THE DEVELOPMENT OF NOMADISM:

THE VIEW FROM ANCIENT NORTHEAST AFRICA

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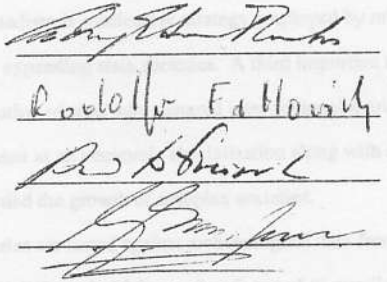

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The Development of Nomadism:
The View from Ancient Northeast Africa

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The current anthropological literature contains several competing theories to explain the development of pastoral nomadism. The most popular is an ecological theory, stating that nomadism is an adaptation to marginal environments. Other theories include the military mobility one which maintains that nomadism is a defensive strategy employed by militarily inferior hinterland populations against expanding state societies. A third important theory states that nomadism is a response to the creation of state administered inter-regional markets: in this sense nomadism is thought to have arisen as an economic specialisation along with other specialised industries which accompanied the growth of complex societies.

In this dissertation, the three theories are tested against archaeological data from Northeast Africa. First, nomadism is defined and differentiated from other forms of pastoralism. Second, methods are proposed for identifying the different types of pastoral adaptation in the archaeological record. Third, the archaeological sequence of events is compared to the sequences postulated by each of the three theories.

The focus of the study is the Southern Atbai region of the east central Sudan. Here, in the easternmost Sahel, the archaeological record shows a transition from sedentary populations to nomadic pastoralists in the period from ca. 4000 BC to AD 500. Through the cross-correlation of settlement pattern analyses, faunal and artefactual studies, ancient historical records, and other data retrieved by two separate archaeological projects over the last eight years, it is concluded that nomadism in the Southern Atbai probably emerged as a response to opportunities provided by state administered markets.

A review of the currently available archaeological and ancient historical data from Northeast Africa--specifically southern Egypt, northern Sudan and northern Ethiopia-- suggests that the state market theory might also explain all other instances of nomadism in the region: the other two theories--the ecological and military mobility ones--can potentially explain only a few instances of nomadism.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

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CHAPTER I

ON THE ORIGIN OF NOMADISM

Introduction

Nomads have long fascinated outsiders. To paraphrase Gellner (1984), their pride, sense of worth, and belief in the nobility of their calling have provoked the admiration and envy of many sedentary folk. As "barbarian hordes" they have also put the fear of God into their sedentary neighbours: during the Middle Ages, nomads, along with cholera and the plague, were listed in the register of disasters!

Myths notwithstanding, the striking non-conformity of the nomad's life has intrigued scholars since at least the time of Herodotus. Many aspects of nomadic life are deemed extraordinary. Gellner (1984: xi), for example, is clearly fascinated with their egalitarianism when he states that, "Nomadic societies know a certain equality, a wide diffusion of civic, political, and military participation, an incapsulation of almost the entire culture in each individual, and a certain quite conscious aversion for that division of labour, that specialisation, which Karl Marx also abhorred and wished to see abolished."

Another extraordinary aspect of nomadic society is its long term stability. Many researchers (Khazanov 1984; Gellner 1984; Tolybey and other Russian scientists mentioned in Khazanov 1984) have come to the conclusion that nomadic societies, unlike sedentary agricultural ones, are incapable of change unless motivated by state level societies. The four thousand year turbulent history of the Beja (Paul 1954) suggests that even in the face of massive pressures from state level societies, at least one nomadic society has survived practically unchanged for millennia longer than any known agricultural one. How can such cultural stability exist, and how can it continue to exist in today's frantically developing countries?

This question leads us to the practical aspects in the study of nomadism. Attempts to integrate nomadic pastoral cultures into the national economies of developing Near Eastern and African countries have in the recent past led to some very serious problems. Shortsighted policies, such as forced settling, have failed to provide positive results. This has encouraged closer co-operation between social scientists and the agencies in charge of national development programs. Several international meetings with topics such as "Change and development in nomadic and pastoral societies" (Galaty and Salzman 1981), "The future of pastoral peoples" (Galaty et al. 1981), and "*Nomadismus als Entwicklungsproblem*" (1969) were aimed at furthering research into this pressing problem. There remains much to be done.

Current research on nomadic society is hampered by the very elusiveness of the term "pastoral nomad". Scholars agree that a high degree of mobility and economic reliance on herding provide the basic definition of pastoral nomadism (among others, Goldschmidt 1979; Spooner 1973; Dyson-Hudson and Dyson-Hudson 1980). Beyond that, however, they disagree on precisely which aspects of pastoral nomadism--socio-political organisation, the character of migrations, particular mode of obtaining agricultural products, ecological parameters, relations of production, herd composition, etc.--define its character. This issue--the specific nature of pastoral nomadism--has been one of the foremost topics for anthropological research on the subject (for diverse views see, among others, "Pastoral Production and Society"; Monod 1975; Weissleder 1978; Khazanov 1984).

Although ethnologists and other social scientists have spent a great deal of time and effort trying to define nomadism, archaeologists have rarely contributed to the discussion. Most archaeologists have been satisfied with a general distinction between agriculturalists and pastoralists, but they have attempted few stricter definitions. Yet, the definition of nomadism is not solely an ethnographic problem: it can also be addressed through an examination of the history of nomadism, rather than through detailed examinations of its modern practitioners. Today, there is a bewildering variety of pastoral societies. To a large extent, the modern pastoralists are all "polluted" by the continous pressures exerted on them by the ever expanding

agricultural components of modern societies. Confusion is bound to arise by seeking a definition among contemporary examples. A study of the origin of nomadism, that is the time and the conditions under which it arose, might lead us to a better definition.

Spooner (1973:5) remarked that "... virtually nothing is yet known about the beginnings of nomadism." This still holds true to a large extent. As we shall shortly review in detail, there have been several attempts at explaining the origins of nomadism in both anthropology and archaeology. Ethnographic studies have obviously had to rely more on abstract scenarios to explain the origin of nomadism, while archaeologists with access to the hard data have been hampered in their efforts by an overly general definition for nomads. Consequently, there has been little agreement on how, when and under what conditions nomadism actually originated.

To contribute towards the study of the origin of nomadism, the archaeological evidence for its evolution in Northeast Africa will be reviewed. These data are used to test three general explanatory models--an ecological, a military-mobility, and a trade and interaction model--in order to determine which best explains the origin of pastoral nomadic life. The models, which are described at the end of this chapter, have been constructed on the basis of prevalent hypotheses in the anthropological and archaeological literature. It will be shown that, for Northeast Africa, the trade and interaction model explains the origin of pastoral nomadism best. It is convenient to start with a review of current hypotheses on the origins of pastoral nomadism.

Anthropological Thoughts on the Origin of Pastoral Nomadism

The oldest, and until recently, the most widely accepted model was the so-called tri-partiate theory (Khazanov 1984). It postulated that nomadism arose in those hunting/gathering economies where the prey had been domesticated. This theory became particularly popular in the 18th and 19th centuries, with such well known proponents as Condorcet, Montesquieu, Morgan and Engels. The reindeer herders of Northern Europe have been considered the prime evidence supporting the tri-partiate theory (Schmidt and Koppers 1924; Schmidt 1951; Flor 1930; Thurnwald 1932; Pohlhausen 1972,1954).

This theory is no longer generally accepted. As Khazanov (1984) points out, the logistics of reindeer hunting make it improbable that any large scale herd domestication was undertaken by the Northern European hunters. Furthermore, populations like the Plains Indian bison hunters (who failed to domesticate the animal, much less herd it) tend to negate the theory. Also, archaeological evidence indicates that some of the earliest Neolithic populations relied on a very broad based economy including pastoralism and cultivation, as well as foraging, hunting, and fishing (Flannery 1965, 1969; Hole, Flannery and Neely 1969; Read 1959; Gifford et al. 1980; Redman 1978; Robbins 1973). There are no convincing archaeological data anywhere, which support a direct evolution from hunters to pastoral nomads.

In terms of popularity, ecological models have replaced the tri-partiate one. The ecological models state that populations moving into marginal environments (desiccation caused either by natural or human agencies), have had no choice but to adapt as pastoral nomads. Many archaeologists--as we shall see in the next section--have come to regard nomadism in this light, and have sought ecological explanations for its origins. There are, however, two major problems with ecological models.

First, the assumption that pastoral nomadism is strictly confined to ecologically marginal areas is incorrect. The worldwide boundaries between agriculturalists and pastoralists do not perfectly match the boundaries between the desert and the sown. Irons (1968), for instance, points out that the Yomut Turkmen are more mobile than is demanded by their environment; their ecology would certainly have allowed them to lead a more settled life if they so wished. The Humr Baggara nomads of western Sudan (Cunnison 1966) share the low rainfall woodland savanna belt with agricultural populations. In fact, as some scholars have noted (cf. eg. Lefébure 1979), the environment in which nomads are found is often better described as politically, rather than ecologically marginal.

There is a problem of logic in the ecological models as well: they seem to confuse a description of nomadism with a statement of its cause. Most descriptions of pastoral nomadism refer to the combination of animal herding and population mobility in a marginal area (for

example Khazanov 1984; Goldschmidt 1979; Lefébure 1979; and others), but that is not to say that the marginal environment caused nomadism. Arguing that pastoral nomadism arose because of the environment in which it was practiced carries no more weight than an argument that agriculture arose because populations came to live in optimal environments.

Besides the ecological models, there are a set of economic models for the origins of pastoral nomads. This line of thought is apparently most popular in Soviet anthropology (Khazanov 1984), but also has followers elsewhere (cf. eg. Barth 1973; Sauer 1952; Cribb 1984). Economic models begin with a mixed economy population, and propose that the transition to pastoral nomadism resulted from the natural exponential growth rate of herds. Growth in the size of herds forced populations to become mobile in search of new pastures: larger herds need more grazing area.

Cribb (1984) elaborates that pastoral migrations also serve as a response to what he terms the Pastoral Paradox. This paradox involves the high gain/high risk nature of pastoralism. Stocks accumulate and grow rapidly, but are susceptible to disastrous downfalls triggered by environmental calamities, disease, or political situations. In a mixed economy the downfall of the herding sector can be compensated to some extent by heightened productivity in the agricultural sector. However, among specialised pastoralists, the only insurance against disastrous herd loss is the ability to move lock, stock, and barrel to new pastures. Without their mobility, specialised pastoralists could suffer total economic breakdown in the course of one unproductive season.

In economic models, the extent of mobility depends on the ratio of stock keeping to agriculture. The more stock, the more mobile the population. The economic models are hinged on a logical and systemic process--the natural exponential growth rate of herds--which eventually must create a mobile herding economy. As an explanation for the nature and origins of nomadism, however, the economic model is itself a paradox. Following its logic, one would expect that the growth potential of herds would inevitably lead all mixed economy populations to a nomadic pastoral adaptation. The fact that this did not happen suggests that it is perhaps more appropriate to study processes and institutions which prevented the model's outcome. As it

stands, the model does not explain why only certain societies became nomadic.

There are other criticisms of the economic model. Khazanov (1984) points out that even the most primitive pastoralists know how to regulate herd size. The animals also have their own herd size regulating mechanisms (Lack 1954). The sort of uncontrolled expansion in herd size envisioned in the economic model is not commonplace.

Another popular set of theories on the origins of nomadism revolve around the idea of mobility as a defensive strategy. These military mobility models have their origins in the frontier theories of Lattimore (1967). Recent proponents of the military mobility model have included Irons (1968,1979), Shahrani (1979) and Ekvall (1961), among others. According to these models, nomadism evolved out of the continual struggle between rival political groups for the control over marginal zones. The populations of the marginal zones became mobile in order to avoid the force of their settled and politically unified neighbours. Irons (1968), for example, attributes the high mobility of the Yomut to resistance of firm governmental control. Military mobility theorists argue that a high degree of mobility and the lack of a fixed territory to defend are invaluable advantages to a relatively weak force in opposition to more powerful adversaries.

Military mobility models can be refuted on empirical grounds. They suggests that nomadism should be at its height when central government is at its strongest. However, as Cribb (1984) points out, during the Second World War, it was with the collapse of Reza Shah's government in Iran that nomadism resumed among the Yomut (Irons 1971, 1975), Shahsevan (Tapper 1979), Qashqai (Garrod 1946), Boyr Amed (Fazel 1973), and the Basseri (Barth 1961) tribes. Furthermore, the military mobility model does not take into account the requirements of a pastoral economy. Any role that stock might play in the need for mobility is relegated to causal insignificance.

Yet another popular set of models for the origins of pastoral nomadism are the so-called displacement theories. These postulate that weaker populations were pushed out of the optimal lands (and into pastoral nomadism) as a result of overpopulation in the agricultural communities (Lattimore 1967; Spooner 1975; Service 1975; Gilbert 1975). The displacement theory is most

popular in archaeological studies, and so will be reviewed in more detail later in this Chapter.

Aside from the above models, there are some which can be described as variations of one or another of the general theories on the origins of nomadism. Thus, Khazanov (1984) notes that everywhere the development of nomadism had its own pre-conditions, stimuli, motivating and inhibiting factors. Nevertheless, he notes that it was the mixed economy populations in the marginal zones who had to rely more on pastoralism once domesticated animals were introduced into the economy: as populations became more and more economically diverse, it was the mixed economy populations in the marginal lands who turned to nomadism. As such, Khazanov's model is really a variant of the ecological models, which suggest that the marginal environment was the prime mover in the development of nomadism.

Archaeological Thoughts on the Origin of Nomadism

Archaeological studies of the origins of pastoral nomadism have been hampered by poor definitions. In many cases, researchers do not differentiate between types of pastoralism, opting instead for a very broad definition to include all sorts of herding economies (for example, Chang and Koster 1986). Since a strict definition of nomadism is vital in a study of its origins we shall return to this issue in more detail.

Suffice it to say that the lack of a coherent viewpoint on nomadism has not prevented archaeologists from attempting to explain its origins. There are two main schools of thought evident in the archaeological studies. On the one hand, there are those who see nomadism as an adaptation to the natural environment, and on the other, those who see it as an adaptation to the cultural environment. The former explains the rise of nomadism via such factors as environmental desiccation, population pressure, and the natural growth rate of herds. The latter calls upon such prime movers as warfare, trade, and technological progress. There is a third camp, actually the most populous one, wherein researchers subscribe to a quasi-systemic view: both natural and cultural factors are said to work together in bringing about nomadism.

On the ecological side, several researchers working in the European and Mediterranean theaters see pastoralism resulting from the creation of pasturelands; a consequence of the early agriculturalists' forest clearing and other detrimental activities (Sherratt 1983; Geddes 1983; Fleming 1972; Barker 1981; Guilaine et al. 1982; Halstead 1981; Lewthwaite 1981, 1982). They argue that once a pastoral niche was created, populations flowed into it becoming nomads in the process. As an explanation for the rise of nomadism such models are inadequate: Chang and Koster (1986) point out that there is no evidence for the absence of natural pastureland prior to cultivation and forest clearing.

Also in the ecological camp, Khazanov (1984) attributes the origin of pastoral nomadism in the Eurasian Steppe to climatic changes after ca. 1000 BC, when the pursuit of agriculture was abandoned and populations had to turn to full-time pastoralism. In Khazanov's words, "...the dry climate was the final stimulus for pastoralists to...become fully nomadic." (1984: 95). Khazanov also provides a good example of the quasi-systemic viewpoint. He allows state level societies and their extensive trade networks to play a secondary role in his explanation for the origin of nomadism. However, nomadism in his view is principally an adaptation to the natural, not the cultural environment (1984: 117).

There are other researchers in the ecological camp. E. Bacon (1954), for example, argues that in the Middle East the mixed economy populations inhabiting the marginal lands eventually had to give up cultivation and became pastoral nomads. R.Mc.C. Adams (1974) expresses somewhat similar thoughts. Likewise, Coon (1943) attributes the origins of the Bedouin to mixed economy populations who moved into the desert, giving up agriculture in the process.

In a very similar vein, but presenting another aspect of natural forces bringing about pastoral nomadism, Gilbert (1983) argues that the exponential growth of herds in a mixed economy society necessitated ever widening migratory circuits to feed the animals. Eventually, the herders, having established new commercial connections with distant markets, split from their original communities to set up an independent nomadic pastoral society.

In the ecological camp, population pressure is sometimes considered the foremost cause of nomadism. Thus, Irons (in Lees and Bates 1974) argues that a rise in human population led to an intensification of agriculture in mixed economy societies. This in turn led to a drop in pastoral production, and encouraged the creation of independent specialised pastoral groups beyond the arable lands. Several other researchers (Sherratt 1983; Lynch 1983; Levy 1983; Spooner 1972; Lattimore 1967) argue that population pressure on prime arable lands led to the displacement of borderland communities into more marginal zones, to which they eventually had to adapt as fully nomadic pastoralists.

Opposed to the above are those researchers who argue for nomadism as an adaptation to cultural phenomena. Lees and Bates (1974) for example suggest that the development of canal irrigation led to a specialised agricultural sector in an originally mixed economy society. With irrigation technology, the agricultural sector expanded, pushing the pastoral sector farther and farther away from arable lands. Eventually, as mixed economies became impractical in the marginal lands the pastoral and agricultural sectors split to become fully specialised.

