choice of "cultivator" as primary occupation by the majority of heads of households and spouses in the households. Cultivators are, however, often engaging in other crafts, pastoral or wage labor activities in the course of the year. Occupational specialists like smiths and merchants are in a minority but make an important contribution to the communities. There are also the local aristocracies in each locality. The import of positions in national administration and services, the national cotton company (Sodecoton), missionary establishments, and handicraft production for tourist markets differs between communities. Migration for commerce and wage labor are common, but the impacts of increasing monetization vary according to cash income availability to communities, households, and women.

Agricultural activity is first devoted to production of staple crops for subsistence and sale. Systems of wet season cultivation of sorghum, peanuts, cowpeas, and other crops are similar in the four cantons. Terraced agriculture is important, however, in Mokong and rather limited to a simple exploitation of local slopes in the other three cases. Dry season sorghum cultivation (karal) is also practiced in depressions and near mayo beds.

Cash cropping of cotton is the major source of income from agricultural production in the four communities. The staple crops are also sold to wholesale merchants at weekly markets as a regular means of fulfilling daily household needs. Onion production during the dry season from irrigated plots is important in Dogba and Meskine.

The pre-colonial agricultural systems were already adapted to producing food crop surpluses to support local Fulani aristocracies and urban, imperial centers. Cultures for certain market foods--such as onions--and manufacture--such as cotton--were also well developed. Land and labor were appropriated from the indigenous populations, or new populations were recruited as slaves to cultivate lands surrounding the new cities.

Various researchers argue that the colonial and independence governments intensifying emphasis on cash cropping for manufacture and export in cotton and peanuts detrimentally affected the availability of local foods, local standards of living for most agriculturalists, and thus eventually the nutrition and health of local populations. The combination of obligatory cultivation of export crops with little remuneration, and the alienation of lands otherwise devoted to crops for local consumption and manufacture, compromise the quality and quantity of local foods. Evidence now suggests that the standard of living for rural African populations is indeed inferior to conditions prevailing at independence, and this observation applies well to the disenfranchised rural populations of much of northern Cameroon. The genuine benefits of increased cash cropping are reaped by a small, perhaps a decreasing, segment of the local population. The most industrious small farmers receive no more than a few hundred dollars each year for their crop after reimbursing costs for fertilizers and insecticides, paying rent for land equipment, and paying local religious or other taxes (the Islamic zakat for rent and religious taxes can total 20% of the annual crop). The lump sums delivered with the regional cotton markets are generally soon spent on major "capital" investments like new agricultural implements, clothing, and kitchen utensils. Small, weekly sale of staple and processed foods from the households furnish many of the basic daily needs for the rest of the year.

Crafts production is primarily for household use or local sale in the village or at weekly markets. Activities such as basketry, hut and granary construction, weaving, pottery-making, and smithing are universal. Specialists in crafts like calabash decoration or services like barbering also cultivate. A few specializations like smithing and tailoring become exclusive cash or kind remunerated occupations. The weaving of cotton cloth, tanning and working of leather, embroidering, and other forms of handicrafts have become important activities and sources of income in Meskine due to the demand in Maroua for crafts for tourist and regional trade.

Pastoral activity is particularly important in Dogba and Gawar. The cantonal territories have large, unoccupied spaces adapted to the movement and grazing of cattle and other animals. The more densely populated areas around Meskine support dry season transhumance of animals, and some members of this wealthier

community invest in cattle guarded by pastoralists in other localities. Merchants and nobility in Dogba and Gawar also invest in animals often distant. Household stocks of goats and sheep are seasonally guarded at home or entrusted to pastoralists. Chickens and guinea fowl are kept around the compound. The steep slopes around Mokong ill afford pastoral movement, but labor-intensive animal husbandry flourishes in the small stone compounds.

Positions in national administration and services, Sodecoton, or missionary stations are few and vary between communities. Primary education occupies teachers in the centers of the four cantons, as do medical services at the national dispensaries in Gawar and Meskine and veterinary work at Dogba. Sodecoton stations in Dogba, Gawar, and Meskine employ a range of permanent and seasonal personnel. The Dogba and Mokong missions also employ a range of specialities including cooks, gardeners, para-medical personnel, and primary and secondary school teachers. The permanent, and even occasional, employees of these institutions, with greater cash incomes, constitute an advantaged minority in the local societies.

The traditional elites continue to dominate local resources and cash reserves. The Fulani or Muslim aristocracies in each canton collect national taxes, monitor and enforce cotton production, manage local markets, register local animals, and direct or monitor other domains of local economy. The mountain peoples in Dogba, Gawar, and Meskine pay 10% of their annual crops to Fulani landlords as rent for land. The Muslim clergy also receive monies for religious instruction and activities from the 10% tax on annual income levied on all Muslims. Muslim merchants control local retail of manufactured goods, much retail trade in local products and manufactures, and all wholesale regional trade. There are few resident merchants in Mokong, but Dogba and Gawar have localized commerce as well as more prosperous merchants trading in other regions of Cameroon, Nigeria, and the Central African Republic. A few of the very wealthy merchants of Maroua reside in Meskine.

Although local economies have become increasingly monetarized, access to markets, manufactured or regional goods, and sources of income generation differ greatly among villages and households. Important weekly markets occur in Dogba, Meskine, Mokong, and Gawar Vindé. Gawar Garré, Louguéré Haoussa,

and Wouro Ita must depend on other regional weekly markets at varying distances for major exchanges. Manufactured goods are particularly pervasive in Meskine and Dogba, though basic items like cotton cloth, enamel ware, salt, and wheat flour may be found in every community. Cash income and purchased goods are nevertheless scarce in the villages peripheral to Gawar Garré, the households perched on mountain slopes around Mokong, and in the poorest mountain households in Dogba. Only the most rudimentary purchases are possible in these homes.

Weekly markets and daily exchanges between households or at small markets (in Dogba and Meskine) furnish the basic items used by households in the communities. The poorest households sell foodstuffs (such as cowpeas and millet) or home manufactures (such as pottery and peanut oil) for a few hundred Francs CFA (at 400 Francs CFA to the dollar) in order to purchase a little dried fish, peanuts, and salt for the weekly cuisine. A little of this money is also often devoted to millet beer at the market "taverns." Wealthier families purchase a much wider variety of goods including meats, canned tomato paste, sugar, tea, tinned coffee, kerosene, and flour.

Most members of the immediate community seem to participate in the color and conversation--and usually some of the sales and purchases--animating the markets. Women selling processed foods, drink, and alcohol prepare days in advance for the market. Merchants travel 30, 40, or more kilometers on donkeys, bicycles, mopeds, and trucks to hawk their wares. The focus of the entire community is on commerce and communication and provides, in effect, a day of rest for agriculturalists and many others in the area. Millet beer enlivens the conviviality of the non-Islamic groups.

The intensity of market activities changes annually. In the height of the rainy season, markets are small as new crops are not ready for commerce, agriculturalists are at work in the fields, and cash is unavailable. Marketing is at a peak during and immediately after harvests, when merchants stockpile foodstuffs, Sodecoton agents purchase the annual cotton crop, and agriculturalists temporarily have "large" amounts of cash.

All of the communities are affected by labor migration as well as trade and markets. Young men of mountain stock often move as agricultural laborers for Fulani landholders. Seasonal labor in rural and urban sectors is common. Unskilled laborers and craftsmen often used to travel to work in urban Nigeria, but the recent Nigerian expulsion of foreign workers has effectively eliminated this option for young men. Indeed, returning laborers and prosperous skilled craftsmen are floating from Dogba through urban Cameroon or trying to return to agriculture on rented lands in the canton.

"Patterns of Food Consumption"

Seasonal activities, seasonal food availability, household economic status, women's domestic labor organization, and individual preferences govern food consumption patterns. Two minor and one major meal each day are almost universal for all groups. Breakfast is a minor meal of tea or coffee with beignets (similar to a doughnut) or the remains of the evening meal. During periods of peak agricultural activity, the men leave very early for the fields with a bit to eat in the course of the morning. Women prepare the midday meal and carry the food to the men in late morning. The major meal is consumed at home in the evening. Non-agriculturalists and agriculturalists during off-peak periods consume the main meal at midday and eat a light meal of porridge or other foods in the evening.

The universal basic staple—sorghum—is prepared to serve as a hot paste. Women remove the bran with mortar and pestle each day and then prepare flour with mortar and pestle, grinding stone, or at a local mill. In the central portions of all four communities, many households send children or women with the processed grain for grinding at the gasoline-operated local mills. The flour is mixed and simmered in boiling water to produce a hot paste formed into ovals or balls for serving. A separate sauce based on a combination of dried or fresh vegetables, salt, vegetable or animal oil, condiments (like dried tomatoes and garlic), a protein source (such as dried or fresh fish, cowpeas, peanuts, or meat), and water is prepared as a stew to complement the paste. The quality and composition of sauces varies with household resource and to some degree ethnicity. Poor households may often consume sauces based on (dried) vegetables, water, and salt, with only occasional weekly additions of legumes, vegetable oils, and dried fish. Sauces for wealthy diets are

heavy in oils and meats. Mountain diets emphasize cowpeas and fewer condiments. Islamic households employ cowpeas only in beignets, emphasize condiments like tomatoes and onions, and include milk in evening meals. Pastoral households rely heavily on dairy products in their diets.

Paste and sauce are served in separate dishes to a common group. Sitting on earth, mat, or stool, group members in turn tear off a piece of the common paste and dip the piece in the common sauce. The food is always handled (even during cooking) and eaten with the right hand, as the left hand is "unclean" and thus reserved for activities such as cleaning and excretion. Food is always eaten in common out of common dishes.

Different groups do, however, eat together. In most homes, men eat in groups distinct from women and children. Extended families may have several groups of men and women distinguished by family rank and age. Village chiefs, lawan, and laamiido eat in common with a few senior court members or religious figures and always in strict privacy. Groups eat in separate sections within the common compound, under open shelters rather than in a chamber.

Other foods and beverages are available during the day or seasonally to children and adults. Roasted peanuts, sweet sesame cakes, and other snacks are in the household or purchased from local women at home or on the streets or at small, daily markets. Insects, particularly termites and grasshoppers, are gathered in certain seasons to grill as snacks. Fruits including mangoes, lemons, papayas, and guavas are common during specific periods. Households with greater resources and more income can, of course, afford more of these foods, as well as other luxury foods like canned fish, wheat breads, crackers, sugar candies, sweetened condensed milk, kola-nuts, and cube sugar.

Male members of all the groups, including Muslims and individuals of high social and economic status, consume alcoholic beverages. Mountain and plains peoples are reputed to drink millet beer and locally distilled spirits, but poorer Muslims and Fulani also drink these beverages. In the larger villages, millet beer is available most of the week. Millet beer is only brewed for the weekly market days in more rural areas, but the distilled spirits may be conserved and sold throughout the week. Individuals with higher income (like

Fulani aristocrats and local government officials) prefer to indulge in nationally brewed bottle beers and imported European spirits. The extent of the effect of these consumption patterns is particularly acute in younger, contemporary families. Male resources are devoted to expenses outside the household without bringing any benefit to the home, and a variety of psychological and social tensions develop between household members and in the community. Older members of the Islamic community eventually renounce alcohol to increase status thorugh stricter observation of Muslim law and custom. Some men attempting to attach merit to their professions--like Coranic teachers, Muslim healers (marabouts), and some merchants--also refuse to drink. Strict adherents to the Protestant sects of Christianity (like Baptism or Adventism) drink little or no alcohol. But generally alcohol consumption is pervasive and often excessive given household resources and the physical, social, and psychological consequences for the man and his family.

Social and Political Organization

The structures of social and political organization are strikingly similar in the four communities. Households are the basic constituents of villages and village districts. Fulani and increasingly Islamicized models of social and political organization have become pervasive in all of these locales. The mixture of peoples from migrations and resettlements, and the imposition of Fulani administration on local peoples (like the Guiziga in the Diamaré plain) during pre-colonial, colonial, and independence periods have dramatically reduced the importance of groups based on kin association. The village became the unit basic to Fulani and imperial administrations governed by a Fulani hierarchy. Fulani domination of village and canton have extended into the local and regional branches of northern Cameroonian government and administration.

The unit basic to the society and of most import to the study is the "household." The nucleus of the household is a group of patrilineal co-resident kin: the male consanguines own the cluster of buildings and structures usually delimited by an encompassing mud wall or thatch fence that constitutes the "compound" of the co-resident household. Other members of the household may include the wives of the male kin, other kin, other kin by marriage, fostered kin and infants, visiting kin and guests, and seasonal

laborers. The "head of household" is the senior male in large or small households. Meals are not only limited to household members, nor do all household members always eat in the household, but the household remains the most common consumption unit.

The size, membership, and evident wealth of the households vary tremendously. Wealthy Fulani merchants and aristocrats may have immense compounds with a profusion of buildings of cement and metal housing co-wives, paternal kin, affinal kin, guests, and laborers. A newly established household of a cultivator may include a mud and straw hut and granary containing his wife, their infants, their harvest, and a few meager possessions. The physical appearance of the compound is not, however, a certain indicator of the current wealth or composition of the household. Changes in household membership and family fortune can dramatically alter the actual profile of the unit. Divorce, death, separations, labor migration, remarriage, and intra-familial disputes can radically change household membership periodically or permanently. For instance, the average Fulani woman has been divorced three times by the age of thirty. The periodic returns to her family, residence in her spouses' households, and distribution of her children issued from her unions transform the constitution of the relevant households. Economic fortunes also change. An ill and aging, but formerly successful, male head of household may receive little support from distant sons or other male kin.

The male head of household directs family members and manages the cash income from sources like the cotton crop and animal husbandry. Land is owned exclusively by males. Women are not, however, without independent resources and decision-making powers. A female's income from crafts and her own crops remain in her hands. Women may own and inherit goods and animals (including cattle). Divorce and separation are easy, and women often continue to have support from their male kin in disputes. But children always ultimately belong to the paternal kin.

Villages may be broken down into districts and other subgroups following size and ethnicity. Members of a common ethnic group will often confer in a common area to regulate internal affairs not germane to the local government. The

individual villages or village districts are governed by the chief and council that are responsible to the heads of the cantons.

In Gawar, Meskine, and Mokong, the laamiidos govern the cantons subject to the local Sub-Prefecture. In Dogba, the lawan is responsible to the laamiido of Maroua who is subject to the Sub-Prefecture of Maroua. All of these authorities are surrounded with elaborate courts with officers fulfilling specialized roles. Their economic, legal, and political powers are pervasive in cantonal affairs. As with many other "traditional" indigenous leaders of mountain communities enthroned by the colonial and independence governments, (though of Mufu ancestry) the laamiido of Mokong carefully emulates Fulani models. He is Muslim, resides in a walled compound with a unique entrance and a sequestered section for his eight wives, presides over a Fulani-inspired court, and conducts his affairs in the Fulani language. In addition, some of his wives are Fulani. The other cantonal leaders are "true" Fulani.