Other examples of cultural forces affecting the rise of nomadism come from medieval Spain and from ancient Andean civilisations. For these areas researchers have argued that the emergence of state administered regional markets provided an opportunity for specialised pastoral production (Braudel 1973; J. Klein 1920; Lynch 1983; Browman 1981). In these cases, pure pastoralism is seen as one of the many specialisations accompanying the emergence of the state.

The role of state level societies is deemed by many to have been highly important. However, these same researchers also place great emphasis on the role of ecological factors in the evolution of nomadism. Thus, Sherratt in the Near East (1983), Lynch in the Andes(1983), and Levy in the Negev (1983) consider population pressure as the cause of both displacement into marginal areas, and the rise of complex societies. In their view, nomadic pastoral society did indeed come about as an adaptation to marginal environments, but only because there existed institutions--state administered regional markets--which allowed for such specialisation. Population pressure, the

marginal environment, and the economies of complex societies, all acting in a set of feedback loops, are thought to have encouraged the emergence of pure pastoralists.

Likewise, Khazanov, having pointed out the primary role of the environment, notes that "...it was...[the] very existence [of states] with corresponding opportunities for nomads which facilitated the specialization of the latter" (1984: 95). Bates (1971) also stresses state level societies as mediators for exchange, promoting the specialisation of pastoral nomads. Likewise, Lattimore's (1967) frontier theory includes the idea of state level societies pressing populations of the marginal lands into a mobile lifestyle.

Finally, there are those cases where nomadism is seen as a secondary development. Thus, Khazanov (1984) argues for population pressure and the exhaustion of pasturelands in the southern Russian steppe leading to the spread of specialised pastoralism into the Indo-Iranian region during the second millenium BC. Similarly, Oliver (1961) argues for livestock increase, and exhaustion of pastures as the cause for the spread of nomads into East Africa, while Jacobs (1975) implicates the dry climate, and Dale (1954) the wet climate, as the cause for this population displacement. Other such examples include de Planhol (1969) and Cahen (1975) who mention the spread of Bedouins into Khuzestan, and Turks into Anatolia after the Saljuq conquests (de Planhol 1959, 1966). Likewise, nomadism is thought to have penetrated on to the Iranian Plateau in the 11th and 12th centuries with the Saljuq invasions, and again in the 13th century with the Mongols (Lambton 1953; Bosworth 1968).

What is Nomadism?

Clearly, researchers share no unified view of the evolution of nomadism. To some extent this is because they do not agree about who is to be classified as a nomad. Pertinent examples abound in the literature. In Inner Asia, Lattimore (1967) argues for the presence of nomads only in the fourth and third centuries BC, while Khazanov and other Russian scientists (in Khazanov 1984) argue that nomadism started with the Jung and Ti populations of the Chou period in the first half of the first millenium BC. In the Near East, many think that nomadism started in the

earliest Neolithic stage of that region (Flannery 1965; Hole and Flannery 1967; Kupper 1959; Brentjes 1968; Childe 1936; Krader 1959). Mortensen (1975), on the other hand, states that nomadism did not arise in the Near East prior to the late fourth millenium BC, but he goes on to say that local transhumance extended back into pre-ceramic times (Mortensen 1972, 1974; also, Hesse 1982, 1984). Khazanov (1984) mentions that prior to the appearance of real nomads in the first millenium BC, semi-nomadism and herdsman husbandry were the only forms of pastoralism practiced in the Near East. In the Middle East, Spooner (1972) considers nomads to have been active during the third millenium BC, whereas de Planhol (1959, 1969) considers the same population as transhumant, practicing agriculture as well. For the Mediterranean area, Higgs (1976) sees transhumants operating by the third millenium BC, while Walker (1983) dates the earliest transhumants to medieval times.

The problem is partially one of terminology. In the absence of agreement on what nomadism is, and who should be classified as a nomad, it is very difficult to come to any concensus about its origin. Yet there have been few, if any, efforts made by archaeologists to go beyond a vaguely defined classification of pastoralism into nomadic, semi-nomadic, and sedentary populations. "Transhumants" have sometimes been mentioned (Flannery 1965; Mortensen 1972; Hesse 1982; Walker 1983). This term, along with "agro-pastoralist" (cf. eg. Håland 1986; Hall and Smith 1986) may yet herald the beginning of improved definitions.

One extreme in imprecise definition is when hunter/gatherers are labeled as nomadic (de Planhol 1966; Taylor 1972; Lee and DeVore 1968). It should not, however, be necessary to explicitly equate the term "nomad" with "pastoral", since "nomad" itself is derived from the Greek verb to graze (Patai 1951). At the other extreme of imprecision is the use of "pastoralism" and "nomadism" as interchangeable terms covering all kinds of herding economies. Typical of this is the use of "nomadic" as applied to archaeological cultures in which the remains clearly indicate a sedentary population (Håland 1981; Bietak 1986).

In contrast to the loosely defined nomads in archaeological writings, the anthropological literature is filled with a bewildering variety of definitions. Here, the common definition includes

a mobile population with pastoral production as its main economic activity, plus occupation of lands considered marginal (cf. eg. Khazanov 1984; Goldschmidt 1979; Penn 1986; Cohen 1974; D.L. Johnson 1969; Lefébure 1979; Spooner 1973; and many others).

Such classifications, however, generally suffer because they fail to specify exactly how much mobility and pastoral production, and in what sort of marginal environment defines nomadism. The problem is that pastoral production is a continuum, at one end of which can be found purely nomadic, and at the other end purely agricultural folk. Along this continuum, there is a decrease in pastoral production and an increase in agricultural production; there is concurrently a decrease in household mobility, and an increase in sedentism.

As with any continuum, there is no universally accepted subdivision into stages. Thus different researchers break the continuum in different ways. For example, a geographer like D.L. Johnson (1969) classifies pastoralism by the form (direction, length, duration) of the seasonal herding cycles (also, Bernard and Lacroix 1906; Capot-Rey 1953; Veyret 1951). Others classify pastoralists by the ecology of the animals herded (Goldschmidt 1979). The Culture Area school of anthropology classifies pastoral societies on the basis of their geographical location, and their cumulative trait list (Schmidt and Koppers 1924; Patai 1951, 1978; also E. Bacon 1954). Yet others classify the pastoral continuum by a population's degree of sedentism (Murdock and Wilson 1972), or by patterns of pasture utilisation (Barth 1962). In most cases vertical and horizontal migrations--determined by mountain or flatland terrain--are an important element in types established along the pastoral continuum (Arbos 1923; Khazanov 1984; Patai 1951; Goldschmidt 1979; and others). Occasionally, the relative proportion of the population involved in migratory herding cycles defines varieties in the types of pastoral production (Arbos 1923; also Khazanov 1984).

Some researchers break the continuum by the relative importance of agriculture versus pastoral production in the economy (Cribb 1984; E. Bacon 1954), or by the permanence of dwellings (E. Bacon 1954), degree of population mobility (Cribb 1984), and even by the presence or absence of riding animals (Goldschmidt 1979; Khazanov 1984). Some (myself included)

consider the nature of relations to sedentary agricultural communities an important factor in classifying the continuum of pastoral production (Goldschmidt 1979).

Not surprisingly, there are those who reject subdivisions of the continuum (N. Dyson-Hudson 1972; R. Dyson-Hudson 1972). They maintain that since all pastoral types can often be found within the same society, subdivisions of the continuum are meaningless. Others (Asad 1979; Spooner 1973) even wonder if the category "pastoral nomad" has any theoretical relevance at all.

Such doubts notwithstanding, a strict definition of nomads remains a central issue in the investigation of its origin. Therefore it is worth examining certain classifications of the pastoral continuum in more detail.

Current Classifications of Pastoralism

Three recent, detailed examples have been selected to illustrate some basic similarities between divergent classifications. Based on the degree of pastoral production and several other factors (such as degree and form of population movements, and the presence or absence of mounts), Khazanov (1984) divides the continuum of pastoralism into six types. His types are:

1. Pastoral nomadism proper, which describes pastoralists without any agriculture, who are highly mobile and who possess riding animals.
2. Semi-nomadic pastoralists who rely extensively on pastoralism, but also engage in agriculture as a secondary subsistence measure. There are two varieties here;
    a. those societies wherein each household engages in both agriculture and pastoralism, and...
    b. those societies which have specialised sections attending to agriculture or pastoralism.
3. Semi-sedentary pastoralism, where agriculture is the predominant economic activity. This type also has the variants (a) and (b).
4. Herdsman husbandry, where most of the population is sedentary, and specialist herders take care of the stock.

5. Yaylagh pastoralism, or transhumant pastoralists whose use of different vertically separated ecological zones in mountainous terrain, sets them apart from the lowland free range herders. Otherwise, the characteristics of the transhumants may be like types 2, 3 or 4.
6. Sedentary animal husbandry where agriculture is by far the most important economic activity. This type refers essentially to farmers who keep some stock.

Khazanov's typology contains four basic types: 1,2,3, and 6. Type 4 (herdsman husbandry) can take on many forms. It may represent a predominantly agricultural community (type 6 or 3) entrusting its stock to herders of the same society, or even of another society (type 1 or 2). On the other hand it may refer to farming societies (type 3 and 6) who have an occupational class of specialist herders within them. The type 5 (transhumants) can describe any of the basic four types when set in a highland context. As such, types 4 and 5 are actually qualifiers, rather than real types; they can be appended to any of the four basic types to provide for a more specific description of a pastoral population.

In contrast to Khazanov, Goldschmidt (1979) divides the continuum of pastoral production first in two parts: predominantly pastoral, and predominantly agricultural. Within the predominantly pastoral group, which itself constitutes a continuum, Goldschmidt sees variability arising from four factors. These are:

1. The nature of the pastoral population's relationship to agricultural producers:
    a. the group does not cultivate, but trades for agricultural products with some other group
    b. the group does not cultivate, but is in a symbiotic relationship with agriculturalists
    c. the group itself is engaged in some agriculture
2. The nature of the terrain which they utilise for their herds; either montane or desert
3. The nature and ecology of animals herded, of which there are two groups:
    a. small stock (sheep, goat, llama, alpaca)

b. large stock (cattle, camel, reindeer)

4. The degree of the mobility of herders, and whether they have mounts or not.

With these factors, Goldschmidt makes a taxonomy of modern pastoral populations.

A. Large stock, flat land nomads, who are either

1. mounted, or

2. pedestrian.

In each category, they are either

a. independent of agriculture, or

b. integrated with agriculture, or

c. practicing secondary agriculture.

B. Small stock mountain dwelling transhumants, who are either (a), (b) or (c), as in the above case.

In spite of the different approach to classification, there are obvious similarities between Goldschmidt's and Khazanov's types. Thus, Goldschmidt's "type" B is actually Khazanov's qualifier transhumant, when applied to the basic types. Likewise, types A1(a) and (b) of the former match the latter's type 1, type A2(c) is similar to type 2 of Khazanov, and so forth.

Cribb's (1984) classification is more straightforward than either of the above. Based on the relative degree of agriculture to pastoral production, and the relative mobility or sedentism of the population, Cribb divides the continuum of pastoral production into four types. The types and their specifics are shown in Table 1.1. Cribb's classification uses factors similar to the others. The categories "productive regime" and "number of stock" are obviously measures of the degree of agricultural versus pastoral production; this is an important factor in the other two classifications as well. Likewise, the category "marketing strategy" partially describes the same idea as Goldschmidt's nature of relation to agricultural production. The category "mobility" is of course always important as a determinant of stages on the pastoral continuum.

TABLE 1.1

CRIBB'S CLASSIFICATION OF PASTORAL PRODUCTION

	Productive Regime	Numbers of Stock	Marketing Strategy	Mobility
Type 1.	Fully Specialised Agriculture, Minimal Pastoralism	A Few Animals for Traction and Transport	Agricultural Products Marketed and Subsistence	Fully Sedentary
Type 2.	Predominantly Farming, Limited Pastoralism	Small Number of Stock for Household Needs	Agricultural, Subsistence Pastoralism	Sedentary, Limited Movement of Flock around Village
Type 3.	Pastoralism Combined with Cultivation	Numbers Beyond Perennial Carrying Capacity of Locality	Agricultural and Pastoral Products Marketed	Village-based Transhumance
Type 4.	Predominantly or Exclusively Pastoral	Large Numbers of Stock Well Beyond Carrying Capacity of Locality	Pastoral Products Marketed, Subsistence Cultivation Optional	Fully Nomadic

Overall, Cribb's four types match well to Khazanov's basic types. Thus the former's types 1,2,3 and 4 match the latter's types 6,3,2 and 1. They also match the archaeologists' favoured, but ill-defined, categories of sedentary agiculturalist, transhumant or semi-sedentary pastoralists, semi-nomadic, and nomadic pastoral populations.

Interestingly, some native models of the continuum of pastoral production contain more or less these same four types. Arabian pastoralists, for example, distinguish between purely nomadic camel herders, semi-nomadic sheep herders, semi-sedentary pastoralists and sedentary agriculturalists (Musil 1928; Dickson 1951; Coon 1976).

The general similarities between classifications suggest that divergent views are principally the result of different theoretical positions, rather than an inherent disagreement about the "plateaux" in the continuum of pastoral production.

If this were all, diverse classifications and terminologies would hardly present a problem. But there is something more serious: the question of the scale of society at which pastoralism is practiced. Pastoralism can be practiced as a specialisation within a mixed economy household, where, for example, the males are engaged in herding while the females cultivate, or as a specialisation at the sectional level within the same society, or even as specialisation at the level of entire societies. Why and how the scale of society may correspond to the different levels of pastoral production, is not generally dealt with other than as an appendix or qualifier to the main types in the pastoral continuum.

Khazanov (1984) for example, notes that his type 2 and 3 populations (semi-nomadic and semi-sedentary pastoralists) can have varieties (a) or (b); whether each household practices both animal husbandry and cultivation, or whether there are economic sectors within the population which specialise in either pastoral or agricultural production. Clearly, in Khazanov's typology the scale of society at which the mixed economy is practiced is simply a secondary distinction, although for his type 1--actual nomads--it is implicit that pastoral production must be a specialisation at the level of the entire society.

Likewise, Goldschmidt's (1979) category for the relation of the pastoral group to agricultural production is really another way of dealing with the question of the societal scale for pastoralism. Thus, the factors 1 (a) and (b)--groups who get agricultural products from other societies--clearly refer to a situation where an entire society is specialised as pastoralists (Khazanov's nomadism proper). On the other hand, factor 1 (c) refers to those pastoral societies which have agricultural sections within them, complementing the specialised pastoral sections (Khazanov's types 2 b and perhaps 3 b), or those wherein each household engages in both agriculture and pastoralism (Khazanov's 2 a, and 3 a). The issue of the scale of specialisation is cloudier in Goldschmidt's taxonomy than in Khazanov's, but it is an improvement on Cribb's typology which does not take the issue into account at all.

The question of societal scale crops up in many other studies of pastoral societies. Arbos' (1923) typology of a part of the pastoral continuum into nomadic and transhumant is based on

whether the entire population or only a segment thereof moves with the flock; a crude accommodation of the different societal scales in pastoral production. Elsewhere, the issue of societal scale is the stumbling block which led to N. and R. Dyson-Hudson's (1972, 1972) stance against any subdivision of the pastoral continuum. Those societies wherein various types of pastoral production are practiced are clearly involved in a smaller societal scale of pastoralism than the true nomads whose whole society is engaged in pastoral production.

Certain researchers have studied the issue of societal scale of production more thoroughly, but their findings have not been integrated into classifications of the pastoral continuum. Thus, Barth (1973) distinguishes between (a) mixed economy households, wherein pastoral and agricultural production is engaged in simultaneously; (b) two economic sectors within one ethnic group, wherein whole tribal sections are specialised in either agriculture or pastoralism; and (c) two economic sectors in two ethnic groups, wherein an entire society is specialised in pastoral, and another in agricultural production. Similar ideas are expressed by Monod (1975).

A few researchers have attempted to explain the changes in societal scale of pastoralism. Lefébure (1979), for example, is of the opinion that specialisation in food production manifests itself initially as two economic sectors within the same ethnic group. Eventually, he thinks, the desire for autonomy within each of the sectors resulted in ethnic fission. As an example, Lefébure considers the Nilo-Hamitic pastoralists to have evolved in just such a way. Likewise, E. Marx (1978) has pointed out that in cases where pastoral nomads have no access to arable land in their annual migratory routes, certain sections will peel off in order to set up an agricultural sector. With time, the different sectors will acquire new ethnic identities and so the group will have evolved from a case of two economic sectors in the same society to two economically specialised societies: one nomadic and the other agricultural. The outlines of a similar idea can be seen in archaeological studies which assign the origins of pastoral nomadism to the displacement of certain segments of population into the hinterlands, where they eventually set up their own independent and economically specialised society (cf. eg. Lees and Bates 1974; Coon 1943; Service 1975).

In spite of these models, there is as yet no classification of the pastoral continuum which adequately integrates the issues of degree of pastoral production, with the question of societal scale in pastoral specialisation. Indeed, many of the disagreements on the origins of nomadism arise from the fact that the societal scale of specialisation is not adequately taken into account (as an example, one might look at the disagreements between Khazanov, Merpert, Shilov and Masson on the status of nomadism in the Eurasian steppe during the Bronze Age; in Khazanov 1984:91).

The different societal scales in pastoral production suggest an evolutionary trajectory along the vector of increasing scale in specialisation. A household-based mixed economy with both agricultural and pastoralism practiced by the same family represents the lowest level of production specialisation. Two economic sectors engaged by different sections of the society (agro-pastoral) represent a higher level and scale of specialisation. Finally, two economic sectors in two different societies (true nomadism and specialised agriculture) represents the highest scale of specialisation in the continuum. Thus, a key to understanding the origins of nomadism may lie in constructing a classification which unifies the types of pastoralism with the societal scale at which they are practiced.

New Perspective on Pastoral Nomadism

Such a classification is attempted below. It hinges on the concept that the omnivorous human requires not only meat and vegetables, but also the secondary products of plants and animals for various other purposes. In this light a basic strategy of all humans--be they hunter/gatherers or any one of the pastoralist to agriculturalist variants, or even operating within the frame of modern society--must assure the acquisition of both meat and vegetal foods and other products of plants and animals. The way in which food producing populations balance their acquisition of plant and animal foods and products (referred to here as M/V balance), determines not only their place on the continuum from pure pastoralism to pure agriculture, but also the societal scale, from household to ethnic group, at which the pastoral sector of the economy exists.

To illustrate, Figure 1.1 shows a pyramidal hierarchy of the different scales of human society from individuals to household, community, section, tribe and eventually ethnic group. The levels are all nested. Whether a society is described as mixed food producer, transhumant, agro-pastoral, pure agricultural, or pure pastoral, depends on the scale of society at which there is specialisation in pastoral production and subsequent exchange of M/V products.

Thus, a condition where there is division of labour in food procurement, and subsequent M/V exchange, within the household (or within the co-residential community), is referred to as a mixed economy. In a mixed economy specialisation may be between sexes: for example, the men may acquire meat, and the women vegetable products. It is immaterial whether domesticated plants and animals are available or not: a mixed economy society can be either at the hunter/gatherer or food producing level.

Higher up the societal pyramid, if several communities specialise in food production an agro-pastoral economy comes into being. Typically, the several communities make up a tribal section. In an agro-pastoral economy one or more sections specialise in agriculture and others in pastoralism. M/V balance is reached through exchange between the specialised sections. This is a condition where two economic sectors exist within one ethnic unit. Ethnographic examples of this scale of specialisation are abundant, but one example will suffice here. The Eritrean Beni Amer, who have a complex economy based on cattle, camel, sheep and goat herding plus cultivation, are divided into seventeen sections. Many of these are specialised producers of one or another aspect of the overall economy (Nadel 1945). Their stage (agro-pastoralism) is clearly a level higher up the scale of specialisation than the mixed economy group. It is important to remember though, that agro-pastoralism can only exist under conditions where inter-sectional exchange for the M/V balance is dependable. It requires institutionalised cooperation between different sections of a tribe. Thus, it involves the coordination of and co-operation between larger demographic groups than in the mixed economy exchanges.

At the next higher level, when there is specialisation in food production between tribes or ethnic groups, we are dealing with conditions commonly referred to as pure pastoralism

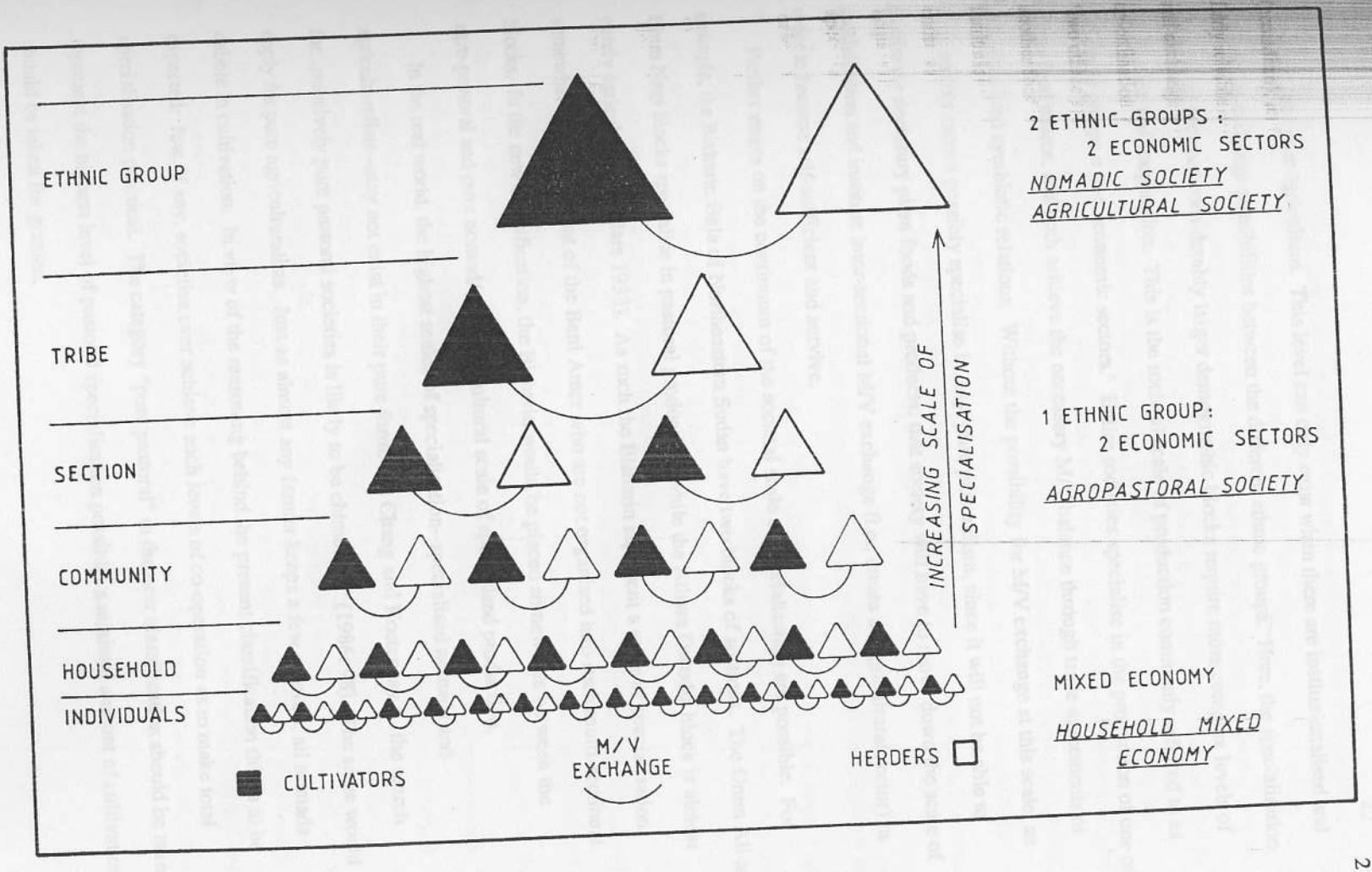

Figure 1.1. The scales of pastoral specialisation.

(nomadism), and pure agriculture. This level can only exist when there are institutionalised and fairly reliable exchange possibilities between the different ethnic groups. Here, the specialisation and exchange between considerably larger demographic blocks require more complex levels of co-ordination and cooperation. This is the societal scale of production commonly referred to as "two ethnic groups = two economic sectors." Entire societies specialise in the production of one or another food source, and both achieve the necessary M/V balance through trade agreements or institutionalised symbiotic relations. Without the possibility for M/V exchange at this scale, an entire society cannot possibly specialise in, say, pure pastoralism, since it will not be able to acquire the necessary plant foods and products; that society will have to move down the scale of specialisation and institute inter-sectional M/V exchange (i.e., create an agricultural sector) in order to become self-sufficient and survive.

Further stages on the continuum of the societal scale of specialisation are possible. For example, the Bisharin Beja of Northeastern Sudan have two blocks of sections. The Umm Ali and Umm Nagi blocks specialise in pastoral production, while the Atbara Omodia block is almost purely agricultural (Sandars 1933). As such the Bisharin represent a scale of specialisation somewhat higher than that of the Beni Amer who are not organised into such multi-sectional blocks. In the new classification, the Bisharin would be placed somewhere between the agro-pastoral and pure nomad/ pure agricultural scale of specialised production.

In the real world, the highest scales of specialisation--specialised nomads and agriculturalists--may not exist in their pure form. As Chang and Koster say,"...the search for...putatively pure pastoral societies is likely to be chimerical" (1986: 98). The same would apply for pure agriculturalists. Just as almost any farmer keeps a few animals, all nomads dabble in cultivation. In view of the reasoning behind the present classification this is to be expected: few, if any, societies ever achieve such levels of co-operation as to make total specialisation practical. The category "pure pastoral" in the new classification should be taken to represent the highest level of pastoral specialisation possible; a minimal amount of cultivation should be taken for granted.

In the new classification, population mobility is inherently accounted for if one agrees that pastoralism, at any scale, requires a high degree of mobility: in a situation where an entire society is specialised in pastoral production, it follows that the entire society will lead a mobile lifestyle. In other cases where entire sections are specialised, high mobility will be restricted to those sections engaged in specialised pastoralism. Likewise, where specialisation is at the household scale, the herders will be quite mobile while the cultivators will be sedentary. There can also be other variants: where one section is agricultural and another has a mixed economy, only the herders of the second section will exhibit any of the nomadic traits connected with pastoral mobility. The specialised agriculturalists in the first section, and the cultivators in the second will remain sedentary.

For now, the continuum of the scale of specialisation can be divided into four principal stages: 1) household mixed economy, 2) agro-pastoral (one ethnic unit = two economic sectors), 3) pure pastoral (nomads) and 4) pure agricultural (two ethnic units = two economic sectors). Variants such as the Bisharin, or a case of M/V exchange within the community, rather than intra-household, can be included in the continuum whenever necessary.

The four principal stages in this new classification have their counterparts in the current typologies of the pastoral continuum. Pure pastoral for example, matches Khazanov's type 1 (pastoral nomadism proper), and Cribb's type 4 (predominantly or exclusively pastoral). Pure agricultural matches Khazanovs type 6 , and Cribb's type 1 (fully specialised agriculture). The agro-pastoral stage fits Khazanov's variant b of types 2 and 3, while the household mixed economy matches his variant a of the same types.

The new classification has two advantages over alternate systems. First, it takes into account both the societal scale of specialisation and the degree of pastoral production and mobility in one unified model; and second, it represents an evolutionary classification, rather than one based solely on a list of traits. This evolutionary aspect is missing from the earlier classifications of pastoral production.

In a general sense the new classification mirrors the universal tendency for change from simple to complex, from undifferentiated to specialised. In this light, the question of the origin of nomadism can be rephrased as "why does the societal scale of specialisation in food production advance to the point where pastoral nomads can come into existence?"

The classification itself suggests an answer. The immediate cause for the evolution from one level of specialisation to another can vary. At its most basic, the cause must have involved agreements and alliances between individuals or groups. It would thus have been a specific historic event, beyond the reach of archaeology. Whatever the immediate cause, however, the result must in all cases be higher levels of cooperation and exchange, established between larger demographic groups. Only this allows the societal scale of specialisation to increase. To illustrate: at the smallest demographic and societal scale, the members of a mixed economy household cannot possibly pass to the next level and specialise in full time pastoralism unless another household in the vicinity is willing to offer agricultural goods in exchange for pastoral products. If the first household specialises prior to this agreement, it may well find itself with a surplus of meat products and no access to vegetal ones; the outcome of that will have to be an immediate reversion to an intra-household mixed economy subsistence. The same principle would also apply to all higher scales of specialisation.

Thus, although there may not be many archaeologically identifiable immediate causes for the increase in scale of M/V exchange, there are specific conditions which have to exist prior to the change in the scale of production. There must be opportunities for co-operation in, and the co-ordination of M/V exchange at the appropriate scale before populations can become more specialised in one or another form of subsistence production. At the smallest societal scale (households) simple agreements between individuals can provide the needed opportunity. But can we explain what provided the opportunity for co-operation between massive demographic blocks at the scale of entire societies?

One can argue that such opportunities evolved in the guise of the population's scale of political unification. The traditional classification of the stages of socio-political complexity from

band, tribe, to chiefdom and then state level societies (cf. eg. Service 1975), represent essentially the evolution of ever larger aggregates of politically and economically unified populations. Thus, it would be logical to assume that pure nomadism and pure agriculture, functioning at the regional scale and involving entire unified societies, can have only come about where political unification and organised co-operation already existed at the inter-regional scale: i.e., a state level society. Similarly, at a smaller scale, it may be that specialised production and subsequent exchange between tribal sections could only be co-ordinated if the unifying abilities of a chiefdom was in place.

This should not be simplified to mean that the state caused nomadism, nor indeed that nomadism caused the state. The immediate causes of a population's advance in the scale of production specialisation--to pure nomadism, or any of the lower stages--were probably factors which lie in the realm of historically specific characters and events. Archaeologically, it can only be said that nomadism, along with other forms of subsistence, craft, administrative, and military specialisations arose with the state. Such occupational diversity in fact partly defines what a state level society is.

Comparison of the New and Traditional Perspectives

Many of the component ideas upon which the new classification and the M/V model are based, can be found in the anthropological literature on nomadism. For instance, Khazanov (1984) clearly notes that the very existence of states facilitated the specialisation of nomads. He even notes the correlation in the timing between the appearance of nomadism and the state in the Eurasian steppe of the first millenium BC. Similarly, he notes that nomads who fall into an economic imbalance due to cessation of trade, are faced with two choices; either to find other means of obtaining agricultural products, or to become less specialised and settle down to some agriculture. Bates and Lees (1977) also mention that as exchange possibilities between nomads and sedentary population disappear, there has to be a move towards less specialisation (also Bates 1971; Barth 1973). The idea that nomads are dependent on the products of agricultural

communities is common (cf. eg. Lattimore 1967; Lees and Bates 1974; Goldschmidt 1979; Arbos 1923; Bates and Lees 1977; and others). The thought is perhaps best expressed by Kroeber who says that, in their dependence on sedentary agriculturalists, nomads are really only a half culture (1948: 278).

In spite of the fact that the component ideas of the M/V model and the new classification are common knowledge among anthropologists, they have not before been put together in a way approximating the present model. Even those current models which attach some importance to the role of the state, tend to place greater importance on the role of population pressure and the ecology to explain the development of nomadism (cf. eg. Khazanov 1984; Sherratt 1983; Lynch 1983; Levy 1983; and others). Only a few scholars (cf. eg. Braudel 1973; J. Klein 1920) explicitly claim state sponsored regional markets to have encouraged the rise of specialised pastoralism. The M/V model is thus closely related to their ideas.

How does the M/V model for the origin of nomadism compare with the ecological, economic, and military mobility models? The environmental settings of different populations--a key factor in the ecological models--becomes causally irrelevant. Once specialisation in food production takes place the participants must move to thier appropriate ecological setting. Efficient specialised agriculture cannot be undertaken anywhere except in fertile valleys, and therefore specialised pastoralists must move towards agriculturally marginal zones, which are in fact the optimal zones for pastoralism. There is an automatic adjustment in spatial distribution once separate sectors of the economy arise.

The adjustment in the spatial distribution of the different sectors of the economy takes place at all scales of societal specialisation. Within the agropastoral system, the agricultural sector establishes itself in zones suited to agriculture, while the pastoral section will utilise the agricultural hinterlands. Within the mixed economy household, the cultivators will inhabit fertile zones, which become the permanent terminus of the herders' migratory cycle, while the ephemeral termini will be located in the agriculturally marginal zones. Any other spatial arrangment will upset the economic system and the M/V balance. In contrast to the ecological

models, the M/V model claims that hinterlands are occupied not because they are there, but because groups can have the assurance that they will be reimbursed with whatever products of the fertile lands they forfeit, when they go to exploit the marginal lands.

According to the M/V model, the economic growth potential arguments of Barth (1973) and Cribb (1984) cannot have causal priority in the formation of specialised pastoralism either. The exponential growth of herds will only lead to pastoral nomadism, if the nomad is assured of acquiring agricultural products from settled populations in order to balance his needs. The agriculturalist will only give up his growing stock, or send if off into the hinterlands, if he can be sure of access to those pastoral products. The fact that such agreements are necessary prior to specialisation probably explains why, contrary to the logical outcome of the economic models, not all mixed economy populations eventually turned into specialised pastoralists.

The military mobility theory for the origins of pastoral nomadism directly contradicts the M/V exchange model. The former posits that the highest levels of specialisation, nomadic and sedentary agricultural, are reached at times of highest competition between the two groups, whereas the latter model suggests that specialisation occurs at times of highest cooperation. In light of the M/V model, the question which the military mobility theory fails to answer is where do the specialised nomads acquire their necessary agricultural products if they can exist only at times of competition with the very people who can supply them the agricultural goods?

Of the other current models, the quasi-systemic population pressure/ displacement models do not necessarily contradict the M/V exchange model, insofar that they generally allow that state level societies, and their regional trade networks, partially laid the foundation for nomadism. However, population pressure of itself is not, according to the M/V model, a necessary condition in the rise of nomadism.