Some other institutions are evident in the communities. The services of a regional unit of Sodecoton (the secteur), a government veterinary nurse, a government primary school, and the Adventist Mission secondary school, primary school, and dispensary are available in Dogba. The regional unit of Sodecoton in Gawar is complemented by the government dispensary and primary school. Meskine benefits from the immediate proximity of all the services in Maroua, but also hosts a government dispensary, leper colony, and primary school as well as another secteur of Sodecoton. Only a government primary school and Protestant dispensary grace Mokong.

Water and Hygiene

The architectural and spatial variation in compounds reflects the great regional economic, social, and cultural differences. Compounds vary tremendously in size, the use of gathered, traded, and purchased materials, and cleanliness. The basic building materials remain earth (mud) for walls, and wood and straw for roofs. Corrugated iron for roofs and doors, cement for walls and floors, whitewash, and rare electrical installations are added according to the socio-economic status and priorities of the head(s) of the unit.

Islamic households are delimited by mud walls with a single entrance. Other households may be defined by mud walls, thatched straw fencing, or simply the relation of a cluster of structures and their surrounding space (often a garden) to other similar units. Mountain peoples in the plain employ stone in construction of shelter and storage. Structures within smaller compounds face one another around a central "courtyard" of clear--but sometimes covered--space. Larger compounds may include a maze of covered or open-air chambers connecting sections of the residence. In wealthier Islamic households, women often live in a section of the compound only accessible after passing through a series of working and male residential areas. The senior wife in mountain households may monitor the movement of junior wives by construction of a series of interconnected huts for these wives with exit only possible through the senior wife's hut.

A separate structure is usually one- and at most two-chambered. Rather than increasing the size and complexity of a single structure, the number of structures is multiplied according to wealth or necessity (such as family expansion). Compounds also include space for sheltered or open-air work and visits, animal shelter and care, storage (in granaries or hangars), personal hygiene, and gardens for vegetables, medicines, and specialities (such as tobacco).

Water is drawn from two kinds of "wells": the wawru or the bundu. A wawru is a depression of depth varying by season dug into the sand in local river (mayo) beds. One or several individuals dig, use, and maintain these often shallow depressions. Water is drawn by descending into the wawru and bailing water with calabash or enamelware into a receptacle perched on the lip of the depression. A bundu is an open-bore well, usually of local construction, dug by village or regional artisans specializing in well excavation. These wells range from several to many meters in depth. The artisans are paid for their work by an individual or a group of households joined to share a common bundu. The wells are usually within a compound enclosure, though other persons often use bundus from original association of their household in the costs for construction or with the assent of bundu co-owners. The simplest wells are at least partially covered to protect against entry of foreign objects. More elaborate constructions include cement margins and lips. A few "European"

open-bore wells (bundu nasaara) built by national and international agencies are scattered within the communities. Water is also used from the seasonal waters flowing through mayos after the rains. This water may be drawn or used directly in the stream.

The construction and use of bundus is almost exclusively limited to the Fulani and other Islamicized peoples. The plains and especially mountain peoples--Christian or animist--used the wawrus or open streams for drawing potable water, washing, and other tasks. Except for the washing of clothing, the Islamicized groups rarely used the mayos for purposes other than watering animals. Reliance on mayo water has important consequences for the health of the non-Islamic groups (see further below).

Drawn water is stored in earthenware jars or enamelware in the compound, and usually outside the house chambers. Earthenware is often buried to lip and collar to keep drinking water cool. Lids of old plates or other materials cover the container mouths.

Water with large particles that have settled to the bottom of pail, cup, jar, or calabash is discarded as "dirty" when water is handled in transfers between containers or for use. A sieve is also sometimes used to remove debris from drinking water. No other treatment--such as filtering or boiling--is employed in processing water for drinking or other household uses. Water for infant drinking is heated--not boiled--before use by all groups. Women claim that warmed water has a beneficial effect on infant digestion and that untreated water contributes to digestive distresses. The preparation of millet water (discussed below) includes heating of the infusion for an hour or more.

Differences in hygienic practices and beliefs between Islamic and non-Islamic groups are dramatic. Animal and other wastes are often scattered throughout the yard in non-Muslim households. In Muslim households, waste is generally deposited in a particular spot within the compound or completely removed. These differing notions of cleanliness also extend to the cooking areas and utensils.

Personal or infant washing is infrequent for mountain groups. The presence of some form of latrine may also be related to ethnicity and religious affiliation: in the Dogba sample about 80% of the Islamic households had latrines, while only 40% of the other households (including Christians of the local Adventist Mission) had facilities. Even most of the Christian nurses at the Dogba dispensary had no latrines. In households without facilities, members relieved themselves in the neighboring bush or on the edge of or in the bed of the nearby mayo.

Islamic law emphasizes body cleanliness as a part of daily religious and domestic practice. Washing of extremities and orifices before and after the five daily prayers is an obligation carefully observed. Cleansings before and after meals, and after excretion, are also universal. Infants and children are frequently bathed. Concern for cleanliness does not yet extend to interest in microscopic creatures in water and foods, but a basic concern for propriety pervades culture and practice.

The lack of interest in hygiene and use of mayo water heavily contaminated by man and beast greatly increases the exposure of non-Islamic peoples to serious risks to health and nutrition. The lack of sanitary potable water, latrines, and household and personal hygienic practices is most notable in these groups. Notions of hygiene and propriety in the Islamic culture that surrounds them may afford easier acceptance of well designed educational and extension health programs for these groups.

IV. WOMEN

Variations in Occupations and Activities and the Sexual Division of Labor

Women in all groups in northern Cameroon fulfill a number of sex-specific roles and tasks. Household food preparation, water drawing and transport, child care, child feeding, and clothes washing are among the tasks almost invariably executed by women. There are important variations in kinds and locations of labor according to the socio-economic status of the woman or her household and her ethnic or religious group.

Married Fulani women may not leave their spouse's compound during the day. Their occupations are thus confined to the interior of the compound. Water is

drawn from the compound well, millet bran removed by pounding in a common working space, and food cooked in the woman's kitchen. The households are often polygynous, multi-generational and may include male siblings and cousins of the same generation. Compounds thus have clusters of huts with associated structures—like kitchens—grouped in distinct spaces within a single compound. Each co-wife has her own house. Women confined to the compound do not work in the fields, nor do they wash clothes at the mayo. A set of male members in the household or hired labor complete these tasks.

Fulani women may nevertheless grow vegetables or other kinds of plants for medicine and other uses within the compound (generally in the rainy season). These plants may also be a source of cash income, since they may subsequently be dried or prepared and then sold by another member of the household in the marketplace or on the street. Fulani women prepare several kinds of beverages, basketry, and embroidery for sale. Some women engage in specialized production of pottery, decorated calabashes, or cotton cloth for sale. Specialized handicraft production is not, however, the sole province of women in aristocratic or merchant households.

Middle-aged and older women engage in petty commerce in front of their homes and in the markets. Fresh, processed, and prepared foods like grilled peanuts, peanut oil, dried okra, and fresh hibiscus leaves are their most common merchandise. Some of their handicraft production may also be sold.

Guiziga and mountain women participate in a wider variety of activities. These women labor in the fields in both the wet and dry seasons during planting, weeding, and harvesting of the crops. House gardens of vegetables, corn, and early maturing sorghum that fill the interiors and areas immediately around the compounds are started and maintained by women. In the poorer households, women cut and gather wood at places in the bush sometimes quite distant from the compound. Wells are seldom found in individual households, and thus women draw water at common wells, from running rivers in the rainy season, or in depressions dug into the local river beds in the dry season.

Fresh, prepared, and processed plant products are sold on the street and in daily and weekly markets. The women trade directly in the marketplace as part

of their daily and weekly schedules. Basketry, pottery, and other crafts are additional sources of income. Some women also produce millet beer or distilled alcohol for sale on market days.

The preparation of plant products, the fabrication of handicrafts, and petty commerce are thus sources of cash income for women. Poorer women may labor on others' fields in wet and dry seasons. The revenues from these activities are, however, derisory. The work is labor intensive, time consuming, and brings in a small return. For example, a woman who prepares a beverage for sale at the weekly market in Dogba may make at most 400 francs CFA ($1.00) after paying for materials and without accounting for labor. Unforseeable fluctuations in demand makes income sporadic and the manufacture of perishable goods a risk.

Seasonal variations in activity are most important for women who are not confined to the interiors of the household compounds. Guiziga and mountain women follow the agricultural calendars of planting in May and June, weedings in July and August, and harvesting in September, October, and November for the rainy season crops. These women also work on the dry season plantings in October and the harvests of dry season sorghum and wet season cotton in November, December, and January. Women available for work in the fields also labor on others' fields for cash and kind in both the wet and dry seasons. Drawing water is most difficult from January to the beginning of the rainy season, which corresponds to the periods in the agricultural calendar between final harvesting and the planting for the next season. The clearing and preparation of both wet and dry season fields are tasks reserved for men.

Infants who do not yet walk remain with their mothers at home, in the bush, and in the fields. Even infants who walk usually stay with their mothers until the age of two years (or more), unless another pregnancy intervenes. On their backs or at their sides, the infants are seldom far from their mothers' attentions. Sleeping infants may be put aside for heavy labor in the fields or bush, but they always remain within easy sight and hearing of the mother. Water and the breast are readily available to the infant. Another child may be at the infant's side in case of immediate distress.

Social Position and the Family

The developmental cycles of the families/households and frequent changes in marital relations make a woman's location and social position fluid. Polygyny is common in all ethnic and religious groups. Separation and divorce are frequent for women. According to the age and status of her spouse, the presence or absence of another male as head of household, and the age, marriage order, and reproductive history of the woman, her status changes within the household and in the community.

Polygyny was found in all of the communities across occupational, ethnic, and religious lines. Christian males (with the exception of perhaps some members of Protestant sects) were as polygynous as Muslims and animists. Two co-wives with important age differences were most common for older men heading a household. This pattern applied equally to agricultural households. Multiple co-wives were usually found in wealthy aristocratic or merchant households. These households often included other couples and were Islamic. For instance, the chief of Dogba had six wives and another couple (an adopted male and his wife) in his household.

Access to and availability of resources varies in these polygynous households according to ethnicity and socio-economic status. Fulani women draw grains, legumes, and other foods from a common granary in the compound. Mountain women each have distinct granaries—often within their huts—that they draw upon when they must prepare food for the household. Women control their resources from personal production and manufacture as goods or income from marketing.

There is often considerable competition for the attentions of the common spouse between the women. The senior wife commands, at least in theory, the household, but the younger wife may be preferred. Jealousy and competition between wives affects infant care and feeding. A woman may devote some of her resources to satisfying her husband rather than child feeding in order to assure his attentions. Sexual activity is often resumed soon after childbirth in order to avoid exclusive devotion to the other co-wife(s).

The majority of the households remain monogamous (60-70%). However, the male still has important commitments to kin outside of the household and perhaps to relationships with other women. Problems of access to male resources thus still apply in monogamous households.

"Separation and Divorce"

Separations and divorce are frequent and common in all groups. Women marry between the ages of thirteen and fifteen, but seldom remain with the original spouse. Although some claimed that the current frequency of changes in marital relations are recent, inquiries into the marital histories of older women suggest that frequent changes in partners have been common in living memory and in all the groups. Even divorced or widowed old women often remarry.

Transformations in kin relations and obligations have, however, altered the effects of frequent divorce and separation. Women in poorer families can no longer rely on the support of male siblings and kin. Women are thus in rural settings with old male kin, single women, and children without important agricultural resources or major sources of income. Women dependent on spouses and male kin occupied in seasonal or long-term labor migration also have little or at best occasional income. Agricultural production and important sources of cash income are provinces of mature male labor. These impoverished rural women have little alternative to remarriage, and their lack of access to resources and income have substantial effects on infant health and nutrition.

Infant and maternal nutrition are adversely affected by these conditions. Nursing mothers have few resources to feed themselves properly or to furnish early, nutritious supplementation to their infants. Meat, milk, and other purchased foods are available to neither mother nor child. Porridges and other special foods for supplementation remain poor for children under two years. For older children, the common family meals shared are of lower quality, with fewer sources of oil and protein.

The emotional and nutritional conditions of infants are also affected by the frequent changes in maternal households. Women devote their attentions to infants with their current spouses, and the children foreign to the new

household are marginalized. These small children are to be eventually claimed by their father in another household; there is thus little motivation to allocate resources to their needs. The mother must attempt her best to balance attentions between the new household and children who may soon leave her care.

V. THE MATRIFOCAL UNIT

Pregnancy

Patterns of food consumption for pregnant women do not appear to vary dramatically from those of other women. Women recognize that increased consumption of meat, milk, and other protein rich foods are best for the expecting mother, but the actual consumption of these foods is conditioned by resources available to the household and the composition of the unit. Foods like meat and milk are purchased in periodic market situations and are expensive for most families. In addition, foods available in the household would be distributed among the members rather than being exclusively devoted to the pregnant women. The ethic of food distribution emphasizes male satisfaction first, and distribution of the best selection of the woman's foods to the children.

A few foods are taboo to pregnant women, but these foods are not nutritionally critical. Meats, eggs, milk, legumes, porridges, and other staples are readily eaten and indeed preferred. Mangoes and a kind of melon are not eaten as they may contribute to difficulties at delivery.

Anemia and goiter are among the common health problems that contribute to difficulties in pregnancy and childbirth. No health education or food supplementation programs are currently addressing these common and widespread afflictions of women.

A woman's relationship to her last-born child may change abruptly and radically with a new pregnancy. A pregnancy within two years after the birth of the last child (in the local view a "premature" pregnancy) will engender early weaning and sometimes separation of child and mother. Women will stop breast feeding children of even under one year. In order to avoid the complaints and insistences of the child, they may give the child to kin or a

friend as a kind of foster mother until well after the birth of the new child. The potential effects to infant health and development of such brutal change are appreciated, and foods like meat and milk will be provided as substitutes to the breast if they are accessible to the household. It should be noted, however, that the reproductive histories gathered of the women suggest that most infants are born at intervals of two to three years. A new birth is thus generally after the infant begins to walk, an event perceived as the critical developmental point before weaning.

No difference in labor allotted to pregnant or other women was noted.

Childbirth and Breast Feeding

Women still rely heavily on local assistance for delivery and instruction in infant feeding and care. Indigenous midwives assist mothers with their first-born child after delivery for the first week after birth, with or without the support of the woman's mother. Women are guarded in seclusion for the first few days after birth. The ceremonies, beliefs, and practices surrounding the disposal of the afterbirth, naming of the infant, associations of articles or ritual objects with male and female infants, and other domains vary according to religion and ethnicity.