The new perspective on the origins of nomadism--the M/V exchange model-- remains to be historically demonstrated. By virtue of the time frame of the origin of nomadism the model has to be demonstrated with archaeological and historical data. It is not only necessary to show that the model fits the available data, but that it fits better than any of the other current models.

In the remaining chapters the various models for the origin of nomadism are tested in the Northeast African archaeological theatre, in the time frame from the early Neolithic around 4500 BC, to 600 AD when the earliest Christian cultures appeared in the area. Analyses must take place at two geographic scales. The smaller one (at hundreds of square kilometers) is designed to test models at the smaller societal scales: household, co-residential, and up to about sectional levels. The area chosen is the Southern Atbai in the Eastern Sudan. There, the Butana Archaeological Project and the Italian Archaeological Mission in Kassala have recently carried out extensive archaeological surveys and excavations, which have revealed a complex sequence of change from large nucleated village occupations to ephemeral nomadic occupations.

At the larger geographical scale the analysis will deal with the archaeological sequence of several regions in Northeast Africa including Upper Egypt, Lower and Upper Nubia, the Middle Nile, Gezira, Southern Atbai, and the Northern Ethiopian highlands. What little data are available from the Butana Grasslands, the Eastern and Nubian Deserts, as well as the Western and Lybian ones are included in the analyses. At this large geographic scale, the models can be tested for the larger societal scales, i.e. above the sectional level to the tribal, ethnic and interethnic levels. The regions chosen include all ecological gradations from fertile river valleys, to marginal areas with seasonal rivers, and on to deserts. Also, within the chosen time frame, the various regions witnessed the emergence of several distinct complex societies including Dynastic Egypt, the Napatan, Meroitic, Pre-Axumite, Axumite, and Post-Meroitic Kingdoms. As such the setting includes all variables relevant to the testing of the models.

To what extent can the tests be carried out? At the larger geographical scale the quality of archaeological data from Northeast Africa is uneven; in some places, especially away from the Nile river, coverage is actually quite spotty. At the smaller geographical scale in the Southern Atbai, however, there is quite extensive coverage. Overall, as we shall see in later chapters, there is a sufficient cross section in cultural, geographical, social and economic variation to allow a fairly complete, if preliminary, test of the models.

CHAPTER II

METHODS FOR IDENTIFYING NOMADS AND DISCOVERING THEIR ORIGIN

Introduction

Methodologically, the present research must be tackled in two steps. First, it is imperative to distinguish properly between fully nomadic, sedentary agricultural, agro-pastoral, and mixed economy communities in the archaeological record. Second, the archaeological sequence of change from one type of pastoralism to another must be compared to the three models on the origin of nomadism, in order to confirm or reject each model.

As concerns the first step, a number of approaches have traditionally been used to identify the archaeological traces of pastoralists. Most leave something to be desired. Many archaeologists tend to recognise only the extremes of the continuum in adaptation --agriculturalists and pastoralists--neglecting the more murky, but highly important, intermediate stages. The traditional approaches are discussed in the first part of this chapter.

In the second part, a number of ethnographic case studies from the Sudan are presented, in order to illustrate the actual complexities of pastoral adaptation. The successes and shortcomings of the current approaches become evident when they are hypothetically applied to the modern Sudanese pastoralists. A set of modified approaches are then suggested which can distinguish between the various types of pastoral adaptation in the Northeast African archaeological record. It is concluded that the task of identifying nomads must be approached on a broad analytic front; principally through a study of settlement patterns, reinforced with other pertinent, but independent, classes of data. Having dealt with the methods for identifying nomads, this chapter concludes with a section on the methods utilised in the second step, that of testing the archaeological sequences against the various models for the origin of nomadism.

Traditional Approaches to Identifying Pastoralists

Most archaeological studies rely on the presence of domesticated animals as the primary means for identifying sites of pastoralists. Often, the pastoral site thus identified, is assumed to have been occupied by nomads (Håland 1981; Bietak 1986; W.Y.Adams 1977). Some studies, however, go farther by attempting to understand ancient herd management strategies through the mortality patterns of the domestic animals found. In the mortality patterns, different age and sex profiles are taken to represent different uses--for instance meat, milk or wool consumption-- to which the animals were put (Chaplin 1969,1971; Cribb 1984a; Davis 1984; Ducos 1969; Hesse 1982,1984; Halstead 1981; Smith and Horowitz 1984). The objective is, of course, to identify different sorts of pastoral adaptations.

Such studies rely on Payne's (1973) models of herd kill-off patterns. Although Payne recognised the tentative nature of his models, others (cf. eg. Uerpmann 1973) have more or less accepted them as definitive. This has led to criticisms of the assumption that one to one correlations between managment strategies and mortality curves can even exist (Baker and Brothwell 1980; Collier and White 1976; Wilkinson 1976).

The problem of identifying types of pastoralism on the basis of faunal remains, however, goes beyond the accuracy of model kill-off patterns, into the domain of taphonomic studies. Recent research has focused attention on the tremendous number of variables which affect the formation and preservation of faunal assemblages (Behrensmeyer and Hill 1980; Binford 1978,1981; Giffford 1978,1981; Casteel 1977; Gilbert and Singer 1982; Grayson 1979; Klein and Cruz-Uribe 1984). There are serious difficulties in measuring relative species abundance on archaeological sites. Indeed in certain archaeological settings, such as the Eastern Sudan, the lack of faunal preservation on deflated sites can prohibit any detailed studies on the subject. A study of pastoralism based on faunal remains can only be attempted if there is near ideal site preservation. It is an ironic fact that the insubstantial sites of nomadic pastoralists rarely, if ever, exhibit this ideal state of preservation.

Without ideal preservation, faunal analyses can only indicate whether or not domestic animals were used by the inhabitants of a given site. The remains of domestic animals, in and of themselves, cannot inform the investigator about the specific form of pastoralism practiced. To distinguish between nomads, agro-pastoralists, mixed economy folks, and farmers who keep some stock, additional data have to be analysed.

Among such additional data are site locations. Robertshaw and Collett (1983), in studying six Pastoral Neolithic sites in East Africa, have relied on site catchment analyses to distinguish between pure pastoral and mixed economy sites. They analysed the agricultural potential of the catchments through a study of the soil types within a five kilometer radius of each of the six sites. The results indicated that four of the sites had no immediate access to suitable arable lands, prompting the authors to conclude that they were occupied by nomadic pastoralists.

A similar, but far less detailed approach was taken by Hole (1978, 1980) to identify sites of pastoralists in Iran. According to him, pastoral sites are to be found in marginal areas away from the zones typically investigated for the remains of early agricultural villages (also Zagarell 1983). Likewise, Bower et al. (1977), working in central Kenya, identified pastoral sites through systematic environmental surveys; sites which were found in areas optimal for a pastoral economy were identified as part of a pastoral settlement system. Other examples of this approach can be found in Chang (1984), Kelley (1982 a,b) and Russell and Dean (1985). The location of individual sites, however, cannot inform about the society's type of pastoral adaptation: it can only indicate whether a particular site was occupied by herders. Whether or not it belonged to a nomadic, agro-pastoral, or mixed economy society must be ascertained by other methods.

As another example of such a site specific approach, the particular nature of a site has been used to indicate pastoral adaptation. Often, the small size of the site, the low density of artefacts found on it, and the purely superficial nature of the deposits are taken as prime indicators of ephemeral occupation by a transitory population. These indicators, coupled with the presence of domesticated animals, are generally taken to signal a site of nomadic pastoralists.

There is some logic here. It has long been recognised that nomads travel in small groups, carry little in the way of material culture, and leave even less behind when they abandon camp (S.E. Smith 1980; Gifford et al. 1980; Robbins 1973; Cribb 1983). In fact, until recently the very notion that prehistoric nomads could be found in the archaeological record was open to doubt. However, more painstaking survey methods and ethnoarchaeological studies of artefact use and discard among nomads (Hofman 1982; Murray and Chang 1981; Robbins 1973; Cribb 1983) have shown that ephemeral campsites can, under the proper conditions, be found. For example, the sites which Connor (1984) recognised as those of pastoral nomads were represented only by a thin scatter of artefacts and bones, and many hearths. Often, although the remains are extremely scanty, they contain characteristic clues about the nature of occupation. Hole's (1974) informants, for instance, recognised Tepe Tulai as a nomadic campsite on the basis of tent outlines and stone platforms which matched modern nomads' facilities.

In addition to the site's characteristics, other special features have also been considered useful. Chang and Koster (1986) mention animal enclosures as one of the best indicators of pastoral adaptation. Obviously, however, these can only be useful where they are built of durable enough materials to survive in the archaeological record. Other interesting advances in recognising animal enclosures have come in the form of phosphate and plant analyses which can give clues to their location (Conway 1983; Provan 1971; Shimada and Shimada 1985). But along with other such site specific analyses, these special features cannot inform us about the societal scale of pastoral production.

Another line of approach in identifying sites of pastoral nomads takes into account aspects of the seasonality of land use. Often, sites are either located in areas which could only have been utilised during specific seasons. It is assumed that if the sites could not have been occupied year-round, the population must have been nomadic. These arguments are particulary popular in the archaeology of the Sudan, where any site located away from the perrennial rivers might be automatically labelled as a nomadic campsite, on the assumption that it could not have been occupied during the dry season (cf. Håland 1981).

In a similar vein, occasionally sites include features which suggest use during a particular season. In conjunction with the presence of domesticated animals, they are generally interpreted as sites of mobile herders. Marks and Ferring (1971), for example, identified sites of the Karat Group as seasonal occupations on the basis of hearths positioned so as to provide a smokescreen against insects during the wet season. Such arguments generally maintain that, since the features are only useful for part of the year, occupation there could not have been year-round.

The above mentioned approaches, singly or in various combinations, are obviously of great help in identifying sites of pastoral populations. However, keeping present research objectives in mind, most leave a number of things to be desired. With a few exceptions, the studies outlined above go on the assumption that pastoralism and nomadism are one and the same thing, diametrically opposed to a settled agricultural adaptation. One is either dealing with pastoralists or agriculturalists, without making allowance for the intermediate stages. Often, when faced with an ephemeral pastoral site, many tend to assume that the entire society was nomadic. In reality, however, what distinguishes the intermediate stages in the continuum of pastoralism from the nomadic extreme is that mobile herders make up only a part of that society. The herder's families may well enjoy the same degree of sedentism as the most settled agriculturalists.

A few of the archaeological studies mentioned do take into account the intermediate types of pastoralism. In Hole's study of Tepe Tulai there have been arguments as to whether the site represents a campsite of specialised pastoral nomads (Wheeler Pires-Ferreira 1975) or whether it is part of a village based herding economy (Gilbert 1983). Another example is the study of Pastoral Neolithic sites in East Africa carried out by Robertshaw and Collett (1983). The distinctions they made between the six pastoral sites indicate an appreciation for the complexities of pastoral adaptations which is not common in archaeological studies.

In view of the shortcomings of most traditional approaches, how then can one identify the variations in pastoral adaptation in an archaeological setting? To give insight into this problem, various ethnographically known groups of agriculturalists and pastoralists in the modern Sudan have been surveyed. The goal is, first, to clearly illustrate the range in pastoral adaptations,

second, to highlight the shortcomings of the traditional approaches and, third, to find material "signatures" in the various types of pastoral societies which can suggest a set of modified approaches to identifying archaeological nomads.

Modern Pastoralists

For present purposes, since the aim is to identify types of pastoral production (rather than their societal scale), it is more appropriate to describe the modern Sudanese pastoralists in the framework of one of the traditional classifications of pastoralism. Cribb's (1984) typology (Table 1.1) serves this purpose. Table 2.1 shows that typology adapted to the Sudanese case studies.

Figure 2.1 shows the distribution of those modern populations reviewed. Figure 2.2 shows an idealised version of the settlement systems of each of the four types of adaptation. The case studies are elaborated below.

Type 1: Fully Specialised Agriculture, Minimal Pastoralism

This type of adaptation, at the most settled and agricultural end of the continuum, is well known from almost all areas of the Old World. Typically, in terms of settlement systems, this type is centered on a permanently occupied village located in prime arable lands. Although this picture is largely valid for Northeast Africa, it must be noted that nucleated villages are not a necessary part of the settlement system. In the sample of ethnographic cases studied dispersed homesteads and hamlets are also associated with this type of adaptation.

The Qemant of Ethiopia (Gamst 1969) for instance, live in highly dispersed communities consisting of homesteads scattered across pastures and agricultural fields. Between 100-400 homesteads make up a community in the form of a neighbourhood, rather than a village. The homesteads comprise 1-4 wattle and daub houses with a few smaller structures located in the midst of fields. Homesteads are generally occupied for a lifetime only. That is, after the death of the head of the household, assuming the children have grown and been married off, the homestead is abandoned and left untended.

TABLE 2.1

CLASSIFICATION OF MODERN SUDANESE PASTORALISTS

Productive Regime	Mobility		Settlements		Modern Examples
	Families	Herders	Families	Herders	
TYPE 1 Fully specialised agriculture, minimal pastoralism	Fully sedentary	Limited movement in the vicinity of settlements	Permanent or semi-permanent habitations. Dispersed or nucleated	Same as families	Sections of: Bisharin Beni Amer Qemant
TYPE 2 Mainly farming. Limited pastoralism	Fully sedentary. Short-range movement in very dry years	Long-range grazing in dry season	As in type 1. Camps close to river in very dry years	Camps at distances over half a day' walk from main settlement	Berti Ingessana Uduk Anuak Didinga Sections of: Bisharin Beni Amer
TYPE 3 Pastoralism combined with agriculture	Semi-sedentary. Dry season migration to riverside camps, or w/herders	As in type 2.	As in type 1. Dry season camps near water.	As in type 2. May include families in dry season	Nuer Murle/Beir Nyangatom Sections of: Beni Amer
TYPE 4 Specialised pastoralism	Migratory, nomadic. Generally accompany herders.	Migratory, nomadic.	Seasonally occupied camps.	Same as families. Herding camps under appropriate conditions.	Kababish Baggara Sections of: Bisharin Beni Amer Hadendowa

Following the traditional approaches to identifying pastoralists, a settlement system such as the Qemant's, which would leave behind evidence of small scattered sites without any standing architecture (the wattle and daub buildings deteriorate rapidly), or great depths to the deposits, could easily be interpreted as ephemeral occupations of a transitory population. The fact that domesticated animals and even enclosures are found around the homesteads, could only fortify

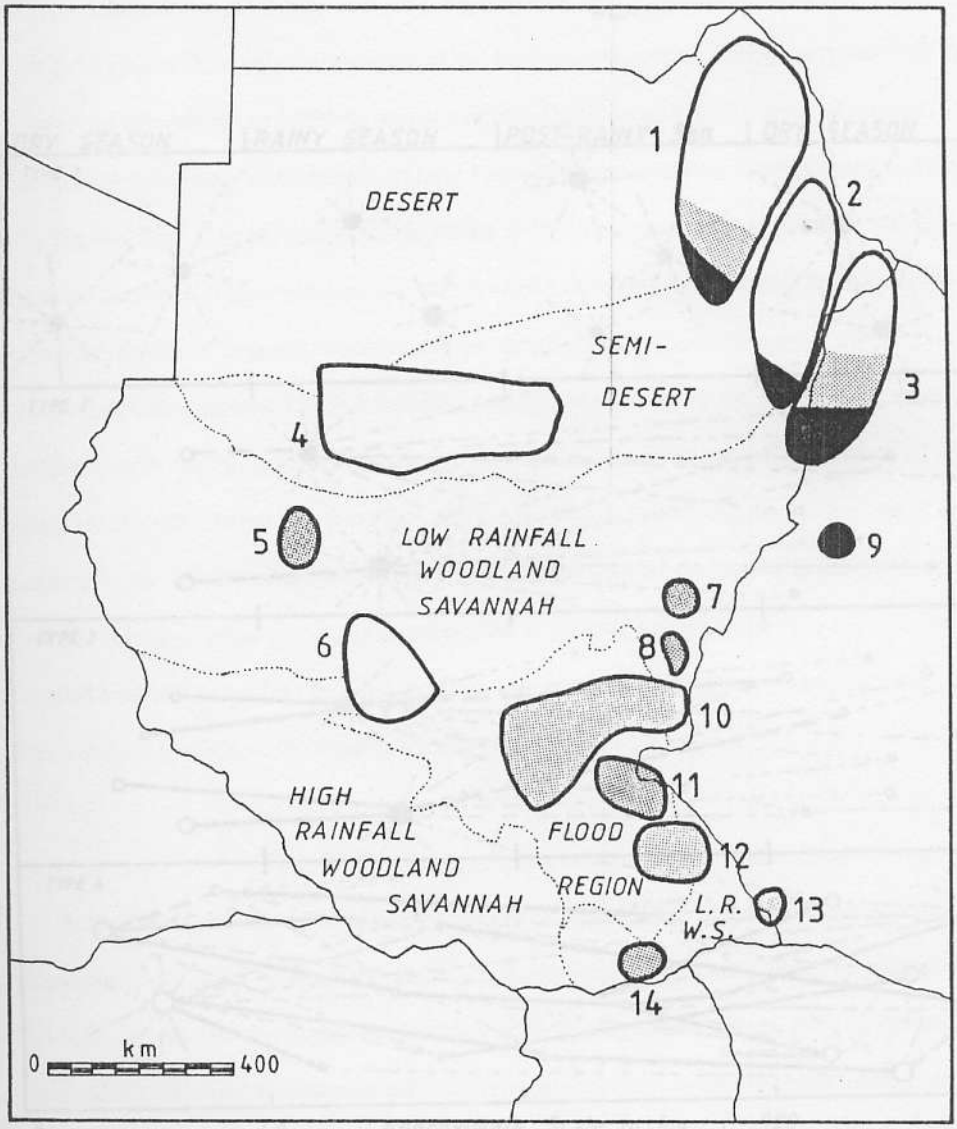

Figure 2.1. Cross-section of pastoralist adaptations in the modern Sudan. Black shading: type 1; dark shading: type 2; light shading: type 3; no shading: type 4. Environmental information from Barbour 1964.

1. Bisharin (Sandars 1933)
2. Hadendowa (Owen 1937)
3. Beni Amer (Paul 1950; Nadel 1945)
4. Kababish (Asad 1970)
5. Berti (Holy 1974)
6. Humr Baggara (Cunnison 1966)
7. Ingessana (Evans-Pritchard 1927)
8. Uduk (James 1979)
9. Qemant (Gamst 1969)
10. Nuer (Jackson 1923)
11. Anuak (C.R.K. Bacon 1922)
12. Murle/Beir (Lewis 1972)
13. Nyangatom (Tornay 1981)
14. Didinga (Driberg 1922)

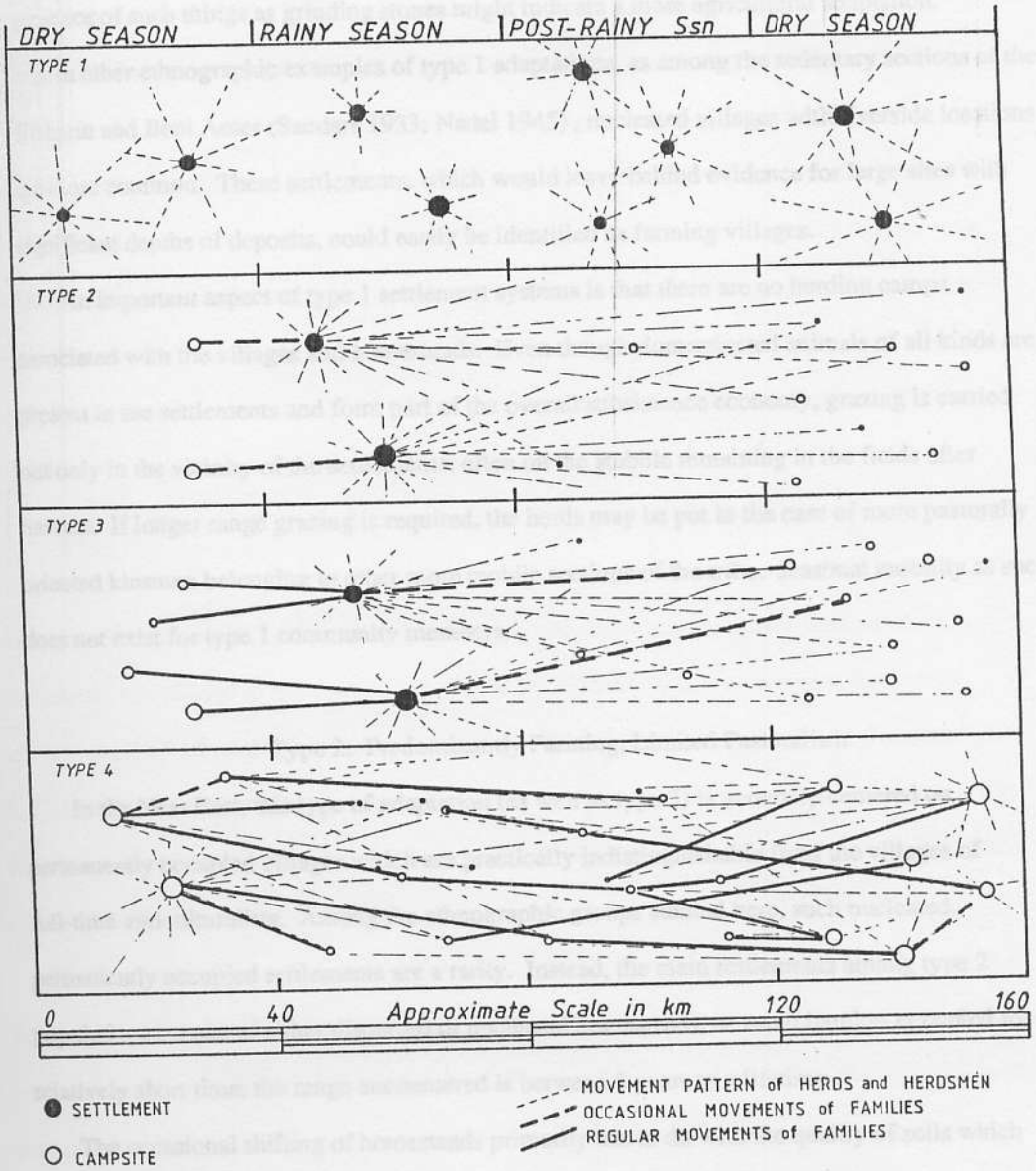

Figure 2.2. Idealised settlement systems of the four types of pastoral adaptation.

the future archaeologist's interpretation of a pastoralist, even nomadic adaptation. Following the traditional approaches, only the location of the homesteads in arable lands, and possibly the presence of such things as grinding stones might indicate a more agricultural adaptation.

In other ethnographic examples of type 1 adaptations, as among the sedentary sections of the Bisharin and Beni Amer (Sandars 1933; Nadel 1945) , nucleated villages with riverside locations are more common. These settlements, which would leave behind evidence for large sites with significant depths of deposits, could easily be identified as farming villages.

An important aspect of type 1 settlement systems is that there are no herding camps associated with the villages and homesteads. Even though domesticated animals of all kinds are present in the settlements and form part of the overall subsistence economy, grazing is carried out only in the vicinity of the settlements, often on the stubble remaining in the fields after harvest. If longer range grazing is required, the herds may be put in the care of more pastorally oriented kinsmen belonging to other more mobile sections of the tribe: seasonal mobility as such does not exist for type 1 community members.

Type 2: Predominantly Farming, Limited Pastoralism

In the Near East, this type of adaptation (as well as type 3) is generally centered on permanently occupied villages which are practically indistinguishable from the villages of full-time agriculturalists. Among the ethnographic groups studied here, such nucleated, permanently occupied settlements are a rarity. Instead, the main settlements among type 2 populations consist of either dispersed or nucleated homesteads, or small hamlets occupied for a relatively short time; the range encountered is between 5 years to a lifetime.

The occasional shifting of homesteads primarily has to do with the quality of soils which necessitate shifting agricultural fields and allowing for long fallow periods. Other reasons include environmental calamities, need for defense, or the basic impermanence of building materials and techniques available. As in the case of the Qemant, it would be only too easy for the future archaeologist investigating the insubstantial remains of these predominantly agricultural hamlets

to conclude that he is dealing with a mobile pastoralist population. A few examples will help to illustrate the nature of the settlement systems among type 2 populations.

Among the Berti (Holy 1974) one typical village consisted of a cluster of fourteen homesteads with a total of only 40 inhabitants. Clusters of such villages are located around a well-field, although some of the villages may be as much as 30 kilometers away from the wells. Villages are relocated according to the soil requirements for sorghum and millet cultivation. Fields in this area are used for up to twenty years. Thereafter, villagers relocate to the vicinity of their new plots. Herds of domesticated animals are kept near the villages during the rainy season. During the dry season they are taken closer to the wells. Once they graze beyond half a day's walk from the main settlement--a distance of 15-20 km--cattle camps are set up by the herders. The rest of the family, however, resides in the village year round.

The Uduk (James 1979) live in small hamlets of from 2-10 huts, which are abandoned and relocated every 4-5 years (Figure 2.3). Hamlets are relocated with an eye towards improving location relative to fields and water resources and, also, in order to improve the quality of the settlements which tend to fall apart every four years. The hamlets are scattered, but not far apart, at the edge of woodlands bordering rivers and streams. Animal sheds and thorn enclosure for the herds are located near the hamlets. During exceptionally dry years, some hamlets set up temporary camps closer to water sources, but this is far from a seasonal migratory cycle and has little to do with the grazing of animals.

The Ingessana (Evans-Pritchard 1927; Launer 1981) live in scattered homesteads occupied for no more than a lifetime. The homesteads are organised into cantons or neighbourhoods, each with its own grazing, cultivation and hunting territory. During wetter parts of the year, the herds are grazed within a 3-5 hour radius of the homesteads. During the dry season, herds are taken out farther afield. Once animals graze farther than half a day's walk from the homesteads (15-20 km), the herders set up temporary cattle camps, and the herds are kept in the pastures overnight. During troubled times the homesteads retreat into the hills, and the movement of herds and herders become more restricted.

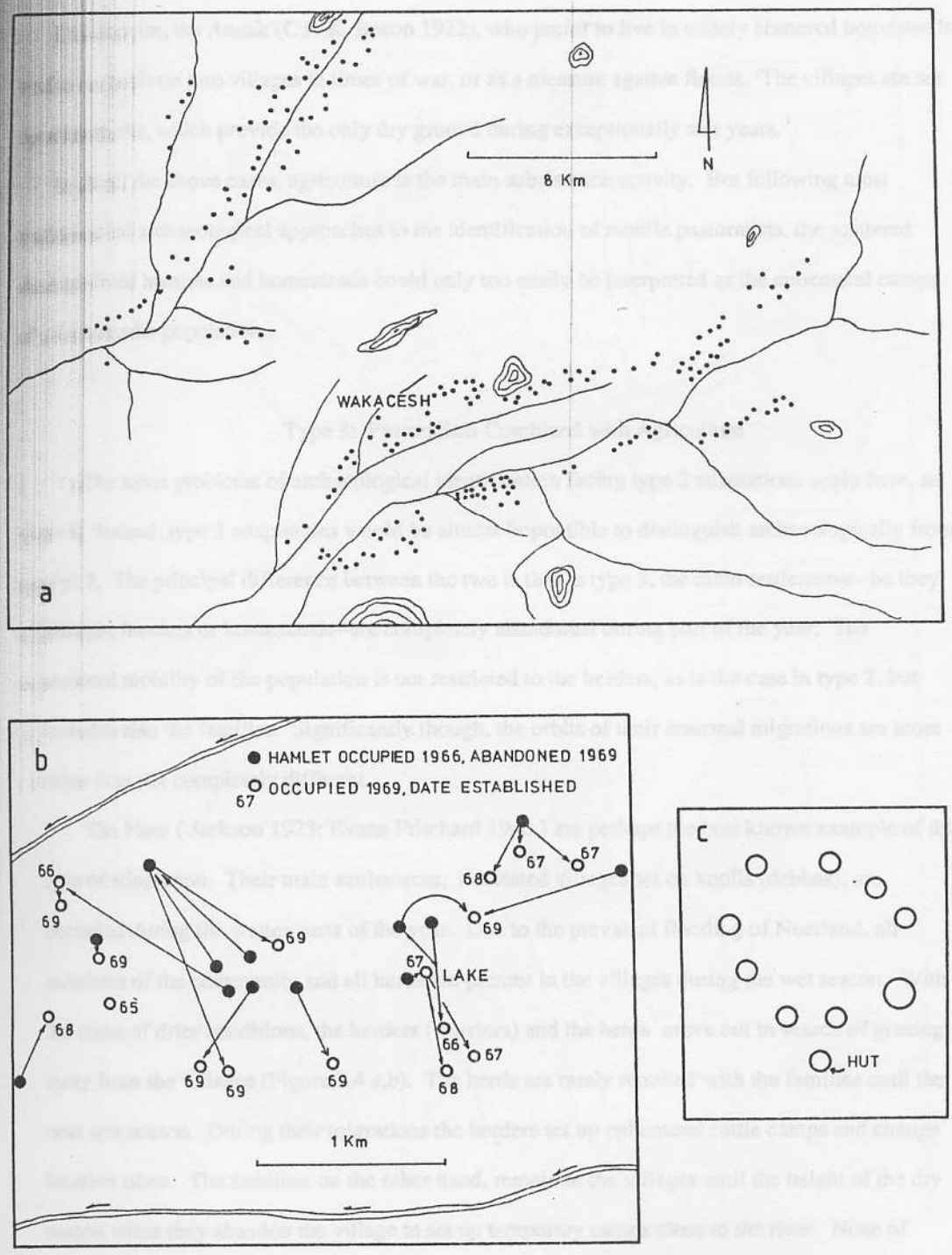

Figure 2.3. Uduk settlement patterns (after James 1979): a.) Northern Uduk settlements, 1968; b) Hamlets of Wakacesh; c) The Lake hamlet.

Likewise, the Anuak (C.R.K. Bacon 1922), who prefer to live in widely scattered homesteads, tend to nucleate into villages in times of war, or as a measure against floods. The villages are set upon knolls, which provide the only dry ground during exceptionally wet years.

In all the above cases, agriculture is the main subsistence activity. But following most traditional archaeological approaches to the identification of mobile pastoralists, the scattered short-lived hamlets and homesteads could only too easily be interpreted as the ephemeral camps of a nomadic population.

Type 3: Pastoralism Combined with Agriculture

The same problems of archaeological identification facing type 2 adaptations apply here, as well. Indeed, type 3 adaptations would be almost impossible to distinguish archaeologically from type 2. The principal difference between the two is that in type 3, the main settlements--be they villages, hamlets or homesteads--are completely abandoned during part of the year. The seasonal mobility of the population is not restricted to the herders, as is the case in type 2, but includes also the families. Significantly though, the orbits of their seasonal migrations are more often than not completely different.

The Nuer (Jackson 1923; Evans-Pritchard 1940) are perhaps the best known example of this type of adaptation. Their main settlements, nucleated villages set on knolls (debbas), are occupied during the wetter parts of the year. Due to the prevalent flooding of Nuerland, all members of the community and all herds are present in the villages during the wet season. With the onset of drier conditions, the herders (warriors) and the herds move out in search of grazing away from the villages (Figure 2.4 a,b). The herds are rarely reunited with the families until the next wet season. During their migrations the herders set up ephemeral cattle camps and change location often. The families, on the other hand, remain in the villages until the height of the dry season when they abandon the village to set up temporary camps close to the river. None of these camps is very far from the villages. They are established purely for the convenience of being close to water, and to take advantage of easy fishing.

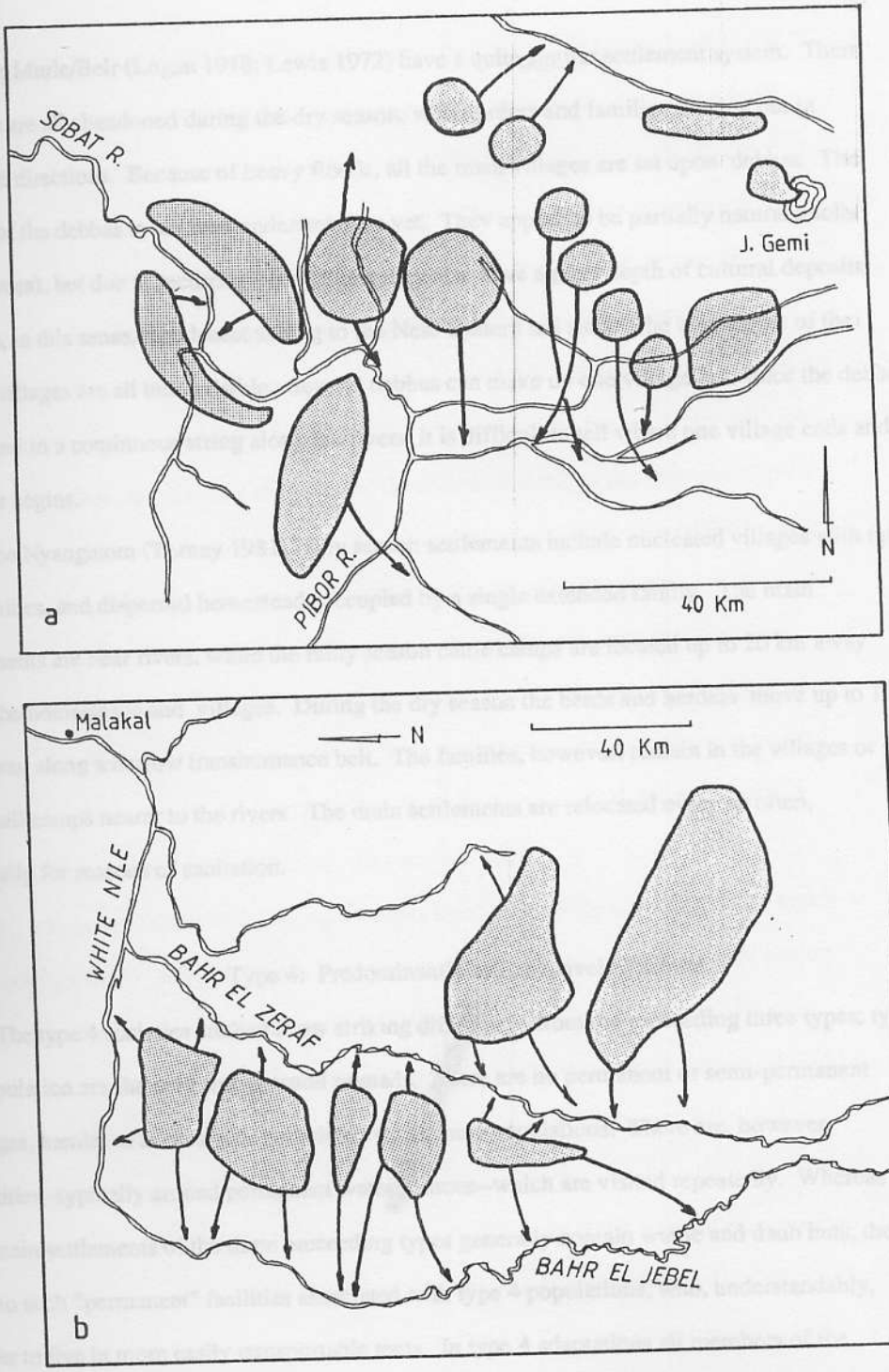

Figure 2.4. Nuer seasonal movements (After Evans-Pritchard 1940): a) Dry season movements of the Eastern Jikany tribal sections; b) Dry season movements of the Zeraf tribal sections.