Some infant problems are directly related to childbirth practices. For instance, tetanus is common due to the manner of cutting and cleaning the umbilical cord.

Many women in villages with access to dispensaries or hospitals--like Dogba and Mokong--deliver their infants in these facilities. There is a corresponding reliance on indigenous knowledge of infant care and feeding once the mother returns to the household.

The local midwives, the woman's mother, and other women instruct the new mother in the care and feeding of the child. Methods of breast feeding, washing the infant, caring for the infant during sleep (such as turning the child from time to time at night, diagnosing and treating simple illnesses and problems, and initiating food and water supplementation are included in the education.

The breast is provided to the child on demand among all of the groups. Feeding is alternated between the two breasts either in the course of the same feeding or in the succeeding feeding. In order to stimulate the initial secretion of the breast milk, the mother rubs the area around the nipple with the heel of her free hand. The breast is wiped clean before and after feeding.

"Bad" milk is an affliction attributed to some women as a problem chronically affecting their breast feeding after each birth and in the normal course of their nursing. The base of the problem seems to stem from insufficiency of milk production or other causes. The symptoms of "bad" milk are the baby refusing the breast by turning away its head, or puckering its lips and ejecting the tongue during feeding as though the milk is not pleasing. The disease may then be diagnosed in several fashions: 1) The mother or a local midwife will taste the mother's milk. The milk is "bad" if it is yellow and pricks the tongue like hot pepper. 2) A sample of the mother's milk will be left outside in a calabash overnight. If the little black ants that come to eat the milk at night are found dead in the calabash in the morning, the milk is "bad". 3) A bit of the mother's milk is dribbled on a hot knife. If the milk does not bead when in contact with the hot knife, it is "bad."

Once diagnosed, both mother and baby are usually treated simultaneously by medicines provided by the mother herself, her husband, a member of the family, a friend, the local midwife, or the indigenous pharmacist in the local markets. Evidently a variety of ingredients and mixtures are employed for drinking, eating, or washing by both mother and child. The critical point is that a diagnosis of "bad" milk does not imply the ceasing of breast feeding. Indeed, continued breast feeding of the infant by the mother is viewed essential to the eventual success of the treatment. The addition of other foods like cow's milk to the baby's diet is considered preferable in households with adequate resources.

The diagnosis of "bad" milk appears to gloss problems of breast milk insufficiency, infant malnutrition, and maternal malnutrition and disease. The modes of treatment and the individual histories of women afflicted with "bad" milk should indicate the cause(s) of the malady.

As is the case for pregnant women, meat, milk, and other foods are preferred for women breast feeding infants. Resource availability and household composition still condition women's access to special foods. No important taboos on foods or drink were noted.

Information on these topics was readily obtained by ethnographers' interviews with women in the Dogba community and key informants chosen as locally renowned practitioners of traditional child care. These interviews generally detailed a picture of preferred practices with supporting beliefs, including native recognition of some pragmatic limiting factors like seasonal food availability, household socio-economic status and maternal disposition. Survey work and ethnographers' observations established ranges of group and individual variation, as well as verifying correspondences between belief and practice. The ensuing greater depth and different perspectives on the same question often produced important results. For instance, initial interviews and superficial surveys suggested that cow's milk or bottle feeding were preferred alternatives to breast feeding for mothers with "bad milk." Further interviews with indigenous midwives and nursing mothers, combined with observation and interview of women currently with young infants and "bad" milk, revealed a different reality. Without exception women with "bad milk" actually continued to breast feed their infants while following local treatments. Bottle or cow's milk supplementation was considered preferable for women with adequate resources and insufficient breast milk. Other foods were never seen as replacements for mother's milk. Decisions on individual treatment relied on a complex combination of maternal breast feeding history, local diagnosis of milk insufficiency or nutritional deficiency, maternal resources, and available forms of treatment. Initial impressions about belief and practice concerning "bad" milk had been based on description of practices fit for wealthy mothers and local conceptions of the existing prejudices of health and rural development workers.

Kinds, Forms, and Ages for Food and Water Supplementation for Infants

Kinds, ages, and practices for infant supplementation vary according to membership in local ethnic and religion categories. There is, however, tremendous intra-category and individual variation in actual practices.

Socio-economic stratification and attendant household status has equally important effects on actual practices.

The important differences in normative statements appear between Fulani (Muslim) and all other groups. Many members of the other groups are in the process of "becoming" Fulani and thus adopting their systems of belief. Individuals and households resistant to Fulani influence nevertheless adopt many aspects of the dominant culture. Basic Fulani conceptions of infant supplementation generally appear sound, but individual circumstance and practice, and the mother's access to resources, condition actual behavior and results.

"Water"

Water is given regularly to infants soon after birth. The mother first gives the baby water from a few days after birth to within the month. Fulani opinion varies from first administration at five days to initiation at twenty days. The other groups also start giving water within the month. Fulani women give their infants "millet water," and other women give their infants unadultered lukewarm water that has been previously heated on a fire.

"Millet water" (ndiyam gawri) is made from a stock of pounded millet or sorghum simmered in water for one or two hours. The crushed grain (not yet flour) is preferably yellow sorghum (safara) or candle millet (yadiiri), though white and red sorghums are also used. There is important individual variation in these preferences, but the ideal stock for millet water would be based on candle millet for the first three to four months and subsequently on yellow sorghum. Natron and butter (leebol) are added to the stock and heated before cooling the millet water and feeding it to the infant.

The thin, bright yellow millet water is fed to the infant two to three times each day. Most women give the water once early in the morning (around seven o'clock) and once in the late afternoon (between four and five o'clock), with some women also giving water around noon. An additional feeding was preferred for women with "insufficient" milk production. Butter is not always included in the millet water if the woman does not have the means to buy butter from local pastoralist women. Women claimed that the breast was offered to the

baby before giving the millet water, though observation suggested that the feedings were independent of baby interest or demand.

The feeding process is a practice of much concern to medical and health personnel at facilities in Dogba and elsewhere. The infants are held either head up between the mother's legs below the knees or head down to the side in the mother's lap. The water is then generally forced into the infant in one of several fahsions. The water is sometimes poured from a calabash over the infant's nose and mouth forcing it to open the mouth to drink and breathe. The mother may pinch the nose closed to open the infant's mouth. If the infant is held between the legs, the mother will cup her hand under the infant's chin and fill the hollow until both mouth and nose are covered with the liquid. The infant is thus forced to drink and choke. Some mothers pinch their infants to force their mouths open. These practices are standard and universal for all groups.

The feeding provokes much infant choking and crying. The combination of drinking and breathing can introduce water into the lungs that provokes pneumonia and other respiratory disorders. In Dogba, one mother even asphyxiated her sick infant at the dispensary through forced drinking.

Other women administer lukewarm water several times each day using the same methods.

Women claim that these feedings, especially of millet water, fatten up (<u>fait grossir</u>) the infant. The baby gains weight, becomes strong, and grows properly. Although still seen as a supplement to mother's milk, (millet) water is felt a key constituent to the early diet of a healthy baby.

Fulani women continue to give millet water to their infants until ten to twelve months. Older informants stated that women formerly continued to give millet water up to two years (though recollections of "old times" and the relationships between supplementation and infant age appear very unreliable). Women in the other groups claimed to still give straight water and breast milk until two to three years. The end of water supplementation actually corresponds to maternal perceptions of infant development. When the infant

Table 3: Infant Foods (foods used by any groups unless noted)

Breast Milk (kosam daada)

(Heated) Water: used by non-Islamic plain and mountain groups from a few weeks of age to one year

"Millet Water": (ndiyam gawri) used by Islamic and Fulanized groups for infants from one to eight months

- base of "true" or "pearl" millet (yadiiri) preferred for infants of two to three months
- otherwise, base of yellow sorghum (safara) preferred, or any other sorghum
- plus natron (manda)
- plus (if available) cow butter (laabol)

"Porridges": (nbusiiri) generally given from between four to eighteen months, with significant individual, household, and ethnic variation

FLOUR BASE of Sorghum or Rice (Islamic)	+	Peanuts or Cowpeas (only mountain)	+	Salt	+?	Sugar	+?	Milk (Islamic)

Cow's Milk (kosam hagge)

Fruits

Bouillon/Meat Broth (ndiyam kosel)

"Beignets": wheat or cowpea flour

"Adult" Food = paste (nyiiri) and sauce (haako): from eighteen to twenty-four months infant is introduced to same foods as adults

changes from only breast and porridge to additional foods (which is at latest preferred at ten to twelve months), the mother drops the forced feeding of water.

The very early introduction of water and the forcing of the feedings perhaps originates with tremendous concern over infant dehydration. The severe heat and prevalence of diarrheal diseases for infants support this hypothesis. Water is always viewed as supplement, not substitute, to breast feeding and is de-emphasized with the addition of porridge to the infant diet. With the addition of other foods, water is no longer an important element for maternal attention. Water is also an important temporary supplement for women with insufficient milk as they start to add porridges and cow's milk (if available) to the infant diet.

"Foods"

Porridges are the first supplement to breast and water for infants. Ages claimed for initiation of giving porridge ranged from four months to over two years. Although claims of late supplementation were most common for mountain women, most of these claims rose from confusion in questions and response between porridge (nbuɔiiri) and the adult staple (nyiiri). Nyiiri is not given to children until after they begin to walk, and between the ages of eighteen and twenty-four months. Nevertheless, many infants are still only given breast and water until ten (and even twelve) months. This late supplementation is much less common in Fulani women, as the preferred age for beginning porridge supplementation is four to six months.

Porridges are generally made from millet flour, ground peanuts, and sometimes a bit of sugar and/or salt. Rice and milk may also be used but are expensive and thus in limited use. The mountain women also use ground cowpeas (black-eyed peas) as a substitute for peanuts in their porridges. The mixture is cooked with water and served to the infant lukewarm. Unlike (millet) water, porridges are given to the infants with a calabash or metal spoon in small portions.

Porridges are given to the infants three to four times each day. The feeding schedule for millet water given above applies equally well to porridge given

three times each day. If porridge is given four times, the third feeding is earlier in the afternoon (at about three o'clock) and the fourth feeding later in the evening (times for the last feeding are variable). Increased feedings at an early age are associated with insufficiencies in mother's milk, as was the case for increasing feedings of millet water. Women continue giving infants porridges to two years of age.

Women emphasize that the porridges should not be too rich with cow's milk or sugar, as these are reputed to cause digestive problems for the children. The ideal porridge is of a thin consistency with plenty of grain flour and ground peanuts (or cowpeas) and a bit of salt.

Meat bouillons (ndiyam kosel), fruit juices, and fruits are added between ten and eighteen months. Beignets are also given to the children in the early mornings. (Beignets are a light, spherical bread made in the early morning from a small portion of risen batter deep-fried in vegetable oil. The batter is made from wheat flour, water, yeast, salt, and sometimes a little sugar.) Fruits are seasonally available (particularly in the dry season), though mangoes are often taboo for infants as they are reputed to cause stomach problems. Beignets and meat are expensive and availability depends on household and maternal resources.

The addition of "adult" foods usually begins after the infant walks, and somewhere between the ages of eight months and two years. The ages reported varied tremendously within groups and between individuals even within the same household. Normative statements about "traditional" (that is, former) and current practices were often combined and thus confused. Households with fewer resources did not have many special foods (like meat bouillon) for infants after porridges. As the mountain households generally had fewer resources in the plains, these infants moved directly from porridges and breast to "adult" foods.

The ubiquitous northern meal is composed of a thick, gelatinous paste (nyiiri) and an accompanying sauce (haako). The paste is made from sorghum flour cooked in boiling water to form a thick paste which is then served very hot. Basic ingredients of the sauce are water, a bit of salt, and dried or fresh

vegetables. According to available resources, (dried) cowpeas, Bambara groundnuts, ground peanuts, (dried) fish or (dried) meat may be added to the sauce. Vegetable oil may also be included. As fish, meat, and oil are market items, some families will only include these foods in their meals a couple of times each week. In mountain diets, cowpeas are important daily constituents in the sauce that are drawn from household stores.

Children to two years still receive great attention from their mothers, other women, or fellow children when eating paste and sauce. Small portions of paste are set aside to cool and then given to the infant. Many mothers reserve special items in the sauce (like bits of fish and meat) for the child. Older children were often observed giving the best portions of food to the smallest children in the group. Priority at meals is always given to the youngest child in the household. Girls and boys received the same foods, and no differences in food preferences or effects according to sex were raised by women.

The connection between the quality and composition of foods and infant health and nutrition are well recognized by women. The tremendous variation in patterns and ages for supplementation may be accounted for by maternal perceptions of the relationship between infant feeding and stages of development and the availability of resources for infant feeding. Both Fulani and other women emphasized the relation between special, better quality infant foods (like meat and eggs) and rapid growth and development.

The picture of later ages for infant supplementation derived from interview and survey for mountain women in the plains and in households with scarce resources suggests the hypothesis that these practices are based on paucity of resources rather than preference.

Initial interviews revealed problems of communication, or translation, in distinguishing local belief and practice. Enumerators glossed "food" as only referring to the paste (nyiiri) consumed as the major household staple. Women thus reported initiating other feeding at 18 to 24 months, especially when the women were using Fulani as their second language during interviews.

Ethnographers' observations and more detailed interviewing quickly corrected these communication problems.

Discrepancies between preference and practice still dominated survey, interview, and observation. Women often illustrated their recognition of connections between proper feeding and infant development with personal experience. For example, one woman with children of 18 and 30 months compared the relationships between their feeding and development and her personal circumstances. The elder child, a girl, had started eating meat, milk, and other foods between six and eight months as the mother had prematurely become pregnant. The girl started walking under one year and soon began talking. The changes in feeding were recommended by her mother and other elder women to permit early weaning and guard the health of the infant. According to the mother, these mountain women well recognized the connection between the girl's feeding and development. The subsequent child, a boy, relies heavily on nursing and does not yet walk at eighteen months. His mother has been separated for months from her spouse. She lives with her children and mother in a small, mountain compound of mud, wood, and straw constructions without any support from her husband or male kin. Meat, milk, fish, and other purchased foods are luxuries occasionally prepared with meals and divided among all members of the household. Given the lack of male labor for cultivating, even peanuts and cowpeas are lacking in the daily diet. The woman also suffers from health and probably nutritional problems but was often observed furnishing her portion of meat, fish, or cowpeas from the meal to the ravenous boy. The contrast between the boy and girl was stark and quickly identified in household conversation.