The Murle/Beir (Logan 1918; Lewis 1972) have a quite similar settlement system. Their villages are all abandoned during the dry season, with herders and families moving out in opposite directions. Because of heavy floods, all the main villages are set upon debbas. The nature of the debbas is not well understood, as yet. They appear to be partially natural knolls (old levees), but due to recurring occupations they also have a great depth of cultural deposits and are, in this sense, the closest analog to the Near Eastern tell sites. The boundaries of the Murle villages are all but invisible. Several debbas can make up one village but, since the debbas are found in a continuous string along the rivers, it is difficult to tell where one village ends and another begins.

The Nyangatom (Tornay 1981) rainy season settlements include nucleated villages with up to 25 families, and dispersed homesteads occupied by a single extended family. The main settlements are near rivers, while the rainy season cattle camps are located up to 20 km away from the homesteads and villages. During the dry season the herds and herders move up to 120 km away along a narrow transhumance belt. The families, however, remain in the villages or set up small camps nearer to the rivers. The main settlements are relocated every so often, primarily for reasons of sanitation.

Type 4: Predominantly or Exclusively Pastoral

The type 4 societies studied show striking differences from the preceeding three types; type 4 population are the only true pastoral nomads. There are no permanent or semi-permanent villages, hamlet or homesteads associated with type 4 populations. There are, however, localities--typically around permanent water sources--which are visited repeatedly. Whereas the main settlements of the three preceeding types generally contain wattle and daub huts, there are no such "permanent" facilities associated with type 4 populations, who, understandably, prefer to live in more easily transportable tents. In type 4 adaptations all members of the community migrate in the same orbit, as opposed to type 3 adaptation where the orbits of the families and herders are functionally and spatially quite different. Some examples follow.

Among the Kababish (Asad 1970) there are no camps. During the dry season households congregate in a damar--around well-fields--setting up tents even up to eight or ten miles from water. The tents may be isolated or set up in linear clusters. Such clusters, however, do not represent any form of fundamental social grouping and are unlikely to repeat themselves from one year to the next; indeed, they may not even last as a cluster for the duration of one dry season. The detailed placement of the tents depends on the individual family's decision as to what is best suited for their animals. During the dry season, the herds are grazed away from the wells and the ring of tents, and are brought in towards the wells for watering at regular intervals. With the onset of the rains, the families move out of the damars directly to the terminus of their seasonal migratory cycle where they set up tents in a more dispersed fashion around the avilable rain pools. The herds and herders take a more circuitous route, meeting the families at the terminus. With the onset of the dry season the families return to the damars, either the same one as the year before or another one, while the herds and herders once again take the long way around, delaying their arrival at the damar until all other grazing resources have been exhausted. Families and herds meet at the damar during the height of the dry season, although invariably the individual tents are located differently from the previous year.

The Humr Baggarra (Cunnison 1966), on the other hand, have fairly strict migratory routes and schedules (Figure 2.5), and tend to stay in camps except during the time they spend tending their small garden plots, where they live in widely dispersed single household units. Herders and families move together and quite often: the camp which Cunnison studied moved a total 61 times in the course of one year. The Baggara camps include up to 20 tents, but individual mobility between camps is quite high.

The nomadic Hadendowa (Owen 1937) live in highly dispersed settlements of no more than one or two tents. Movements are totally individual and can take any direction or distance, depending on the judgment of the heads of households. Only in the most fertile regions of the Hadendowa territory, as around the Gash Delta, can one find larger groupings of tents. As among

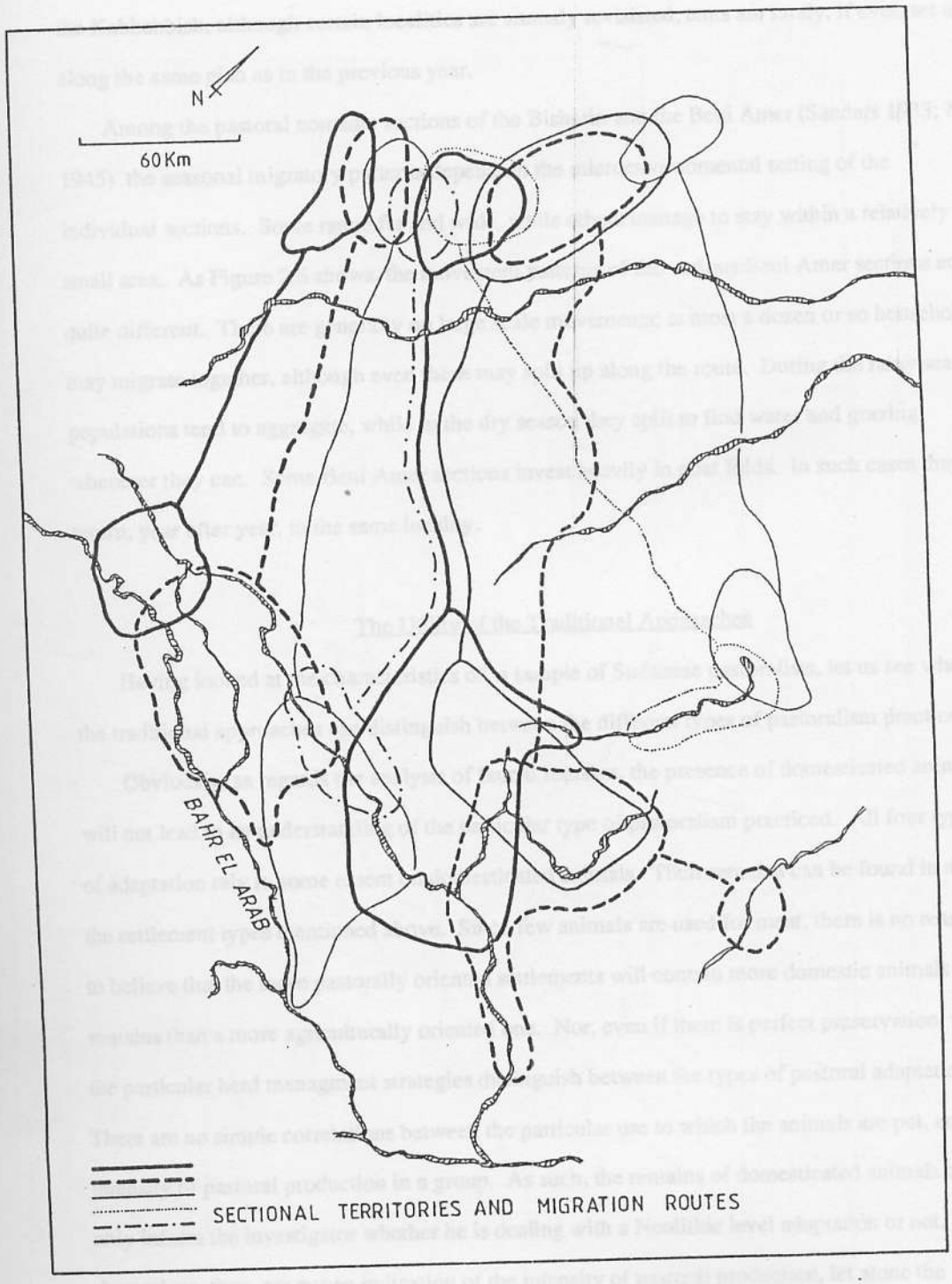

Figure 2.5. Humr Baggara tribal sections and seasonal movements (after Cunnison 1966).

the Kabbabbish, although certain localities are annualy revisisted, tents are rarely, if ever, set up along the same plan as in the previous year.

Among the pastoral nomadic sections of the Bisharin and the Beni Amer (Sandars 1933; Nadel 1945) the seasonal migratory patterns depend on the microenvironmental setting of the individual sections. Some range far and wide, while others manage to stay within a relatively small area. As Figure 2.6 shows, the movement patterns of the various Beni Amer sections are quite different. There are generally no large scale movements; at most a dozen or so households may migrate together, although even these may split up along the route. During the rainy season populations tend to aggregate, while in the dry season they split to find water and grazing wherever they can. Some Beni Amer sections invest heavily in goat folds. In such cases they return, year after year, to the same locality.

The Utility of the Traditional Approaches

Having looked at the characteristics of a sample of Sudanese pastoralists, let us see whether the traditional approaches can distinguish between the different types of pastoralism practiced.

Obviously, as regards the analysis of faunal remains, the presence of domesticated animals will not lead to an understanding of the particular type of pastoralism practiced. All four types of adaptation rely to some extent on domesticated animals. Their remains can be found in all of the settlement types mentioned above. Since few animals are used for meat, there is no reason to believe that the more pastorally oriented settlements will contain more domestic animals remains than a more agriculturally oriented one. Nor, even if there is perfect preservation, will the particular herd managment strategies distinguish between the types of pastoral adaptation. There are no simple correlations between the particular use to which the animals are put, and the intensity of pastoral production in a group. As such, the remains of domesticated animals can only inform the investigator whether he is dealing with a Neolithic level adaptation or not. In themselves, they are not an indication of the intensity of pastoral production, let alone the degree of mobility of that population.

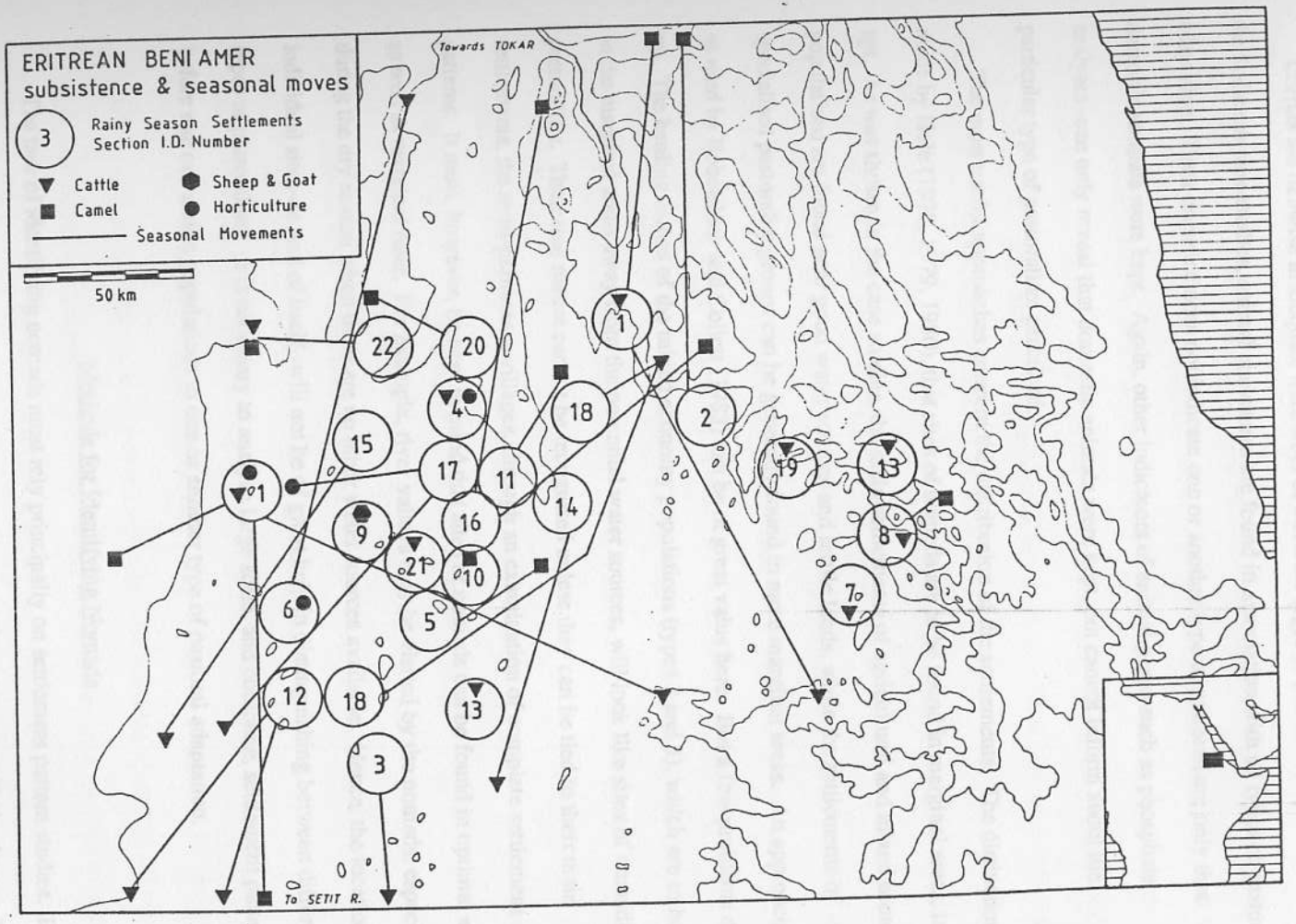

Figure 2.6. Eritrean Beni Amer sections and seasonal movements (compiled from Nadel 1945).

Corrals are likewise inadequate indicators of different types of pastoral adaptation. Among the Sudanese case studies, animal enclosures are found in association with all types of pastoral adaptation. Their presence does not indicate one or another type of pastoralism; only that domestic animals were kept. Again, other indicators of animal pens--such as phosphate analyses--can only reveal that domestic animals were kept, but cannot inform about the particular type of pastoralism practiced.

The most useful approaches concern the distribution of the settlements. The distinction made by Hole (1978, 1979, 1980), that sites of nomads are to be found in marginal areas, is quite apt. As was shown in the case studies, the main settlements of agricultural and mixed economy populations are found near good water sources and fertile lands, while the settlements of specialised pastoralist groups can be generally found in more marginal areas. An approach such as used by Robetshaw and Collett (1983) can be of great value here. But a few problems do crop up. The herding camps of the mixed economy populations (types 2 and 3), which are to be found in the marginal areas away from the perennial water sources, will look like sites of nomadic pastoralists. Their true nature cannot be recognised unless they can be tied to their main settlements, the semi-permanent villages, through an examination of complete settlement patterns. It must, however, be kept in mind that sites of nomads can be found in optimal areas, as well as marginal ones. For example, river valleys may be visited by the nomads, especially during the dry season when there are no other water sources available. Hence, the location of individual sites--in and of itself--will not be of great help in distinguishing between different types of pastoralism. It is necessary to analyse large scale, and complete, settlement patterns before one can assign populations to one or another type of pastoral adaptation.

Methods for Identifying Nomads

The task of identifying nomads must rely principally on settlement pattern studies. But before one can analyse the settlement patterns, it is necessary to have a realistic site typology. The traditional view of site types is problematic. The general view that large sites with deep

deposits represent permanently occupied (agricultural) villages, while small surficial sites represent ephemeral (nomadic) ones, is clearly an inadequate assumption for differentiating between the types of pastoral adaptation. Sites of even the most sedentary agriculturalists, for instance the Qemant, may be small and without deep deposits, due to the dispersed and short lived nature of the settlements. Likewise, the main settlements of type 2 and 3 adaptations, which are often relocated after a few years, cannot be expected to leave very deep deposits and, hence, are susceptible to misinterpretation as ephemeral camp sites.

To remedy this problem one must be able to distinguish seasonally occupied "ephemeral" sites from semi-permanently occupied "ephemeral" ones. Essentially, this requires the recognition that there are more than two types of sites--permanent and ephemeral--to be looked for. There are actually three types of sites: ones which were occupied permanently, semi-permanently and only seasonally. If these can be recognised archaeologically, they can provide the foundation for the settlement pattern studies which will distinguish agricultural, mixed economy, and nomadic populations. The task at hand then, is to index the duration of occupation at any given site in the study area.

All things being equal, the depth of deposit at an archaeological site is an indication of the duration of occupation. The deeper the deposits, the longer the occupation in that place. In Northeast Africa, however, because of the generally deflating natural surface, this simple rule does not always hold. There, the duration of occupation at a site is often reflected not in the depth of its deposits, rather in the density of artefacts found on its surface. This is easily understood. In an originally aggrading terrain, a site which was occupied for 20 years, might build up, say, 20 cms of archaeological deposit. Another site, occupied only for part of one year will have only a centimeter or so of cultural deposits. The densities of artefact per centimeter layer (say a one year duration) will be more or less equal for the two sites (assuming that the rate of artefact discard per year on both sites would have been much the same). After deflation of the surface, however, compression of the 20 cm deposit at the first site will result in a much heavier surface density of artefacts, than the compression of the single layer at the second site.

Thus, even though after deflation both sites are surficial, the heavier densities at the first site will indicate that, originally, it was occupied longer than the second site. Artefact densities become a reflection of the duration of occupation. The trick then, is to index how much surface artefact density reflects how long an occupation.

In the archaeological survey of the Southern Atbai three main degrees of site artefact density were observed; high, medium and low. Originallly, low to medium and medium to high densities were also noted, but as will be explained shortly these intergradations actually comprise part of the medium density sites.

Without exception, the high density sites were those which still had considerable depths of archaeological deposits. Anything between twenty centimeters and two meters of in situ deposits have been found below their high density surface. To give a quantified indication of artefact (specifically ceramic) densities on these sites, KG 23 and KG 7 each yielded some 200-300 sherds/surface square meter, while KG 96 and KG 5 each had between 125-175 sherds/ssm (Frank Winchell, personnal communication), K1 had between 250-300 sherds/ssm (personnal observation of collection from K1iii). The high surface artefact densities appear to be result of site deflation to the point where the surface was literally capped with a carpet of artefacts, prohibiting, or significantly slowing down further deflation. Clearly, high density sites represent very long occupations.

At the other extreme, there are sites in the Southern Atbai survey zone with such low densities of artefacts that in any square meter there were no more than five sherds. Indeed, at KG 111, a careful walk over the entire rather large site, produced fewer than a hundred sherds. Other classes of artefacts--lithics and ground stone--were also rare. A series of such low density sites, which date to the late eighteenth century (the Gergaf Group, Sadr 1984) represent a settlement system still practiced by some nomadic groups in the area today. The densities and layout of artefacts on the Gergaf sites, as well as the overall Gergaf site distributions, could be compared directly to the recently abandoned nomadic campsites. This left no doubt that the sites with such low levels of artefact density represent very short occupations, indeed.

Between these two well defined and easily identifiable extremes lie the majority of the sites in the Southern Atbai. For the sake of simplicity, these are defined as medium density sites. In fact, they are made up of separate concentrations of artefacts. The sites have variable artefact densities, depending on whether one is referring to the concentrations or the spaces in between. Within the concentrations there can be between 25 and 75 sherds per surface square meter (examples from site KG 97 and KG 43); at some sites there are even a few centimeters of in situ deposits. Between the artefact concentrations densities are generally low to medium. Such medium density sites have been interpreted as the remains of semi-permanent settlements, corresponding to the ethnographic examples which were occupied anywhere from a couple of decades to a lifetime.

Such a convenient typological scheme, where there are three types of ethnographically known settlements--permanent, semi-permanent, and seasonal--corresponding neatly with three levels of site artefact density found in the Southern Atbai, may at first glance seem too convenient and, hence, somewhat suspect. For instance, one may ask how the seasonally reoccupied localities fit in the density scheme?

The key to solving the problem of seasonally reoccupied localities is provided in the ethnographic examples. Although certain localities often are reoccupied by nomadic groups (eg. the Kababish damars, Asad 1970), the fact remains that the individual tents are not placed in exactly the same pattern as the year before. Indeed, the localities themselves are extensive areas wherein a sequence of seasonal reoccupation may never result in the exact same spot being occupied more than once. This has important ramifications for the site types, and the distinction between semi-permanent settlements and reoccupied localities.

Common sense suggests that when a settlement is occupied consecutively for a number of years (semi-permanent settlements), the fixed position of the structures and facilities dictate that the areas where trash is deposited must also have fairly fixed positions. At the seasonally reoccupied localities, however, the very fact that the internal layout of the camp varies from year to year--in other words, their lack of fixed structures and facilities--dictates that the trash

disposal areas must likewise vary from year to year. Now, assume that both types of sites, the semi-permanent settlement and the seasonally reoccupied locality, are inhabited for twenty years. They may build up a more or less equal amount of archaeological deposits. What happens after deflation? The semi-permanent settlement after deflation should still reveal the original middens. Since their location never changed, there should be higher concentrations of artefacts in the middens and lower densities in the habitation and cleared areas. At the seasonally reoccupied locality, however, since the midden shifted every year, we might presume that the trash layout will have a random appearance, reflecting the compression of many different trash deposition loci. Such a deflated locality should show a relatively thin, even spread of artefacts over a large area. Reoccupied localities leave behind a sheet midden rather than cluster middens (Figure 2.7).

This explains the particular nature of the medium density sites in the Southern Atbai. The distinct concentrations of artefacts which can be seen on the surface probably represent the compacted middens, while the low density areas in between presumably represent the locations of the original structures and cleared areas. The model also explains the nature of the very large low density sites which have a relatively even scatter of artefacts all over, without any visibly higher density concentrations. These probably represent localities reoccupied by a mobile population over a span of some years.

At this stage, one might ask why do the high density sites, which were obviously occupied for a long time and should have had fixed midden loci, not reveal the same pattern of high and low densities as at the semi-permanent sites. After all, the fixed position of middens should be even more noticable at these sites.

There seem to be two reasons for this. First, since these sites were presumably occupied for several generations, the probability that the internal organisation of the settlement changed over that time is much higher. Hence, possibly over the long term, the structures, facilities and midden areas were not as fixed as they were on the semi-permanent sites. Second, and more importantly, the very nature of deflation on these sites dictates that middens would not be

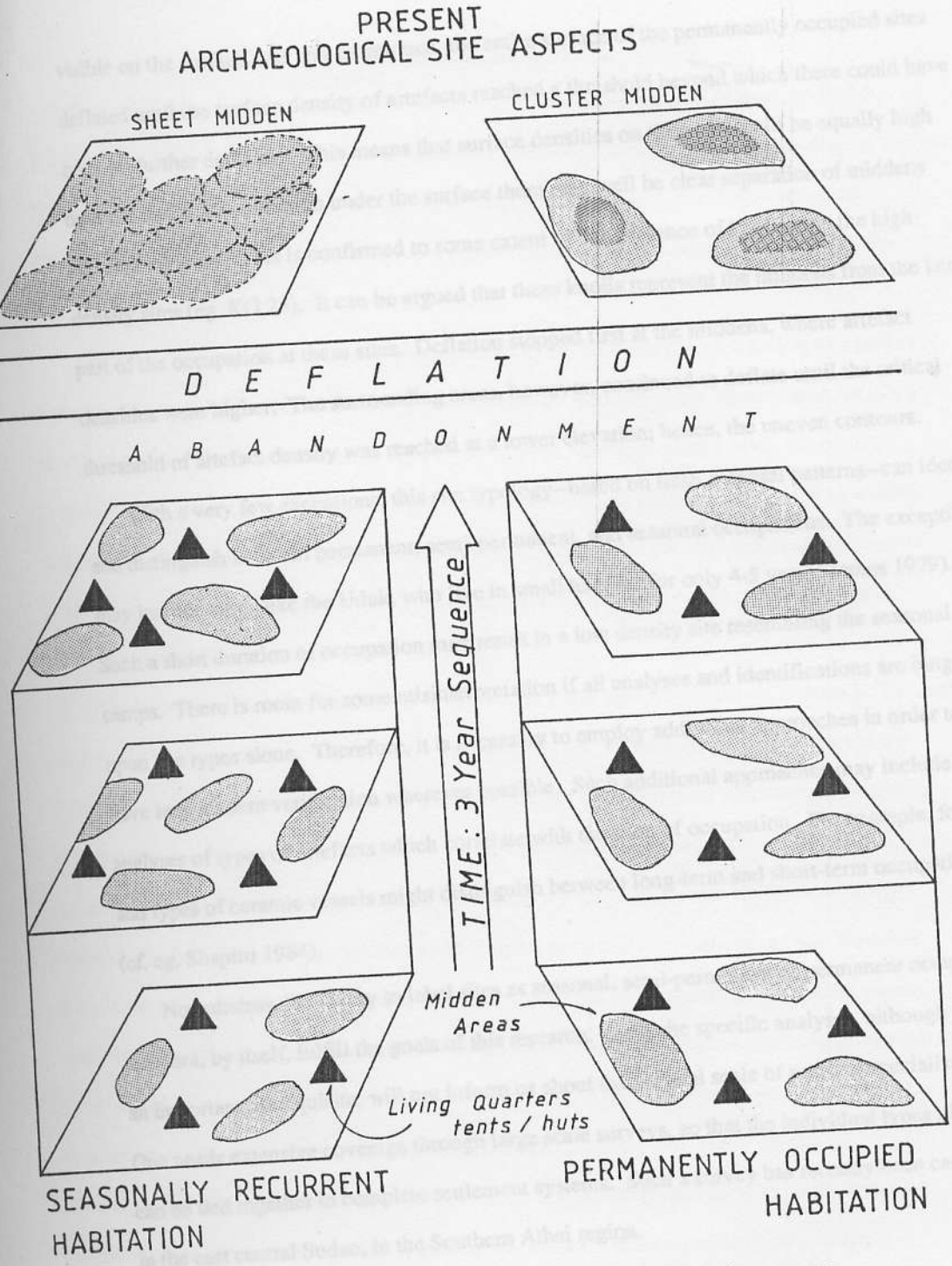

Figure 2.7. Sheet vs. cluster midden: hypothetical site-formation process.

visible on the surface. As was mentioned, the entire surface of the permanently occupied sites deflated until the surface density of artefacts reached a threshold beyond which there could have been no further deflation. This means that surface densities on these sites will be equally high over the entire site, although under the surface there may well be clear separation of middens and cleared areas. This is confirmed to some extent by the presence of knolls atop the high density sites (eg. KG 23). It can be argued that these knolls represent the middens from the later part of the occupation at these sites. Deflation stopped first at the middens, where artefact densities were higher. The surrounding areas, however, continued to deflate until the critical threshold of artefact density was reached at a lower elevation; hence, the uneven contours.

With a very few exceptions, this site typology--based on trash disposal patterns--can identify and distinguish between permanent, semi-permanent, and seasonal occupations. The exceptions may include cases like the Uduk, who live in small hamlets for only 4-5 years (James 1979). Such a short duration of occupation may result in a low density site resembling the seasonal camps. There is room for some misinterpretation if all analyses and identifications are hinged upon site types alone. Therefore, it is necessary to employ additional approaches in order to have independent verification wherever possible. Such additional approaches may include analyses of types of artefacts which correlate with duration of occupation. For example, forms and types of ceramic vessels might distinguish between long-term and short-term occupations (cf. eg. Shapiro 1984).

Nonetheless, the ability to label sites as seasonal, semi-permanent or permanent occupations, does not, by itself, fulfill the goals of this research. Such site specific analyses, although they are an important prerequisite, will not inform us about the societal scale of pastoral specialisation. One needs extensive coverage through large scale surveys, so that the individual types of sites can be tied together in complete settlement systems. Such a survey has recently been carried out in the east central Sudan, in the Southern Atbai region.

The Southern Atbai Survey

Two separate archaeological field projects, the Italian Archaeological Mission in Sudan, Kassala (IAMSK), under the direction of Rodolfo Fattovich, and the Butana Archaeological Project (BAP) under the direction of Anthony Marks and Abbas Mohammed-Ali, have conducted extensive surveys and excavations in the east central Sudan, between Khashm el Girba on the Atbara River, and Kassala on the Gash (Figure 2.8).

The BAP conducted its surveys and excavations in the Khashm el Girba area over a period of eight weeks during 1981 and 1982. The IAMSK has been working in the Kassala area for a few month every year since 1980; their surveys reported here, however, were carried out over a period of nine weeks during 1982 and 1984. The surveys of both projects, conducted by vehicle and on foot, covered some 600 square kilometers, and led to the recording of 223 sites, many of which are multi-component (Figure 2.9). In total, some fifteen sites were excavated. Of the remainder, over 80% were collected for artefacts.

Originally it had been hoped that the Gash/Atbara study area, comprising quadrats K, KG, and SEG, could be completely surveyed. This was not possible. Indeed, the constant uncertainty about how much time and gasoline were available did not even allow for a systematic sampling of the survey area. Surveys proceeded in a highly opportunistic manner, resulting finally in the transect coverage shown on Figure 2.9. Even though the survey area was not systematically sampled, the final sample of terrain surveyed is about as random as might have been expected. If the three quadrats are considered as a complete study area encompassing about 2186 square kilometers, the surveys covered about 27% of the total. Thus, the area covered is large enough to observe settlement systems at, and even above, the scale of tribal sections. As such it provides an adequate study area to distinguish agricultural, agro-pastoral, and under special circumstances, nomadic populations. The Southern Atbai survey area serves mainly to test the first parts of the three models on the origins of nomadism: that is, up to the point where subsistence specialisation emerges betwen tribal sections. To test for the emergence of specialisation at the tribal scale--nomadism proper--analyses shift to Northeast Africa as a whole.

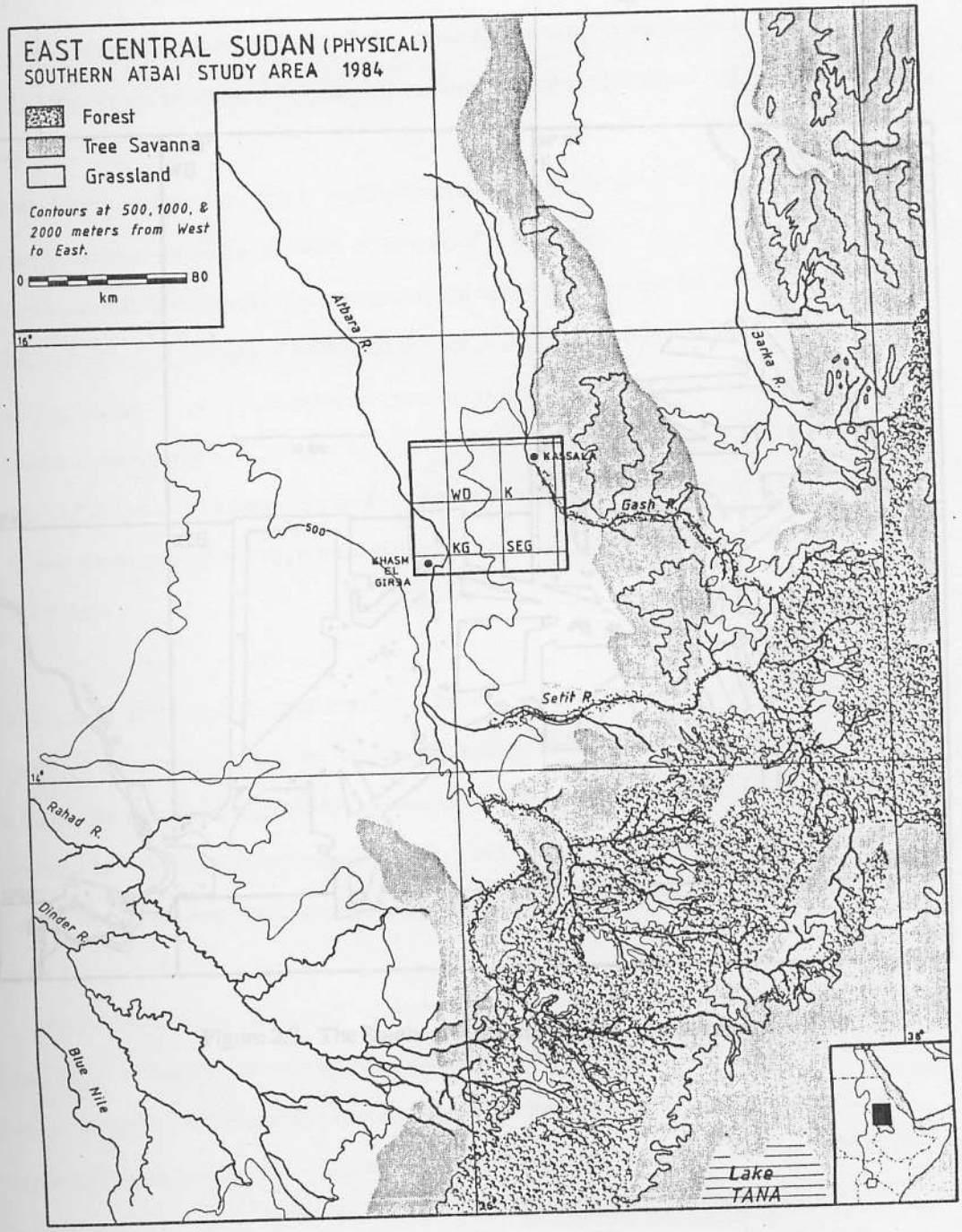

Figure 2.8. The Southern Atbai Study area.