As the mountain populations in the plains have adapted to new and difficult ecological, social, and cultural conditions and often constitute the most disadvantaged group in these local populations, indigenous belief and practice in infant care has suffered a degeneration. In order to test this hypothesis, comparisons should be made with persisting systems of child care in mountain regions.

The quality and composition of infant diet permits the hypothesis that seasonal variations in food availability are not critical in affecting the

nutritional status of children under the age of two years. Special attention is devoted to infant diet, and special foods like porridges and meat bouillons are provided. The basic constituents of these foods are fresh and dried ingredients readily available to households with adequate resources. However, the periodic scarcity of fresh fruits and vegetables may have some effect on sources of vitamins and minerals. Poor diets of lactating mothers have important indirect effects on their nursing infants. The implications of seasonal variation in food availability are reserved for pregnant and lactating women and for older children at the critical ages between two and five years.

Weaning

Infants are weaned between the ages of eighteen months and three years. Fulani women prefer to start weaning at about eighteen months, while mountain and plains women will wait until three, four, and even five years before weaning if no other pregnancies intervene.

Infants are weaned at much earlier ages in the cases of earlier pregnancies. In theory, women refrain from sexual contacts during the year following childbirth to avoid early pregnancies, but in fact women often become sexually active only a few months after giving birth. Women stop breastfeeding the last child when four to five months pregnant (which corresponds to the period when the pregnancy becomes common knowledge).

The reproductive histories of the women in the ethnographic study sample indicated that they usually had infants every two to three years. Infants were thus at least eighteen months old at weaning.

The normal technique when weaning a child around the mother is to rub the breasts with a bitter substance made from a quinine drug (like "nivaquine") or a plant extract (from bitter roots or leaves). The infant quickly learns to reject the unpleasant taste of the breast.

Younger infants weaned earlier because of a premature pregnancy may be treated in a more abrupt fashion. To avoid the stress for the mother of infant crying and tantrums from the early weaning, and of infant jealousy of the forthcoming

sibling, the last-born infant may be placed with a foster mother. Another woman--kin or friend--assumes responsibility for infant feeding and care. The infant is, of course, weaned and an effort is made to supply foods (like milk and meat) that are nourishing and substitute for the loss of the breast. The infant often does not return to stay with the mother until well into the development of the next born and occasionally stays with the foster mother permanently. This form of fostering is common in all of the groups.

Infant Care

Primary, and often complete, responsibility for infant care and health until at least two years rests with the mother. Changes in family economic and social conditions, however, have important effects on traditional, ideal patterns of infant care.

Tremendous attachment between infant and mother is fundamental to local practices. Small infants are constantly at their mothers' sides, in her arms and lap, tied to her back for travel, or at her side in bed, in the course of each day. The children are never distant during maternal work, play, or rest. Infants are breast fed on demand, and the smallest complaint or cry is succored with maternal attention and care. Great effort is made to keep the infant satisfied and healthy.

Even strenuous women's work seldom finds mother and infant distant. While fetching water or tilling fields, a small child often remains on the mother's back or is laid on a cloth to play and sleep within maternal sight. An older girl or an elderly woman remain close to the infant to alert the mother to any changes in disposition.

As the infant reaches one year and begins to walk, the mother entrusts child care for brief periods to her own mother, other elder women in the compound, elder female siblings of the infant, friends, and neighbors. The mother still remains absent for at most a few hours and soon returns for infant feeding and care.

Weaning often signals abrupt separation of mother and infant. The child is instead supervised by elder siblings or peers, and contact with the mother is

prevented to complete weaning. Rubbing bitter substances on the mother's nipples is one common means of discouraging continued feeding without an absolute break between mother and infant. However, with a new or premature pregnancy the infant may be entrusted to a woman in another compound--close or distant--to assure maternal tranquility for pregnancy, delivery, and future breast feeding.

Infant hygiene, feeding, and health thus remain in maternal hands through weaning. Other women and local specialists furnish advice and example to new mothers, and on special topics or during infant crises (such as diseases and abnormal development) to experienced mothers. A new mother receives careful instruction for the first one to two weeks after delivery, but quickly assumes most responsibilities for her first infant. Feeding, washing, health care, and other tasks remain primarily maternal concerns through weaning.

Paternal assistance sometimes briefly extends to actual infant care but normally stays limited to the provision of goods and financial support. Clothing, medicines, and other purchases are ideally covered by the father for infants born in or out of wedlock. However, in paternal support as in other domains, important social and economic transformations often alter actual observance of traditional norms.

Premature pregnancy (from the indigenous perspective), changes in household composition through labor migration, separation, divorce or remarriage, and emphasis on activities for generating female income cause dramatic changes in patterns of infant care. A new pregnancy is not desired until the latest infant is at least nine months, and preferably over twelve months, of age. However, an earlier pregnancy usually occasions the assumption of infant care by another woman and radical--sometimes in effect permanent--separation of mother and child. Increasing lack of paternal or male kin support of infants, given labor migration, dispersions of kin groups, the breakdown of kin obligations with attendant sanctions, separations, divorces and remarriages, puts great pressure on women to furnish income for infant needs. The general lack of important revenues from women's cottage industries and local commerce makes the problem more acute. Heavy labor in others' fields for wage or kind and attention to some industries like millet beer brewing and sale also oblige

entrusting infants to other women more frequently and at earlier ages. Other means of generating income through wages from industrial or office work are still unavailable to rural local women.

"Practices"

Infant hygienic and health practices vary significantly between groups and by socio-economic status. Islamic prescriptions concerning cleanliness affect infant cleaning, care for clothing, and attention to appearance. Socio-economic conditions of both Islamic and non-Islamic groups and local seasonal availability of water also affect infant care practices.

The Islamic groups emphasize frequent complete and partial cleansings of infants. Washing, rather than simply wiping, after both urination and defecation are almost universal. Soap is employed in daily body washings in lukewarm, heated water. Until the infant controls bodily functions well, clothing is usually limited to shirts, skirts, and caps to ease the daily toilet and cleanings. Diapers are rare, expensive to purchase and maintain (due to frequent washings with soap). Heavier clothing is used in the "cool" season between December and February or on chilly evenings. Mucus, dust, and other debris is cleaned off the infant's face often throughout the day.

Clothing becomes more complex as the infant grows older. The state and variety of clothing varies with socio-economic condition and individual household or maternal priorities. All infants and children are expected to receive a complete set of new clothing at the end of the most important annual religious observance--Ramadan. Families strive to maintain this tradition, so even poor males will devote many resources to following this custom. The infant's father is also expected to furnish a set of clothes, blankets, and other necessities at delivery.

Other groups emphasize clothing and cleaning less, though Christianity and Muslim community leaders in both mountain and plain have effected an increase in infant dress. Infants are less often bathed in non-Islamic groups and often simply wiped off after excretion. Children already walking may remain quite dirty in soiled clothing for days in areas with abundant sources of

water. These children are also crawling and playing in poorly cleaned compounds and surrounding bush.

Poor Islamic households in rural areas remote from easy access to water reveal conditions similar to the arduous environmental constraints that fostered practices of the mountain peoples. Small children of pastoral, Fulani families generally remain unclothed for the first few years. They are less frequently washed, with food, mucus, and debris on face and hands attracting the multitudes of flies accompanying animals quartered in adjacent corrals.

Individual interest and energy do, however, count to much in examining different infants and households. Women in some households with limited resources were found to have immaculate compounds, clean and apparently healthy children, and very successful reproductive histories. An occasional Christian household was notably clean, but generally Islamic households better exemplified potentials for propriety with few resources and great enterprise. Interest cannot, of course, replace the income needed for basic expenditures on items like soap, cloth, and medicines.

Infant Health

The information gathered on annual incidence of infant disease from Dogba indicated that endemic diseases and diarrhea figure as more prominent problems than epidemic diseases. Meningitis afflicts infants from January through March, and epidemic diseases like measles and cholera have occasional victims.

Programs of vaccination are unevenly distributed regionally and temporally. In Dogba, women participating in the local Maternal-Child Health Program at the dispensary receive regular vaccinations for their infants. Given the lack of medication and health extension services, infants in the villages surrounding Gawar seldom receive vaccinations or any other medical attention.

Diarrheal diseases and parasites appear to be very common complaints at the dispensary. Indigenous treatments for mild to severe diarrheas include teas from papaya leaves, teas with lemon grass (citronelle) and sugar or salt, and a variety of other plant-derived medicines.

The quality of water sources and lack of treatment invite continual reinfection with gastro-intestinal diseases and parasites. Periodic treatment of major disorders is thus only a palliative measure not addressing basic structural problems currently surrounding water consumption in the region.

Colds, fevers, and respiratory ailments also often afflict infants in the "cool" and rainy season. Malarial fevers cause particularly acute problems for small infants, and treatment is brief and anti-symptomatic with the periodic occurrences of the fevers. Local systems of trade and marketing insure thorough distribution of anti-malarial medicines, but purchases for regular anti-symptomatic treatment are not part of household budgeting.

The effects of many diseases are compounded by the combinations of endemic infections and nutritional status. An infant weakened by diarrhea and a cold in the "cool" season succombs to malarial fever and eventually catches meningitis. This close relationship between poor nutrition and chronic disease is common in the region.

Infant Development

Indigenous perceptions and accompanying conceptions of stages of infant development are the determinant of changes in infant feeding and care rather than reference to the calendar age of an infant. Women are becoming more conscious of infant age through giving birth at medical facilities, attending maternal and child health care (P.M.I.) programs of instruction and infant weighing, and learning to employ the Islamic and European calendars. Birth dates recorded on infant health records kept by the mothers often indicated infant ages that varied by two or three months from the infant ages offered during interviews by the mothers. The rate and stage of infant development are attached more importance than calendar age.

Infant development is followed very closely until the child becomes "large," that is until he starts walking and eating "adult" food. Development is thus carefully monitored until at least two years of age. Women were aware of the effects of nutrition and health on the evolution of different stages including the focusing of eyes, sitting, crawling, walking, and exhibiting curiosity in

exploring the immediate environment. Improved foods imply earlier development.

Teething was associated with mild fevers and diarrhea. The discomfort and crying of the infants is treated by teas and medicines to facilitate sleep.

Girls were considered generally more precocious in their development than boys. Girls were expected to walk and talk a month earlier than boys. Very early or late development was considered to reveal negative personality characteristics in children. For instance, early talking was considered to indicate too strong a will, and late talking a stubborn nature.

Psychological Factors in Infant Development

Dramatic changes in sibling relations and household composition have critical effects on infant psychology and personality development. Affective relations between mother and infant change radically as the child grows older and with the next pregnancy. The prevalence of separation, divorce and remarriage, the practices of infant fostering, the quality of relations between co-wives and other women in multi-generational, polygynous households, and the consequences of male alcoholism affect infants from birth.

A "premature" pregnancy may mean the temporary or long-term fostering of the last-born infant with another woman. Changes in affective relations are also abrupt for older infants who wean at the "normal" age and remain in the household. Children are denied the breast with new pregnancies or sometimes after eighteen months of age, but other physical and emotional ties to the mother are broken. Elder sisters and other women start taking increasing care of the child. The infant is no longer in continual physical contact with the mother, being accustomed to attention and contact at the mother's side throughout the day during work, rest, and sleep. The child no longer accompanies the mother everywhere on her back. The infant is suddenly expected to interact more with fellow children, stop crying or complaining and depending on maternal attention, and act more independently. Maternal attention is devoted to the new pregnacy and eventually the new infant.

Intense jealousy and competition for affection thus temper relations between adjacent siblings. The elder child recognizes that the following infant is appropriating the affection and resources formerly reserved by mother and household for his or her benefit. Anger at the infant, mother, and other members of the household was often observed expressed through tantrums, melancholy, crying, withdrawal, and even physical violence. No effort is made to cushion the emotional shock of such an abrupt change for the infant.

Separations and divorce affect maternal resources and availability. Lack of maternal care and fostering as women marry new spouses and move into new households are problems more acute for infants after two years of age, as maternal priorities still reside with their small children. Nevertheless, women without male support have meager resources and may quickly move into other relationships. In addition, the infants in their care are considered members of the former spouse's kin group that will eventually leave the mother's family. The common lack of infant financial or resource support after separation does not encourage the woman to devote her time and resources to caring for an infant who will soon disappear into the man's family. Women may now place the infant in the care of a woman in the man's family after separation soon after weaning.

Co-wife competition for household resources can also lead to neglect of the child. Resources otherwise devoted to the infant are spent on special foods or other items to draw attention and favor from the shared spouse to the mother. Meat and fish may thus remain in the man's, rather than the infant's, meal.

Fostering is most common for children after the age of two years. Abrupt separation from premature pregnancy, maternal travel and absence during separations and divorce, and transfer of infants to paternal female kin in cases of separation and maternal long-term travel or remarriage, nevertheless affect smaller children. The psychological state of the infant often suffers, as well as infant care.

The psychological implications of changes in household relations and membership have direct effects on infant nutrition and apparent health.

Children may refuse foods and cling to breast or porridge feeding as a response to transformations in affective relations to family and mother. For instance, the infant of one mother with seemingly plentiful resources was chronically ill and quite malnourished. Her husband worked as a laborer at the local Adventist Mission in Dogba. At seventeen months, the infant refused foods other than the breast and a bit of porridge and seemed always sick. The mother tried a succession of foods and medical treatments at the Dogba dispensary and a regional hospital. The child remained small, skeletal, and red-haired. Only cowpeas picked out of a sauce were otherwise consumed by the child. Further investigation suggested that the household was under tremendous tension from conflicts between family members and a lack of adequate common resources. The mother was older and the infant probably her last. The child responded to the surrounding threats and insecurities by maintaining close relations to his mother through ill health and continued breast feeding. The advice and treatments of local healers and medical personnel had no effect on these fundamentally social and psychological problems. Social tensions and child rearing practices can thus contribute to poor infant health and nutrition.

"Modernization" and "Fulanization": The Effects of Health Care Programs and Other Influences

Maternal and Child Health programs ("Prevention Maternelle et Infantile" or "P.M.I.") enjoy an immense popularity in the localities conducting such programs in northern Cameroon. In Dogba, the monthly meetings followed by women from pregnancy through early infant care are well attended by all groups in the community. The meetings are conducted in Fulani (as the local common language) by the para-medical personnel at the mission dispensary. The mission dispensary in Mokong also conducts an important health education program for pre-natal and infant care.

Although the national health administration includes P.M.I. services on a regional level, these centers are weakly staffed with little resources. The programs operate out of the hospitals in major cities and towns with little impact on rural areas. Rural education and extension work ("Animation Rurale") includes P.M.I. elements for meetings with women, but these programs rely on the interests and initiatives of individual offices and extension

workers. In addition, few resources are allocated to this aspect of the extension programs. Missions and private organizations (like CARE in the Mokolo region) carry on most truly rural work, but their distribution, personnel, and resources are severely limited.

Interviews and observation suggested that some effects of the programs were pervasive in the Dogba community, though the nurse directing the dispensary complained of Fulani resistance to changes in infant nutritional and health care practices. Many women in "conservative" Fulani and Muslim households (like the wives of the relgious heads of the community) attend P.M.I. sessions and give birth at the local dispensary or at one of the hospitals in the region. They also follow some health education counseling on the composition of infant porridges, earlier ages for the initiation of certain kinds of supplementation, and disease treatments. Indeed, Fulani conceptions of proper infant feeding, care, and hygiene more closely match this medical advice than mountain and plain beliefs and practices.

The continuing process of "Fulanization" of regional populations also affects infant care and feeding. "Millet water" has become an integral part of supplementation for many non-Islamic peoples living in the plains. Islamic names and dress are sported by animist and often Christian infants. Women from non-Islamic households consult Fulani midwives for advice on infant delivery, feeding, disease, and development. They also rely on their services for childbirth and treatment of illnesses. Transformations in infant care thus include the adoption of aspects of "Fulani" belief and practice. The widest gulf between Islamic and non-Islamic populations remains in notions of propriety and hygiene.

Women are eager to improve infant growth and health using new methods. Rural medical and health personnel encountered during fieldwork commented on the eager adoption of new hygienic and nutritional practices on an individual and sometimes a community basis. Relying on the informed cooperation of local authorities for initial support and continued monitoring facilitated these transformations. For instance, the network of traditional midwives and healers could be incorporated into rural health extension programs in Dogba. Local authorities currently regard other health specialists as competitors and

offer alternative advice and other forms of treatment. They denigrate the value of "European" medicine for local children. Women can be torn between the values of respecting traditional authorities and the attractions of new practices and treatments.

Medicines and immunizations are unevenly distributed. Populations near private dispensaries and state hospitals have ready access to periodic immunization. More isolated rural areas (like those around Gawar) seldom have exposure or access to immunization. Parents are eager to get their children immunized. Only a few medicines, for instance some of the anti-malarial drugs, are generally available to rural populations through retail merchanting. Pharmaceutical prescription and distribution remains at best rudimentary in most of the region.

The impact of marketed, manufactured foods is steadily increasing. Refined wheat flour in beignets for breakfast and refined sugar in porridges and other foods are common in rural areas. Prices for these foods are still prohibitive for the poorest and most isolated sectors of rural society, but many families with even small cash incomes have begun to incorporate these foods into their diets. Canned milk and formulas are too expensive and thus inaccessible to most mothers. Bottle feeding is therefore a luxury of a few urban and wealthy women.

Bottle feeding can on occasion complement infant malnutrition in families of higher socio-economic status. Women with "bad" milk may partially or completely replace breast feeding with cow's milk or formula given in the bottle. However, the breast still remains the predominant form of small infant feeding for even these women. The mix of breast and bottle has in some cases corresponded to evident infant malnutrition and chronic diarrheal and parasitic disease.

V. CONCLUSIONS AND RECOMMENDATIONS

The Bases of Infant Malnutrition

"Environment and Agriculture"

The arduous regional environment conditions the range of human activity and food availability. Regional and local variation in annual agricultural

production depend on frequent, radical fluctuations in seasonal cycles and precipitation. The combination of wet and dry season staples agriculture better distributes risks to total annual production and seasonal shortages, but the long dry season reduces the availability of many foods. Irrigated agriculture has only developed for a limited number of specialty crops.

The poverty of local diet from seasonal or periodic scarcities most severely affects children and pregnant or lactating women. An absolute lack of all foods is rare, but the variety of foods needed for a balance of proteins, minerals, fats, and vitamins is not readily available with shortages. The period of peak agricultural activity for poorer and non-Islamic women also corresponds to the time of peak food shortages and a combination of heat and humidity most demanding for hard physical labor.

Water quality also fluctuates with the seasons. Scarcity with the low water table at the end of the rainy season is succeeded by plenty with mixed blessings. Rain-water inundating soil and river bed is heavily silted and filled with the offal of the previous season. As the wells still contain little water due to the low water table, the communities rely on this white, opaque liquid. Personnel at the Dogba dispensary have noted the correspondance of increased incidence of dysenteries and diarrheal diseases to reliance on this water at the beginning of the rainy season.

"Economy and Society"

The stratification of northern Cameroonian society has important implications for the distribution of local and regional resources. Although most of the male population in the surveys identified themselves as "agriculturalists," the superficial similarity in major occupation masks profound differences in opportunity and access to resources. The dominant group of Islamic agriculturalists, nobles, merchants, and others regulates local resources--such as land and agricultural technology--and receives the major share of local production and cash income. Agriculturalists with more limited access to land and labor, and especially the mountain immigrants to the plain, must accomodate to these conditions by rent for cash or kind and provision of agricultural labor to others for cash and kind. The introduction of civil servants, mission employees, and representatives of the national cotton

company has not affected the basic structure of local society. Indeed, the institutionalization of traditional authorities in the national administration, and elite profit from cash-cropping and new farming technology, have perhaps increased Islamic power and authority.

Household and maternal food availability is thus limited by position in the local system of distribution. Regional marketing and storage are controlled by merchants. The local, Fulani aristocracy regulates cash-crop production, land rights, and taxation. The cotton company employs local authority, the national agricultural service and its own extension agents to regulate the quality and quantity of local production. Cash income from cotton production does not replace food production for most agriculturalists through money or kind, but rather positively affects some wealthier local farmers, the state, and, of course, the company. Elite control of agricultural resources and the marketing of basic items like dried fish, salt and stocked sorghum, peanuts, and cowpeas insures the continuing dependence of the other agriculturalists. These agriculturalists have less access to otherwise available foods and therefore less potential for a healthy diet.

The breakdown of traditional systems of support through blood and marriage has further affected conditions prevailing in disadvantaged households. Cooperation and redistribution during periods of peak activity and hardship are becoming increasingly rare. Family members have started to demand immediate cash or kind remuneration for services rendered to one another. Outside labor is sometimes preferred to avoid intra-familial quarrels over conditions and costs for labor, rent, or loan.

Young males respond to modern conditions by seeking wage labor with wealthier community members, in regional centers or in adjacent coutries. These men are absent for long periods and far distances. Any cash income thus generated may not compensate the loss of a principal laborer at key points in the annual agricultural cycle. Educated young men seldom return to the more limited opportunities of the countryside.

Many rural women are confronted with combined effects of an inferior socio-economic status, an eroding base of kin support, evanescent marriages (and

paternal support for their children), and derisory potential sources of goods or income. The prevalence of separation, divorce, and remarriage has combined with decreasing male support to compromise resources available for infant care and feeding. Women have few options to compensate for the loss of income from spouse or kin.

"Culture"

The system of beliefs and preferred practices for maternal and infant nutrition and care are, in general, sound in the region. Most women, and certainly all women identified as indigenous counselors to other community women, emphasized: 1) a continuing reliance on breast feeding as best for infant health and growth, 2) the (gradual) introduction of special foods for supplementation (such as porridges and milk) between four and eight months, 3) the addition of other special foods into infant diet with infant growth, 4) the introduction of "adult" foods between eighteen and twenty-four months, 5) the connection between infant development and proper feeding. Women also recognized the effect of individual and household conditions on infant nutrition, health, and happiness.

Some important differences between groups and individuals also affected infant care. Maternal feeding practices in Islamic and some non-Islamic households may cause infant respiratory infection with the forced daily dosing of "millet water." Notions of personal and household hygiene held in non-Islamic families certainly affect infant water and food quality, as well as bodily hygiene. Individual variations in practice regardless of socio-economic position or group membership often emerged as just as significant as other factors.

Women are eager to learn and try new methods of infant care. Local "Maternal-Child Health" care programs are popular and well attended for both infant vaccinations and information. Other rural health programs have also met with success on community-wide bases. For instance, the health agent for the CARE wells program in the Mandara Mountains extends his work into rural community and primary school programs. One community included in the survey--Gawar Vindé--participated in the CARE program and indicated signal success. In contrast to other primarily mountain communities, compounds and

water sources were immaculate. The program relies on informed, long-term participation of the extension worker with village authorities and members of the community.

Implications for Further Study

"The Socio-Economic Survey"

The initial ethnographic study has provided a socio-economic survey instrument for the general, interdisciplinary study in the second phase. The ethnographic base has also informed the direction of the nutritional and epidemiological components of the general study. Recognizing the relations between these components is essential to assuring an eventual implementation of research findings and recommendations in the region.

The ethnography has isolated several hypotheses that should be tested with the socio-economic survey and nutritional and epidemiological studies. There is:

1. A high correlation between maternal socio-economic status, the ages for and quality of infant supplementation, and infant (mal)nutrition.

2. No direct correlation between infant nutritional status and seasonal variations in food availability to the age of two years. The relation of maternal nutritional status to seasonal food variations should be examined for breast feeding mothers.

3. An important correlation between infant nutritional status and maternal marital status. Infant nutritional status and health should be inferior when the mother is separated or divorced and not yet remarried. Infants in households with no other kin relationship to the mother's spouse should have lower nutritional status than infants in own father's household.

4. Significant individual variation in infant status in spite of maternal socio-economic status and group memberships. Although these differences will relate to factors like individual variation and current infant health, these cases will stand as exceptional to general correlations.

5. Direct correlation of infant health and nutritional status to household hygiene and water sources. Infant endemic and diarrheal diseases will correspond to non-hygienic conditions. Household ethnic and religious membership correspond directly to these conditions.

6. A high correlation between participation and exposure to P.M.I. and other health programs and good infant nutritional status.

"Further Qualitative Study"

Examination of some other areas illuminated by the initial study require commitment to long-term ethnographic research rather than survey work. Aspects of belief, infant psychology and development, and social change demand continuing inquiry during and between survey periods for the general study. These studies should further explore:

1. Practices and beliefs associated with the administration of "millet" or "heated" water to infants. Indigenous notions of infant dehydration and rehydration should be described. The relationships between this practice, belief about infant hydration, and indigenous treatment of diarrheal disorders could provide important insights for regional health education.

2. Differences in mountain and "Fulani" beliefs about infant care and feeding. Effort should be made to study a more traditional mountain community around Mokong to compare the continuum between mountain and plain beliefs better, and to compare differences between mountain peoples belief in mountain and plain.

3. Indigenous practices and beliefs about the effects of weaning on infants. Special attention should be focused on the effects of early weaning of infants with "premature" pregnancies.

4. Notions of infant development and psychological states. A sensitive appreciation of these complex and nuanced ideas requires thorough familiarity with language and culture over the fifteen month general study. An exhaustive description of systemic relations between

conceptions of infant feeding, care, development, and psychology is necessary.

5. Case studies of older women and young mothers to put into context social and cultural changes in at least the three major ethnic groups, and their relations to transformations in preferred and actual infant care.

Other research areas will emerge in the course of the study. The combination of these qualitative and quantitative methodologies permits more rapid and easy adaptation of research results to proposed programs. Proper ethnography should identify the causes of infant malnutrition but also suggest methods for affecting problems in infant care and feeding.

Some Tentative Implications for Implementing Changes

"Environment and Agriculture"

The contemporary focus of the Cameroon U.S.A.I.D. Mission on improving agricultural production directly addresses the problems raised by the constraints of regional environmental conditions. Higher and more consistent yields of a wider variety of crops over a longer agricultural calendar should limit the effects of local or annual disaster. Experimentation with and dissemination of improved varieties of staples including sorghum, corn, cowpeas, millet, peanuts, and Bambara groundnuts are furnished with American technical expertise in the national research institutes, in conjunction with the Ministry of Agriculture and the national cotton company.

Efforts should be especially concentrated on agricultural improvements that benefit agriculturalists with limited land, labor, and technology. Major agricultural projects and industrial plant varieties may improve global production of a particular crop or for a particular purpose (usually for marketing) but ignore the persisting reliance of most of the rural population on agricultural techniques based on very limited resources. The disenfranchisement of most of the agriculturalist community serves neither region nor nation, as the consequent movement to the cities swells the populations of unemployed (given limited opportunities in industry), and the ultimate consequence must be the decline of food production (and ensuing dependence on imports) characteristic of the rest of the continent. The

favorable balance of Cameroonian agriculture can only be maintained with the strenuous development of all sectors of the rural populations.

Current emphasis on improved yields is best applied to solving problems for all sectors of the agriculturalist population. In addition to work on wider staple variety and greater yields, efforts could be devoted to small-scale irrigation and river-side gardens development. Improvements in dry season agriculture would affect seasonal availability and quality of foods.

"Economy and Society"

Differential access to and distribution of resources certainly have critical implications for maternal and infant nutritional and health status. Transformations in kin relations, household organization, and female status also have key effects on infants and mothers. However, developing social programs aimed at altering prevailing socio-political organizations or furnishing some version of social welfare to the disadvantaged is unrealistic for the Cameroonian context. National resources are devoted to improving production, expanding infrastructure, and providing basic forms of human services (such as education and health). The country is committed to policies that are designed to broaden future opportunities for the public, rather than devoting scarce resources to redressing persisting inequalities. Expanding human services in health, education, agriculture, and other domains put local and regional development in broader perspective historically and nationally. The regulation of the national cereals board and direct food aid currently respond to periodic or chronic crises in staple production, marketing, and distribution.

"Culture" (and Education)

Immediate improvements in maternal and infant nutrition and health can be made through rural health extension and education programs. Resources should be devoted to improving and coordinating existing services. Hygienic water supplies, infant vaccination, and education in basic hygiene, infant rehydration, and proper care and feeding would radically improve current conditions. Education programs would also attack problems of individual variation in practice that negatively affect infants in even wealthy and educated families.

A wealth of experience and networks of potential services already exist in much of the region under study. National programs for maternal-child care in rural development and health agencies function with few resources and staff. Rural populations are thus seldom and inadequately served by these programs. Programs funded by church and international organizations suffer from limited resources and a lack of coordination. The available resources are unequally scattered throughout the region. A much improved program adapted to rural needs and resources really requires minimal capital investments, even for programs of open-bore well construction maximizing local participation. The rural health extension program must, however, include an adequate number of properly supported personnel to deliver consistent education and simple services to an entire region. Such a program will require decisions on national policy, priority allocation of resources to infant care, and overall national and regional planning and coordination.

APPENDIX 1

Available Foods

Millet/Sorghum: true millet
red, white or yellow sorghums
Rice
Maize
Cassava

Fish: fresh, dried and smoked
Meat: fresh and dried grilled meats for immediate consumption at markets
beef, mutton, goat
Chicken

Cow Milk
Butter
Eggs: chicken and guinea hen

Onions
Garlic
Tomatoes: fresh and dried
Hibiscus leaves: fresh and dried
Okra (or Gumbo): leaves and fruit, fresh and dried
Bitter Tomatoes: fresh or dried
Other Local Leaves (such as 'gubudu'): fresh or dried

Peanuts/Groundnuts: raw, roasted (with or without salt), ground, paste
Bambara Groundnuts: raw, boiled, paste
Sesame: raq roasted, as a sweet with sugar, paste
Cowpeas: dried

Beverages: 'Alme'
Millet Waters
Millet Beer
'Argi'
European Beer

Guava
Mangoes
Bananas
Lemons
Oranges
Local Fruits

Oils: peanut, manufactured (cotton, etc)

Beignets: cowpea and wheat flour
Bread

Sugar
Honey
Coffee
Tea
Tinned Milk
Candies
Biscuits
Tomato Paste
Canned Fish (sardines, etc)
Wheat Flour

Salts: Manufactured
Natron (hydrous sodium carbonate)
Potassium

Insects: crickets
grasshoppers
termites

Kola-Nuts

Tobacco: local
manufacture

APPENDIX 2

Women's Activities

I. Non-Remunerative

Housecleaning
Cooking
Pounding Sorghum
Infant Care
Fetching Water
Fetching Wood
Washing Clothes
Cultivating: Planting
Weeding
Harvesting
House Gardening
Marketing

II. Remunerative

Weaving
Pottery-Making
Basketry
Calabash Decoration
Food Preparation and/or Processing
Beer Making
Distilling Alcohol
Laboring in the Fields of Others

Other

(Request amount of income generated in last week. If none, how much expected from such activity.)

APPENDIX 3

TOTAL # FOR HOUSEHOLDS (130) IN NATURAL SAMPLE

I. INFANT AGES (BY MONTH) M/F → 64/68 = 132

0	1	2	3	4	5	6	7	8	9	10	11	12
3 / 2	1 / 2	4 / 2	3 / 4	2 /	5 / 2	/ 4	3 / 3	3 / 2	9 / 4	1 / 5	/ 3	5 / 9

13	14	15	16	17	18	19	20	21	22	23	24	?
2 / 3	2 / 4	3 / 1	2 / 6	3 / 2	3 / 3	1 / 1	1 / 1	2 /	1 / 2	3 / 1	2 / 2	/

II. PREGNANCIES (BY MONTH)

1	2	3	4	5	6	7	8	9
	2	2	4		7	8	6	2

= 31

III. ETHNICITY

107

a) MEN = 133

FULBE	34
GUIZIGA	20
MAMA	1
MOUFOU	42
MOULGOUR	2
MUSUGO	5
MOUTOUROUA	1
MOUYANG	1
NZANA	1
NGUKUSADA	1
ZOULGO	1
KOLA	1
SIRATA	3
WAZAN	1
HAMA	1
MANDARA	1
GAMBAGA	4
GAMBAR NOSSERE	1
KABSIKI	1
GONA	1
ZIDIME	2
LOULOU	1
MEADAN	1
DIME	1
MAFA	2
BAO	2
DJOUNOUR	1

b) WOMEN = 158

FOULBE	39	GANA	1
FOUTAN	1	GOUDOUL	1
GUIZIGA	35	ZIDIM	1
MAGUIRMAN	1	GOUDOUL	1
MOKIO	1	BOSSOM	2
MOUBAREI	1	MAFA	2
MOUFOU	= 44	FALI	1
MOULGOUR	3	BAO	2
MOUTOUROUA	1	TCHOUNOUK	2
NGUERSADA	1	MUNA	1
TUBERE	1		
ZOULGO	1		
WAZAN	1		
DJONDJON	1		
DOUANGREA	1		
MAGAM	1		
DIMLO	4		
BOZO	2		
MIZIGAD	1		
GMOS	2		
GAMBAGA	2		

IV. MARIAGES 108

a) SAME ETHNIC GROUP 109 (82 minus Hokong Houfou)

FOULBE	31
GUIZIGA	29
HOUFOU	36
HOULGOUR	1
HOUTOUMBA	1
ZOULGO	1
MABAI	1
GABARA	2
G. MOS.	1
ZIDIH	1
DIMEO	1
MAFA	2
BAO	2

b) DIFF ETHNIC GROUPS (M→F) 95 (43 minus Hokong)

HOKO - FOUTAK 1
HOKO - GUIZIGA 1
HOKO - MOUFOUDA 1

HOULGOUR - GUIZIGA 1

HOULKO - GUIZIGA 2
HOULKO - HOULGOUR 2
HOULKO - TCHERE 1

DJONDOUK - MOA 1

MADA - ZOULGO 1

MOA - WAZAN 1

MANDARA - FOULBE 1

GABARA - MIZIGAD 1
GABARA - BOSSOM 1
GABARA - DAWAR MOSSGRE 1

GOUA - BOZO 1

MEZAN - GOUDOUL 1

HOUFOU - TCHOUNOUK 1
HOUFOU - BOUDOUM 1
HOUFOU - DIMEO 1
HOUFOU - MAKUIRMAN 1
HOUFOU - WBANA 1
HOUFOU - GUIZIGA 1
HOUFOU - DOUWAGER 1

GUIZIGA - HOKO 1
GUIZIGA - FOULBE 3
GUIZIGA - HOUFOU 2

HOULKAN'S - HOUBARE 1

WAZAN - HOUFOU 1

SIRATA - GUIZIGA 1
SIRATA - FOULBE 1

MANDARA - FOULBE 1

FOULBE - TCHOUNOUK 1
FULBE - DJONDON 1
FULBE - DIMEO 1
FULBE - BOZO 1
FULBE - BOUDOUM 1
FULBE - FAI 1

KAPSIKI - BANA 1

ZIDIME - DIMEO 1

WULOU - HOUFOU

RELIGION 109

ANIMIST = 66

CHRISTIAN = 21

MUSLIM 71

OCCUPATIONS: HEADS OF HOUSEHOLD = 133

CULTIVATEUR	92
AUBE COMMERCANT	1
BERGER	8
BOUCHER	3
CHARPANTIER	1
COMMERCANT	9
CUISINIER	2
INFIRMIER VETERINAIRE	1
MACON	1
MAIN D'OEUVRE	3
?	1
CAMERAMISTE	1
CHAUFFEUR	3
CHEF DE CANTON	2
GARDE	1
GARDIEN	1
MONITEUR SOUDEUR	1
NOTABLES DU CHEF	2

APPENDIX 4

SAMPLE OF THIRTY (30) HOUSEHOLDS CHOSEN FOR INTENSIVE STUDY : DOGUBA

I. INFANT AGES (MONTHS): M/F → 19/12 → TOTAL = 31

0	1	2	3	4	5	6	7	8	9	10	11	12
		1		1				2 / 1	3 / 1	1		1 / 2

13	14	15	16	17	18	19	20	21	22	23	24	
1	1		1	1	2			1	1 / 2	3 / 1	2 / 2	

II. PREGNANCIES (BY NUMBER OF MONTHS):

1	2	3	4	5	6	7	8	9
	1		2		1			2

TOTAL = 6

III. "ETHNICITY"

a) MEN: 27

FOULBÉ	7	HOUFOU	4	HOUTOUROUA	1	NGUIEBADA	1
GUIZIGA	3	HOULGOUR	2	HOUYANG	1	ZOULGO	1
HADA	1	HOULKO	5	NABANA	1		

b) WOMEN: 31

FOULBÉ	9	HAGUIRMAN	1	HOUFOU	4	NGUIEBADA	1
FOUTAK	1	HOKIO	1	HOULGOUR	3	TCHERE	1
GUIZIGA	7	HOUBAREI	1	HOUTOUROUA	1	ZOULGO	1

IV. MARRIAGES

a) NON-"MIXED" TOTAL = 16

FOULBÉ	5	HOUFOU	3	HOUTOUROUA	1
POLYGAMOUS FOULBÉ (2W)	2	HOULGOUR	1	ZOULGO	1
GUIZIGA	3				

b) "MIXED" (~~FEMALE~~ M) TOTAL = 14

FOUTAK - HOKIO	1	HAGUIRMAN - HOUFOU	1	HOULGOUR - HOULKO	2
GUIZIGA - HOKIO	1	HOKIO - GUIZIGA	1	NGUIEBADA - HOKIO	1
GUIZIGA - HOULGOUR	1	HOUBAREI - HOUYANG	1	TCHERE - HOULKO	1
GUIZIGA - HOULKO	2	HOUFOU - NABANA	1	ZOULGO - HADA	1

III

I. OCCUPATIONS OF HEADS OF HOUSEHOLDS:

AIDE COMMERÇANT	1	CULTIVATEUR	18
BERGER	1	INFIRMIER VETERINAIRE	1
BOUCHER	1	MACON	1
CHARPENTIER	1	MAIN D'OEUVRE	2
COMMERÇANT	2	?	1
CUISINIER	1		

II. RELIGION

CHRESTIANISM 5

ANIMIST 𝍸 𝍸 𝍸 𝍸 15 15

MUSLIM 𝍸 𝍸 11 11 11

APPENDIX 5

30 HOUSEHOLDS INTENSIVELY EXAMINED GAWAR

I. INFANTS

0	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2 / 1	1 / 2		3 / 1		1 / 2		3 / 1	1	2	3 / 2

13	14	15	16	17	18	19	20	21	22	23	24	
1	1 / 1	1	1	1	1 / 1		1					

= 16/20 = 36

PREGNANT

1	2	3	4	5	6	7	8	9
			2			2	3	

= 7

II. ETHNICITY

1) MEN =33

FULBE	HHT HHT I	11	WULOU	I	1
GADALA	IIII	4	GUIZIGA	III	3
G. HOS.	I	1	MERAIN	I	1
KAPSIKI	I	1	DIMEO	I	1
GOVA	I	1	MAFA	II	2
MUFU	III	3	BAO	II	2
ZIDIME	II	2			

2) WOMEN =43

✓ DIMEO	IIII	4	✓ BANA	I	1	✓ ZIDIM	I	1	BAO	II	2
✓ BOZO	II	2	✓ MUFU	II	2	✓ GOUDOUL	I	1	TCHOUVOUK	I	1
✓ HIZIGAD	I	1	✓ FULBE	HHT IIII	9	✓ BOSSOM	II	2			
✓ G. HOS	II	2	✓ BOUDOUM	I	1	✓ MAFA	II	2			
✓ GADALA	II	2	✓ GUIZIGA	HHT IIII	9	✓ FALI	I	1			

III. MARRIAGES (M-F) 3 w/ 2 W, 1 w/ 4 W; 1 HH w/ 4 COUPLES / HH + HH w/ 2 W, 2 w/ 3 W

1) SAME =28

GADALA	II	2	FULBE	HHT IIII	9	DIMEO	I	1
G. HOS	I	1	GUIZIGA	HHT IIII	9	MAFA	II	2
MUFU	I	1	ZIDIM	I	1	BAO	II	2

2) DIFF =16 ~~ANOTHER 2 HHT 6~~

FULBE - DIMEO 1
FULBE - [illegible] 1
GADALA - HIZIGAD 1
FULBE - BOUDOUM 1
GADALA - BOSSOM 1
GADALA - G. HOSS. 1
KAPSIKI - BANA 1
GOVA - BOZO 1
MERAIN - GOUDOUL 1
FULBE - TCHOUVOUK 1
GUIZIGA - MUFU 1
FULBE - FALI 1
MUFU - DIMEO 1
ZIDIME - DIMEO 1
WULOU - MUFU 1
MUFU - BOUDOUM 1

3) RELIGION =43

MUSLIM	HHT HHT HHT HHT I	21		
PAIEN	HHT HHT HHT	15	PAIEN MUSLIM	1
CATHOLIC	HHT	5	PROTESTANT	1

87 4) OCCUPATION =33

CHEF DE CANTON GAWAR (Foulbe)
CULTIVATEUR 19 HHT HHT HHT HHT — BERGER (Foulbe) HHT,
Gardien MUFU C
MANOEUVRE (Gdg)
MONITEUR
[illegible]

APPENDIX 6

40 HOUSEHOLDS INTENSIVELY EXAMINED: MESENE

113

I. INFANTS H/F 20/21 = 41

0	1	2	3	4	5	6	7	8	9	10	11	12
I / I	/ I	I / I	II / I	I /	I /	/ II	II / I	/	II /	/ III	/	I / III

13	14	15	16	17	18	19	20	21	22	23	24	?
II /	/ II	II / I	/ I	II / I	/ II	I / I	I /	I /	/	/	/	/

PRELIMINARY

1	2	3	4	5	6	7	8	9
	I	I			IIII	I	III	

= 10

II FERTILITY

1) WOMEN = 44

GWIZIGA	IIII IIII IIII	19	KOCA	I	I	WAZAI	I I
FOUBE	IIII IIII IIII I	16	SIRATA	I	3	~~[illegible]~~	
MUKO	IIII II	7	WAZAN	I	I	WANDIAN	I I

2) ADULTS = 51

GWIZIGA	IIII IIII IIII IIII	19	WAZAN	I	I	WAZAI	I I
FOUBE	IIII IIII IIII IIII I	21	DJONDJON	I	I		
MUKO	IIII II	7	DOUMANGER	I	I		

III MARRIAGES I M 5 W & 1 COUPLE II MM W/ 1 XTRA COUPLE
III M 2 W I MM W/ 2 COUPLES 2 DIFF, NO MM

1) SALVE = 38

GWIZIGA	IIII IIII IIII II	17	MUKO	IIII	5
FOUBE	IIII IIII IIII	15	WAZAI	I	I

2) DIFF = 13

GWIZIGA - FOUBE	III	3	MUKO - GWIZIGA	I	I	FOUBE - DJONDJON	I I
" - MUKO	I	I	KOCA - WAZAN	I	I	MUKO - DOUMANGER	I I
			SIRATA - GWIZIGA	I	I	WAZAN - MUKO	I I
			WANDIAN - FOUBE	I	I	SIRATA - FOUBE	II 2

3) REMARRIAGE = 51

ANNIVERSAIRE	IIII IIII IIII III	18	PROV	IIII	4
MUSLIM	IIII IIII IIII IIII IIII IIII	29			

IV. MEN'S OCCUPS. = ~~[illegible]~~ 44

CULTIVATEUR	IIII IIII IIII IIII IIII IIII III	32	CHAUFFEUR	II Foulbé 2
CATECHISTE	I			
COMMERÇANT	IIII II Foulbé, Gwizigia (M), Sirata (M)	7		
BÛCHERON	II	WAZAN (M), Foulbé 2		

APPENDIX 7

30 SAMPLE HOUSEHOLDS CHOSEN FOR THE STUDY: MOKONG 114

I. DEMOGRAPHIC PROFILE

1) MOKONG: INFANTS LESS THAN 24 MONTHS M/F = 9/15 = 24

0	1	2	3	4	5	6	7	8	9	10	11	12
2	1	1			1 / 1	2		1 / 1	1 / 2	1	1	2

13	14	15	16	17	18	19	20	21	22	23	24	?
1	1		1 / 4									

2) PREGNANT WOMEN

1	2	3	4	5	6	7	8	9
		1			2	5		

= 8

3) ETHNICITY & MARRIAGE

a) HEAD OF HOUSEHOLD / HUSBAND: (4 POLYGAMOUS HOUSEHOLDS - 3 PAGAN, 1 MUSLIM)

MUFU	28	= 29	"PAGAN"	15
LAMBOUR	1		MUSLIM	8
			CATHOLIQUE	6

b) WOMAN

MUFU	31		"PAGANE"	18
TOUBOUDUC	1	= 33	MUSULMANE	9
AMIR	1		PROTESTANTE	1
			CATHOLIQUE	5

4) MALE'S OCCUPATION

CULTIVATEUR	23	CHEF DE CANTON	1
NOTABLE DU CHEF	2	CUISINIER	1
BOUCHER	2		

DOGBA : EXAMINATION OF GENERAL, INDEXICAL NOTEBOOKS

APPENDIX 8

115

I. QUARTERS (JAWRO)

a. SIRNILA DAMON & HAMADU BAKARI

DOGBA CENTRE (GARRÉ)
LOLDOLDEO
DOGA TCHAMPITIGA + TCHAMPITIGA
GANAKRE FOULBE

MISSION ADVENTISTE
GUIZIGA NGADA MAYO
FOULBE NGADA MAYO
GANAKRE MOUFOU

b. MARTIN'S SURVEY (REPORT OF FALL, 1982)

GARRÉ
DOMAYO
GUIZIGA
TEKAMPITIGO
DOLDOLDEO

c. ON THE FORMS FROM MARTIN'S AUGUST SURVEY

DOLDOLDEO
MADA
HAMAN
GARRE
DOMAYO
GANAERE
TEKAMPITIGO
GUIZIGA
MISSION
HARDE
SEIDI

d. MADA WORDE - THERE ARE 62 JAWRO'EN IN DOGBA CANTON.

II. GENERAL DEMOGRAPHY

1) # OF HOUSEHOLDS (w/ CHILDREN < 2 YRS OR PREGNANT WOMAN):

GANAKRE FOULBE : 18
DOGA TCHAMPITIGA : 42 (TCHAMPITIGA 8)
DOLDOLDEO : 24
DOGBA CENTRE : 42
GANAKRE MOUFOU : 20
GUIZIGA NGADA MAYO : 24
FOULBE NGADA MAYO : 18
MISSION ADVENTISTE : 26

TOTAL = 214

2) INFANT AGES (MONTHS): M/F

0	1	2	3	4	5	6	7	8	9	10	11	12
1/4	4/2	9/1	2/8	2/4	4/4	4/Ø	2/6	6/6	4/2	6/3	1/1	15/15

13	14	15	16	17	18	19	20	21	22	23	24	?
2/5	2/4	3/3	1/2	1/3	4/2	Ø/1	2/3	4/Ø	8/6	12/8	14/12	1/1

114/106 TOTAL = 220

3) PREGNANCIES:

1	2	3	4	5	6	7	8	9	TOTAL
Ø	4	4	9	11	3	6	5	5	47

90

MARRIAGES AND ETHNIC AFFILIATIONS:

I. CHEFS DE MAISON:

BANANA	1	HADA	20	9%	HOULGOUR	8	NDOUGOUR	1	
CHOUA	1	KAHAKAÏ	1		HOUNDANG	1	NGOUMBA	1	
FOULBE	48	22%	HANDARA	2	HOUSGOUM	1	NGUELBADA	7	
FOUTAK	2		HATAKAH	5	HOUTOUROUA	1	OUDOUME	1	
GUEMZEK	1	11%	HERI	1	HOUYANG	11	SARA	1	
GUIZIGA	24		HOKIO	12	NDANA	3	SIRATA	2	
GUOYANG	5		HOLKO	21	NSELE	1	TCHERE	2	
KERE	1		HOUFOU	15	NSIDHE	1	ZOULGO	10	

PLUS TWO UNIDENTIFIED WITH FULBE NAMES (FULBE ALSO?)

TOTAL = 214

II. WOMEN

DEGOIN	1		HAWIRHAN	2		HOUFOU	15	NGORAM	1
DOULBAÏ	3		HAKA	1		HOULGOUR	13	NGOUMBA	1
FOULBE	50	21%	HANDARA	4		HOULOUDAÏ	1	NGOYANG → GUOYANG	
GOUDOL	1		HATAKAH	1		HOUTOUROUA	2	NGUELBADA	3
GUEMZEK	2	16%	HIKRI	4		HOUYANG	14	SIRATA	4
GUIZIGA	38		HOKIO	9		NBAKA	1	TCHERE	3
GUOYANG	2		HOLKO	15		NBIDHE	1	TOUKOUZEK	2
HADA	23	10%	HOUBARÈI	1		NDOUGOUR	1	ZOULGO	15

PLUS FOUTAK FOR TWO

TOTAL = 235 239

III. "NON-MIXED" MARRIAGES

FOULBE	46	42%	HATAKAH	1		HOULGOUR	3	SIRATA	2
GUIZIGA	12		HOKIO	1		HOUTOUROUA	1	ZOULGO	6
HADA	18	16%	HOLKO	9		HOUYANG	8		
HANDARA	1		HOUFOU	7		NGOUMBA	1		

[PLUS TWO FULBE WOMEN WITH FULBE(?) MEN UNIDENTIFIED (?)]

TOTAL = 109 125

IV "MIXED" MARRIAGES (WOMEN > MEN)

NEGWIN - NGWELBADA	1	
DOULBAÏ - FOUTAK	1	
- KAHANAÏ	1	2
FOULBE - HANDARA	1	
FOUTAK - HADA	1	
- MOKIO	1	
GOUDOL - HATAKAM	1	
GWENZEK - MOKO	1	
- ZOULGO	1	
GUIZIGA - CHOUA	1	
- FOULBE	4	
- GUOYANG	1	
- HADA	2	
- HATAKAM	1	
- MOKIO	3	
- MOLKO	5	
- MOUFOU	4	
- MOULGOUR	1	
- NGWELBADA	3	
- ZOULGO	1	
GUOYANG - MOUFOU	1	
- MOKIO	1	
HADA - MOULGOUR	1	
- GUIZIGA	1	
- OUDLOME	1	
- ZOULGO	1	
HAGUIRMAN - MOUFOU	1	2
HAKA - SARA	1	

HANDARA - FOULBE	3	
HIKRI - HATAKAM	1	
- MOLKO	1	
- NBANA	1	
- NDOUGOUR	1	
MOKIO - FOUTAK	1	
- GUIZIGA	2	
- MOULGOUR	3	
- MOUNDANG	1	
- NBIDME	1	
MOLKO - GUIZIGA	2	
- HATAKAM	1	
- MOUFOU	2	
- MOUSGOUM	1	
MOUBAREÏ - MOUYANG	1	
MOUFOU - GUIZIGA	2	
- GUOYANG	3	
- MOLKO	1	
- MOULGOUR	1	
- NBANA	1	
MOULGOUR - GUIZIGA	4	
- GUOYANG	1	
- MOKIO	1	
- TCHERE	1	
- ZOULGO	1	
MOULKOUDAÏ - KERA	1	
MOUTOUROUA - NGWELBADA	1	
? NBAKA - GUIZIGA	1	

MOUYANG - HADA	2	
- MOKIO	2	
- MOLKO	2	
NBIDME - MOUYANG	1	
NDOUGOUR - MOKIO	1	
NGORAM - MOKIO	1	
NGWELBADA - MOKIO	1	
- DOULBAÏ	1	
- MOLKO	1	
SIRATA - FOULBE	1	
- GUIZIGA	1	
TCHERE - GUIZIGA	2	
- MOLKO	1	
TOUKOZEK - MOKO	1	
- NBANA	1	
ZOULGO - BANANA	1	
- GWENZEK	1	
- HADA	3	
- MERI	1	
- MOULGOUR	1	
- MOUYANG	1	
- NBELE	1	

TOTAL = 112 → 114

+3 +2 +2 +7

I. OCCUPATIONS OF WOMEN'S SPOUSES:

1. BUTCHER (BOUCHER)	8	Foulbé, 3 Guiziga, Guoyang, Hada, 2 Mokio
2. COOK (CUISINIER)	3	Foutak, Moulko, Dudlouné
3. CULTIVATOR (CULTIVATEUR)	160	
4. GARDENER (JARDINIER)	3	Matakam, Moutourouà
5. LABORER (MAIN D'OEUVRE)	1	Moulko
6. LAUNDERER (BLANCHISSEUR)	1	Foulbé
7. MASON (MAÇON)	7	Choua, Hada, Ndélé, Naïdme, 3 Zoulgo
8. MERCHANT (COMMERÇANT)	7	6 Foulbé, Guiziga
9. MERCHANT'S ASSISTANT (AIDE COMMERÇANT)	1	Moulko
10. NURSE (INFIRMIER SANITAIRE)	1	Mouyang
11. NURSE'S ASSISTANT (AIDE SOIGNANT)	2	Hada, Matakam
12. PREACHER (EVANGÉLISTE)	1	Moundang
13. ROOF-BUILDER (CHARPANTIER)	2	Guiziga, Nguetbada
14. SHEPHERD (BERGER)	1	Foulbe
15. TAILOR (TAILLEUR)	5	3 foulbe, Moudara, ?
16. TEACHER (CORPS ENSEIGNANT)	5	Foulbe, Guiziga, Hada, Haka, Hiri
17. TEACHER (C.E.S.) (PROFESSEUR)	1	Ngoumba
18. VETERINARY NURSE (INFIRMIER VÉTÉRINAIRE)	2	2 Nguetbada

19.	?	84	Guiziga, Hadu, Houlgour

TOTAL: 214

VI. RELIGION OF HEAD OF HOUSEHOLD

MUSLIM	72	34%
"ANIMIST"	103	48%
CHRISTIAN	39	18%
TOTAL	214	

APPENDIX 9

GAWAR: EXAMINATION OF GENERAL, INDEXICAL NOTEBOOKS 120

I. GENERAL DEMOGRAPHY

1) # OF HOUSEHOLDS (W/ CHILDREN < 2 YRS OR PREGNANT WOMEN)

GAWAR CENTRE	19	LOUGUNÉRÉ HAOUSSA	24
GAWAR WINDÉ	53	WOURO ITA	13
TOTAL = 109			

2) INFANT AGES (BY MONTHS):

0	1	2	3	4	5	6	7	8	9	10	11	12
1/1	2/1	6/6	1/5	2/2	5/4	5/1	3/2	1/Ø	4/2	2/2	2/2	4/7

13	14	15	16	17	18	19	20	21	22	23	24	???
2/3	2/1	3/	3/2	Ø/5	2/2	Ø/Ø	1/1	1/2	Ø/1	1/Ø	Ø/Ø	Ø/Ø

TOTAL = 53/57 = 110

3) PREGNANCIES:

1	2	3	4	5	6	7	8	9
Ø	Ø	1	5	Ø	3	5	7	1

TOTAL = 22

II. ETHNICITY AND RELIGION: HEADS OF HOUSEHOLDS / HUSBANDS

BAMBARA	1	GOUA	1	HEBBAN	2
BOUBOUM	1	GOUDOUL	2	NUFU	7 6%
DIKEO	7	GUIZIGA	13 11%	MASSAMZA	1
DJELIN	1	KOLA	1	SARA	1
FALI	1	KAPSIKI	4	TASSAÏ	1
FOULBE	31 26%	LOULOU	2	TCHOUNOUK	2
GADALA(O)	4	MAFA (MATAKAM)	18 15%	TOUROUI	1
GAWAR HOSSERE	8	MANDARA	1	ZIAM(E)	3
?	2				

TOTAL = 116

* 3 HOUSEHOLDS WITH DIFFERENT HUSBANDS THAN HEADS; 1 HOUSEHOLD WITH HEAD DIFFERENT THAN TWO COUPLES WITHIN; 2 HOUSEHOLDS WITH HEAD & SPOUSE PLUS OTHER COUPLE; 1 HOUSEHOLD WITH HEAD PLUS FOUR COUPLES

ETHNICITY AND RELIGION: WOMEN 121

BAGUIRMI	1	✓ FOULBÉ	25	✓ MOUNOUR	1
GANA	1	GADALA (O)	4	✓ MUFU	9
BOSSOM	1	✓ GANAR HOSSÉRÉ	12	✓ TCHOUNOUK	2
✓ BOUDOUM	9	GOUDOUL	5	TOUPOURI	1
✓ BOZO	2	GUIZIGA	23	VARA	1
DIMEO	8	HINA	2	WANDAÏ	1
DJELIN	1	MADAGAMZA	1	ZIDIM	1
FALI	1	✓ MAFA (MATAKAM)	17	MIZIGAD	1
✓ ?	2				

TOTAL = 132

II. MARIAGES

1) ETHNICITY:

a. SAME GROUPS

BAGUIRMI	1	FOULBÉ	20 +2	GUIZIGA	15 +3
BOUDOUM	2	GADALA (O)	3	MATAKAM	17
DIMEO	1	GANAR HOSSÉRÉ	5 +1	ZIDIM	1
MUFU	2				

22

b. DIFFERENT GROUPS (M → F)

DIMEO - BOUDOUM	3	GOUDOUL - MUFU	1
DIMEO - HINA	1	GOUDOUL - G. HOSSÉRÉ	1
DIMEO - GUIZIGA	1		
DIMEO - GOUDOUL	2	GANA - BOZO	1
FOULBÉ - DIMEO	1	GANAR HOSSÉRÉ - FOULBÉ	1
FOULBÉ - G. HOSSÉRÉ	2	" " - WANDAÏ	1
FOULBÉ - BOZO	1		
FOULBÉ - KOLA	1	GUIZIGA - BOUDOUM	1
FOULBÉ - FALI	1		
FOULBÉ - GUIZIGA	1	KAPSIKI - GANA	1
FOULBÉ - MUFU	3	KAPSIKI - FOULBÉ	1
FOULBÉ - BOUDOUM	2	KAPSIKI - DIMEO	1
FOULBÉ - TCHOUNOUK	1	KAPSIKI - MUFU	1
FOULBÉ - GADALA (O)	1		
		LOULOU - MUFU	1
DJELIN - GUIZIGA	1	LOULOU - GUIZIGA	1
		LOULOU - GOUDOUL	1
FALI - TCHOUNOUK	1		
		MAFA - FOULBÉ	1
GADALA (O) - MIZIGAD	1	MAFA - MOUNOUR	1
GADALA (O) - G. HOSSÉRÉ	1		
GADALA (O) - BOSSOM	1	MADAGAMZA - G. HOSSÉRÉ	1
MUFU - BOUDOUM	1	MEDAMA - GOUDOUL	1
MUFU - TOUPOURI	1		
MUFU - GUIZIGA	1	WANDAÏ - G. HOSSÉRÉ	1
MUFU - GOUDOUL	1		
MUFU - DIMEO	2	MEDAMA - DIMEO	1

96

SARA - ILINA	1		TOURON - BOUNOUM	1	
TASSAÏ - VARA	1		SOBINE - DIMEO	2	124
HAYAKAM - TCHOUNOUK	1		TCHOUNOUK - MUFU	1	
+ 2 UNKNOWN					60

2) RELIGION (H => F) 120

MUSLIM	61	51%	PROTESTANTE	1
ANIMISTE	56	43%	CATHOLIQUE - PAIENNE	1
CATHOLIQUE	10		PAIEN - MUSLIM	1

3) POLYGAMOUS UNIONS:

104 monogamous

WITH TWO WIVES	9	18	12 polygamous
WITH 3 WIVES	2	6	
WITH 4 WIVES	1	4	
		132 women	

II. MEN'S OCCUPATIONS - 116 total

CULTIVATEUR	90	INFIRMIER ADJOINT	1
BERGER	11	GAROT	1
CHAUFFEUR	2	GARDIEN SODECOTON	1
CHEF DE CANTON GAWAR	1	MANŒUVRE SODECOTON	1
CHEF DE ZONE SODECOTON	1	MONITEUR SODECOTON	2
CHEF SECTEUR SODECOTON	1	MAITRE FRANCO - ARABE	1
COMMERÇANT	2	TAILLEUR	1

HAESKENE

I. 1) # of HOUSEHOLDS

DOUGOÏWO	22	? 4
THARLO HUTU	51	= 204
DOUGOÏWO	(10)	

2) INFANT DEATHS (BY MONTH) M/F

0	1	2	3	4	5	6	7	8	9	10	11
5/6	2/4	4/5	7/3	5/3	6/2	1/5	3/6	6/0	7/1	2/8	2/2

12	13	14	15	16	17	18	19	20	21	22	23	24
9/11	3/3	6/6	4/3	5/5	6/1	4/8	5/4	5/3	4/1	2/2	0/0	0/0

105/95 = 200

3) PREGNANT

1	2	3	4	5	6	7	8	9
0	3	6	7	6	13	13	5	2

= 55

II. ETHNICITY & RELIGION

1) MEN

GWIZIGA	166	31%	
HUTU	31	6%	
FULBE	85	40%	
HAYAKAM	1		
?	1		
DOUROUM	3		
GITIM	1		
KOLA	1		
BABOUR	1		
THALA	1		
HANDARA	5		
SIRAYA	2		
WAZAN	1		
HWA	1		
HABAI	1		
ZIUN	1		
			212

2) WOMEN

GWIZIGA	30	30%	
HUTU	39	16%	
FULBE	104	41%	
HAYAKAM	1		
WAZAN	4		
DOUROUM	1		
SAWA	1		
STODTON	1		
BAMIEKE	1		
DOUNANGUED	1		
SIRAYA	10		
KOLA	1		
HWA	2		
HABAI	1		
HANDARA	7		
KRONCA BAGAI	1		
			251

III. [illegible] (H → F)

a) SAME

HUFU	26 27%	SIRATA	2
GUIZIGA	68	HUWA	1
FOULBE		MASAI	1
MATAKAM	9		
DOUALOUM		155	
MANDARA			

b) DIF 56 22%

GUIZIGA - HUFU	6	KOLA - WAZAN	1	1	1	SIRATA - SIRATA	1 1
HUFU - GUIZIGA	4	BADOUA - GUIZIGA	1	1		MANDARA - SIRATA	1 1
GUIZIGA - FOULBE	4	TARA SAWA	1	1		SIRATA - FOULBE	4
? - FOULBE	1	FOULBE - DJONDJOU	1	1		HUFU - DOUALA	1 1
FOULBE - GUIZIGA	2	GUIZIGA - BAMILEKE	1	1		GUIZIGA - SIRATA	1 1
DOUALOUM - WAZAN	2	MANDARA - HUFU	2			FOULBE - MANDARA	1 1
GITH - FOULBE	1	FOULBE - HUFU	3			FOULBE - SIRATA	5
		WAZAN - HUFU	1			MANDARA - FOULBE	2
		GUIZIGA - WAZAN	1			SIRATA - GUIZIGA	1
						SIRATA - MANDARA	5
						SIRATA - KOLA	1 1
						HUFU - KOLA DABAI	1 1

c) RELIGIONS

ANIMISTE	86 34%
MUSLIM	
CHRETIEN	146
PROTESTANT	15 59%

d) POLYGAMY

85 monogamous + 38 + 15 + 5 + 8 = 251 women

4 w/ 2 w 15 1 w/ 4 w 2

3 w/ 3 w 5

1 w/ 5 w 1

2 HH w/ xtra couple 1 HH w/ 2 xtra couple — 1 diff couple

IV. OCCUPATIONS = 212

COMMERCANT	31	Guiziga / Muslim, Bilin, Foulbe, Guiziga (M), Sirata	CHEF DE BONE	1	Guiziga (A)
MACHAN	1	Guiziga (M)	MARABOUT	5	Foulbé 1, Mandara 1, Sirata 1
CATECHISTE	2	Guiziga (A)	PROFESSEUR	1	Foulbé
SOUDANT	1	Douloum (A)	BARBIER	2	Wazan, Foulbé
BOUCHER	1	Foulbe	SERRURIER	1	Foulbe
FONCTIONNAIRE	15	Foulbe, Bamileke, Douala, Kola, Mandara, Sirata	CHEF BOUCHER	1	Foulbé
CULTIVATEUR	151		TAILLEUR	5	Guiziga (A), Foulbe 1

APPENDIX II

MOKONG: EXAMINATION OF GENERAL, INDEXICAL NOTEBOOKS

19.5

I. GENERAL DEMOGRAPHY

1) # OF HOUSEHOLDS (W/ CHILDREN < 2 YRS AGE OR PREGNANT WOMEN)

GOUDOUR	12	MOKONG CENTRE	29
GADAMAYO & "LIMSAC"	24	SIDOUGOUM	12

TOTAL = 77 HOUSEHOLDS

2) INFANT AGES (24 MONTHS): M/F

0	1	2	3	4	5	6	7	8	9	10	11	12
2/1	1/Ø	1/Ø	2/1	1/1	2/1	2/3	Ø/Ø	1/2	2/4	2/2	2/3	1/4

13	14	15	16	17	18	19	20	21	22	23	24	?
2/2	1/Ø	1/Ø	3/5	1/2	4/2	1/1	1/Ø	Ø/Ø	Ø/Ø	Ø/Ø	Ø/1	Ø/Ø

24 + = 1 MALE

TOTALS = 33/36 = 69

3) PREGNANCIES:

1	2	3	4	5	6	7	8	9
Ø	1	1	2	Ø	5	7	3	Ø

TOTAL = 19

II. ETHNICITY AND RELIGION

1) HEADS OF HOUSEHOLDS / HUSBANDS:

MUFU	75		"MAKENS"	[illegible]
DJOUDOUR	1	(notable du chef)	MUSLIM	17
MOUNDANG	1	(Service d'élevage Sahélien)	CHRISTIAN: CATHOLIC	11
MATAKAM	1	(Marabout)	PROTESTANT	1
	78			18

* TWO HEADS OF HOUSEHOLDS AND "MAKENS" DO NOT CORRESPOND

2) WOMEN

MUFU	82
MATAKAM	2
MOUNDANG	1
TCHOUNOUC	1
HINA	1

TOTAL = [illegible]

100

II. MARRIAGES:

1) ETHNICITY:

MUSU - MUSU	31	TCHOUVOUE - MUSU	1
MATAKAM - MUSU	1	AMA - MUSU SUD	1
MATAKAM - MATAKAM	1	BOUNOUR - MUSU	1
MOUNDANG - MOUNDANG	1		

2) RELIGION: (F → M)

"PAGANS" → "PAGEN"	55	PROTESTANT → CATHOLIC
MUSLIM → MUSLIM	19	CATHOLIC → CATHOLIC
PROTESTANT → PAGAN	1	

3) POLYGAMOUS UNIONS: 9 WITH TWO WOMEN; 1 WITH THREE WOMEN (MUSU w/o HEAD OF HH STILL LIVING)

III. MEN'S "OCCUPATIONS"

BOUCHER	3	MONITEUR SODECOTON	1
CHEF DE CANTON	2	MOULINIER	1
CUISINIER	1	NOTABLE DE CHEF	2
CULTIVATEUR	63	POTIER	1
FORGERON	1	SERVICE RELEVAGE SODECOTON	1
MARABOUT	1	SODECOTON	1

CENSUS INFORMATION FROM SOUS-PREFECTURE: DOGBA (1978 CENSUS)

I. POPULATION GLOBALE: M/F 3.866/3.886 → TOTAL = 7.752

0 à 1	1 à 14	15 à 19	20 à 59	60+	TOTAL =
159/164	500/875	446/365	1856/2108	505/374	7352

* DIVIDED INTO 61 QUARTERS (JIWORO). MANA WORDÉ - THE LANDLANDS SECRETARY - SAYS THAT THERE ARE NOW 62 QUARTERS (AS OF APRIL/MAY, 1983).

II. SURVEY BY QUARTER (JIWORO) FOR TARGET AREA (1979-1980 CENSUS)

							TOTAL
I	15/15	53/60	46/30	36/156	44/73	284/234	618
II	4/7	13/13	15/6	39/54	19/20	90/100	190
III	3/7	19/25	10/8	24/40	15/14	71/94	165
	1/3	42/41	11/17	68/85	9/11	131/157	288
V	0/0	5/7	0/1	12/10	1/0	18/18	36
VI	0/1	15/7	4/3	22/25	4/9	45/45	90
VII	0/1	6/3	1/0	12/14	0/0	19/18	37
VIII	1/4	18/25	17/16	40/41	9/7	85/93	178
IX	2/0	11/18	2/5	20/14	0/0	35/37	72

QUARTERS:

I. DOGBA GARÉ (CENTRE)
II. DOLDOLDENO
III. DOKAYO
IV. TCHAMPITIGA
V. TCHAMPITIGA GUIZIGA
VI. GAYAKRÉ FOULBÉ
VII. GAYAKRÉ HOUSSA
VIII. GABAMAYO GUIZIGA
IX. DOGBA MISSION

107

APPENDIX 13

CENSUS INFORMATION FROM THE SOUS-PREFECTURE: GAWAR CENTRE (1981 CENSUS)

I. POPULATION GLOBALE: M/F 430/454 => TOTAL = 884

0à5	5à9	10à14	15à19	20à24	25à29	30à34	35à39	40à44
61/66	63/43	56/34	29/20	15/25	16/26	20/32	23/38	30/56

45à49	50+
39/32	83/82

TOTAL = 884 * 18 QUARTERS

II. POPULATION PAR QUARTERS

FALO	74	LAMODÉ	211	SABONGARI	6
FALIO I	37	LOGODAO	42	SOUKOURWO I	25
DJIGUIDARÉ	51	MATAKAM	73	SOUKOURWO II	67
DJOULGOUF	5	MOUFOURÉ	68	SOUKOURWO III	11
GADALAO	53	OURO-SARKISOANON	31	TALLYÉ	31
GADALAO II	29	SABÉRÉ	55	YOLDEO	15

TOTAL = 884

QUARTER WOURO ITA (MA.3A) (PART OF VILLAGE/CANTON MAYO LADDÉ)

0à5	5à9	10à14	15à19	20à24	25à29	30à34	35à39	40à44
33/26	22/27	18/10	7/7	5/13	3/5	3/14	5/4	4/13

45à49	50+
3/7	14/22

TOTAL = 265

* NB. TOTAL POPULATION FOR MAYO LADDÉ 782 (1981-82 CENSUS)

CENSUS INFORMATION FROM THE SOUS-PRÉFECTURE: GANAR JINDÉ (1981 CENSUS)

I. POPULATION GLOBALE: M/F 216/229 → TOTAL = 445

0 à 5	5 à 9	10 à 14	15 à 19	20 à 24	25 à 29	30 à 34	35 à 39	40 à 44
29/27	33/19	16/14	6/12	12/12	9/15	16/24	10/21	23/21

45 à 49	50+
16/20	46/44

TOTAL = 445 + 11 QUARTIERS

II. POPULATION PAR QUARTIERS

FOULBÉ	92	MAZAGAT	60	WANDAINO PLATEAU	29
FOULBÉ NOURA	47	TONDOUROU I	22	NOULEF	19
HAMBARKA	58	TONDOUROU II	44	(?)	34
HAMBARKA II	47	WANDAINO FOULBÉ	13		

TOTAL = 445

LOUGOUERÉ HAOUSSA (1981-82 CENSUS)

POPULATION GLOBALE / → TOTAL = 884

0 à 5	5 à 9	10 à 14	15 à 19	20 à 24	25 à 29	30 à 34	35 à 39	40 à 44
61/66	63/43	36/34	29/20	15/25	16/26	20/32	23/38	30/56

45 à 49	50+
34/32	83/82

TOTAL = 884

APPENDIX 14

CENSUS INFORMATION FROM THE SOUS-PREFECTURE: MESKINE (1979/80 CENSUS)

I. POPULATION GLOBALE: M/F 4141/5020 → TOTAL = 9.161

0 à 1	1 à 14	15 à 19	20 à 59	60+	TOTAL =
274 / 261	1115 / 1117	541 / 469	1726 / 2731	485 / 442	9161

* DIVIDED INTO 48 QUARTERS.

105

CENSUS FROM THE SOUS-PREFECTURE: MOKONG CENTRE (1981 CENSUS)

I. POPULATION GLOBALE: M/F 1691/1899 TOTAL = 3590

0 à 5	5 à 9	10 à 14	15 à 19	20 à 24	25 à 29	30 à 34	35 à 39	40 à 44
299/315	269/235	284/241	144/129	107/108	83/92	101/159	70/121	101/176

45 à 49	50+
76/93	152/230

+ 10 QUARTIERS USITÉS

TOTAL = 3590

II. POPULATION PAR QUARTIERS:

GOLEM	110	LAMORDÉ	236	MOULDAL	337
GOLOM	825	LÉNOTER	452	TALABAVE	1325
KÉDWÉ	100	MBÉNER	393	WOUSSI	88
KIBINET	224				

TOTAL = 3590