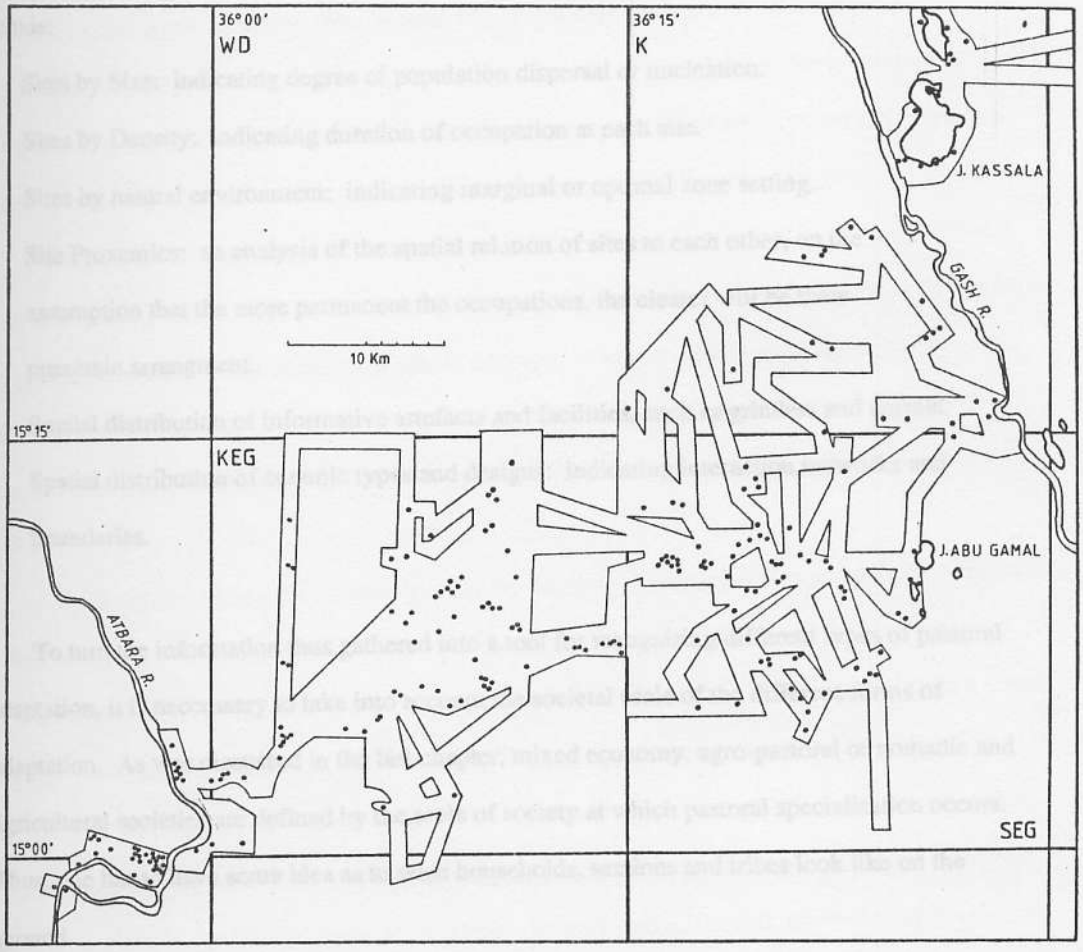

Figure 2.9. The Southern Atbai survey and recorded sites.

As will be seen in Chapters four, five and six, several angles of attack have been chosen to achieve the first step of the analyses; that of identifying the nomads. In the Southern Atbai study, the sites of each archaeological phase are analysed from several different angles. These include:

1. Sites by Size: indicating degree of population dispersal or nucleation.
2. Sites by Density: indicating duration of occupation at each site.
4. Sites by natural environment: indicating marginal or optimal zone setting.
3. Site Proxemics: an analysis of the spatial relation of sites to each other, on the assumption that the more permanent the occupations, the clearer will be their proxemic arrangment.
5. Spatial distribution of informative artefacts and facilities, such as grinders and corrals.
6. Spatial distribution of ceramic types and designs: indicating interaction networks and boundaries.

To turn the information thus gathered into a tool for recognising different types of pastoral adaptation, it is neccessary to take into account the societal scale of the different forms of adaptation. As was discussed in the last chapter, mixed economy, agro-pastoral or nomadic and agricultural societies are defined by the scale of society at which pastoral specialisation occurs. Thus, one has to have some idea as to what households, sections and tribes look like on the ground.

This is a basic, and not fully resolved, issue in archaeology. Several recent works by Hodder (cf.eg.1982, 1978) have addressed the issue admirably. He has proposed complex relations between archaeological (material) cultures, and actual ethnic groups. These findings are of great help in solving the problem of societal scale in the present study. There are, however, other means as well.

Scales of society clearly correspond to demographics. Families and households are composed of fewer individuals than a community, which in turn has fewer members than a tribal section,

and so on up to the level of the ethnic group. The more members there are at each higher scale, the more space they occupy. Thus, a household, apart from a particular scale of society, exists also at a geographically specific scale: up to a few hundred square meters to be precise. A community is larger: anything from several hundred square meters to several hectares. Commonly, a site, or a series of them describe a community. A section, as the ethnographic material suggests, exists at the scale of several hundred square kilometers (sub-region), while a tribe or ethnic group can cover several thousand or moe square kilometers (region).

With large scale coverage, and Hodder's ideas to provide a first line of inquiry, the societal scale of pastoral production can be identified simply by observing the geographical scale at which pastoral specialisation takes place. Thus for example an agro-pastoral adaptation can be distinguished from a mixed economy one simply by observing whether the specialised pastoral sector occupies a small geographical area (site and inter-site scale), or one at the sub-regional scale.

By cross-correlating the patterns yielded by the above approaches it is possible to fulfill the first step of the required analyses, at least as far as the Southern Atbai study area is concerned. The identification of nomads at the larger geographical scale, that of Northeast Africa as a whole, is not quite so straightforward. There are few if any large scale surveys from other areas of Northeast Africa, and the quality of data which are available is uneven. The above approaches utilising site types, densities, and locations (points 1,2, and 3) can be applied to most Northeast African sites, but points 4,5 and 6 are not so easily applicable. Instead, however, there are other classes of data available. Among these ancient textual records are quite important. As shall be seen in Chapter eight, when it comes to identifiying nomads in ancient Northeast Africa, every scrap of potentially relevant data has been employed in order to distinguish between different types of pastoral adaptation.

There remains the second step of the analytic methodology; that of testing the data against the three models. In a general sense, this is done quite simply: each of the three models postulates a particular configuration of causes, prevailing conditions, and chronological

sequence of events (Figure 2.10). Having documented the actual chronological sequence in which the different types of pastoralism emerged in Northeast Africa and the Southern Atbai, the models can be tested simply by comparing their postulated sequence of events to the archaeological one.

For example, the ecological model postulates an initial condition wherein cultivators occupy the optimal zone (river valleys, lakesides, and high rainfall areas). At this stage there is negligible occupation of marginal and desert zones. Through a combination of environmental degradation, population pressure in optimal zones, forest clearing activities leading to creation of pasturelands, or natural growth potential of domesticated animals, the ecological model postulates that agriculturalists in optimal zones grow to nearly full capacity, while the marginal areas become sparsely occupied by mixed economy households. Further combinations of the above causes continue the trajectory of change, until the optimal zones fill with specialised agricultural communities, marginal zones become crowded with mixed economy households, and the desert and steppe hinterlands become occupied by fully migratory pastoral nomads. At this stage all three sectors of the economy remain part of one archaeological culture. Eventually the natural requirement for autonomy by the members of different economic sectors leads to the pastoral nomads splitting from the parent culture, thus creating an ethnic or material cultural boundary between the desert and the sown.

The military mobility model postulates an initial condition similar to that in the ecological models, up to the point where the optimal zones are filled with agriculturalists, and household mixed economy occupation begins in the marginal lands. With added population, and an increase in the social complexity of the optimal zone communities (e.g., emergence of ranked societies), competition (seen archaeologically in textual records, and material culture boundaries, re. Hodder 1982) arises over the resources of the marginal zones. Eventually, as a result of pressures from neighbouring complex societies, the populations of marginal lands become fully mobile and take to the desert and steppe as specialised pastoral nomads, in order to defend themselves against the superior power of the state.

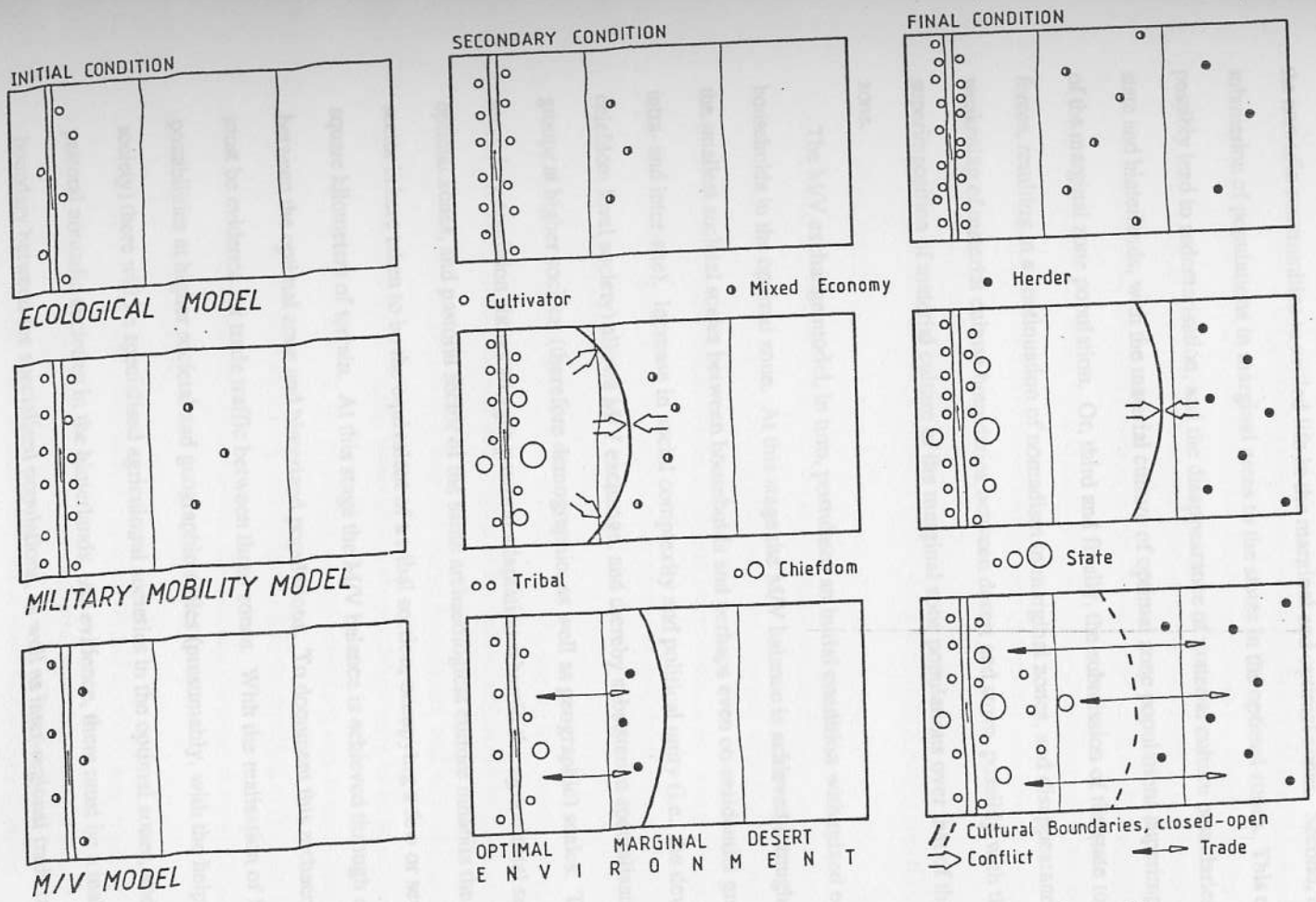

Figure 2.10. A comparison of the sequence of events according to three models of the origin of nomadism.

Thereafter, there are three possible outcomes: first, cessation of hostilities, and the return of the nomadic communities to settled life in the marginal and optimal zones. Second, the submission of populations in marginal areas to the states in the optimal zones. This could possibly lead to sedentarisation, and the disappearance of material culture boundaries between state and hinterlands, with the material culture of optimal zone populations superimposed on that of the marginal zone population. Or, third and finally, the submission of the state to nomadic forces, resulting in a continuation of nomadism in marginal zones, and disappearance or weakening of material culture boundaries between desert and sown, possibly with the superimposition of material culture of the marginal zone populations over that of the optimal zone.

The M/V exchange model, in turn, postulates an initial condition with mixed economy households in the optimal zone. At this stage the M/V balance is achieved through exchange at the smallest societal scales between households and perhaps even co-residential groups (i.e., intra- and inter-site). Increase in social complexity and political unity (i.e., the development of chiefdom level society) allows M/V exchange, and thereby subsistence specialisation, among groups at higher societal (therefore demographic, as well as geographic) scales. Thus, the secondary condition shows an agro-pastoral adaptation wherein the agricultural sector inhabits optimal zones, and pastoral sector of the same archaeological culture inhabits the hinterlands. A sector is here taken to be the equivalent of a tribal section, occupying a few or several hundred square kilometers of terrain. At this stage the M/V balance is achieved through exchange between the optimal zone and hinterland populations. To document this archaeologically there must be evidence for trade traffic between these zones. With the realisation of M/V exchange possibilities at higher societal and geographic scales (presumably, with the help of a state level society) there will be specialised agricultural societies in the optimal zones, and specialised pastoral nomadic societies in the hinterlands. As evidence, there must be a material culture boundary between the specialised populations, as well as inter-regional trade traffic between the desert and the sown.

In fitting the actual sequence of events to the postulated ones, particular attention has to be paid to reconstructing the prevailing conditions within the archaeological sequence of events. Thus, for example, the M/V model requires that the conditions accompanying the evolution from, say, agro-pastoral to nomadic, include trade and co-operation between large demographic blocks. Since trade in animal and plant products is virtually invisible in the archaeological record, the studies here attempt to reveal trade in more durable items. The assumption is that trade in plant and animal resources would have flowed along the same interaction networks as the more durable goods.

Another condition of the M/V model is that there should be a rise in social complexity; the factor which actually allows for the larger scale of trade and interaction. For the Southern Atbai, level of social complexity is documented in the settlement hierarchies, and in the nature of trade traffic within them. It is also evident in analyses of relative site wealth, as judged by the presence of exotic, high quality artefacts. At the larger scale, in Northeast Africa, levels of social complexity can be ascertained by various other means as well, including textual references, grave goods, public buildings, etc.

As briefly mentioned above, the conditions accompanying the rise of nomadism in the Military Mobility model include competition and warfare, which can be documented by analyses of cultural boundaries, degree of interaction across boundaries, and most successfully by reference to ancient texts. Again, levels of social complexity have to be monitored.

In the Ecological models, the prevailing natural conditions can be monitored through paleo-environmental reconstruction. Also important, is the tracking of rise and fall in population densities. As will be seen in Chapter seven, site size and duration of occupation are used as indeces of population levels.

Overall, the Southern Atbai survey, covering terrain up to the sub-regional scale, is useful for testing the models concerning the rise of agro-pastoral societies. To test for the rise of nomadism itself, however, regional scale data are required to show interactions between separate cultural entities. Northeast Africa as a whole, provides the stage on which the question of the origin of

nomadism will be answered. Towards that end, the next chapter sets the stage by presenting some background information on the natural and cultural aspects of Northeast Africa and the Southern Atbai.

CHAPTER III

THE NATURAL AND CULTURAL BACKGROUND

Of Northeast Africa, the southern half of Egypt, the northern and central Sudan, and northern Ethiopia are focused upon in this study. There are several major sources on the geography of these areas (cf eg. Barbour 1964; Hance 1964; Vail 1978; Platt and Hefny 1958; Ullendorff 1960). To set the present research in context, this geography, both physical and human, modern and ancient, is briefly summarised in the following pages.

The Geography of Northeast Africa

Except for the Nile Valley and a few oases, southern Egypt and most of northern Sudan are all desert and practically uninhabited. In stark contrast, the Nile Valley itself, filled with settled farmers and dotted with their fields, forms a thin green line cutting across this otherwise barren landscape. Farther south, in the central Sudan and northern Ethiopia there are several other rivers. The banks of the Baraka, Gash, Atbara, Setit, and the Blue Nile mirror--less intensly--the popularity of the Nile proper. Here, adequate rainfall makes for seasonally green grasslands and by roughly the 14th and 15th parallel cultivation becomes feasible even beyond the river valleys.

Northeast Africa, as defined above, can be divided into several regions which have both natural and cultural significance (Figure 3.1). The Nile Valley, from central Egypt to Khartoum, is divided into four stretches. From North to South these are: 1) the Upper Egyptian Nile, stretching from central Egypt to the first cataract; 2) the Lower Nubian Nile, stretching to the second cataract; 3) the Upper Nubian Nile, with an ill-defined southern boundary around the fourth or fifth cataract; and 4) the Middle Nile Valley from the fourth/fifth cataract to around Khartoum near the sixth cataract.

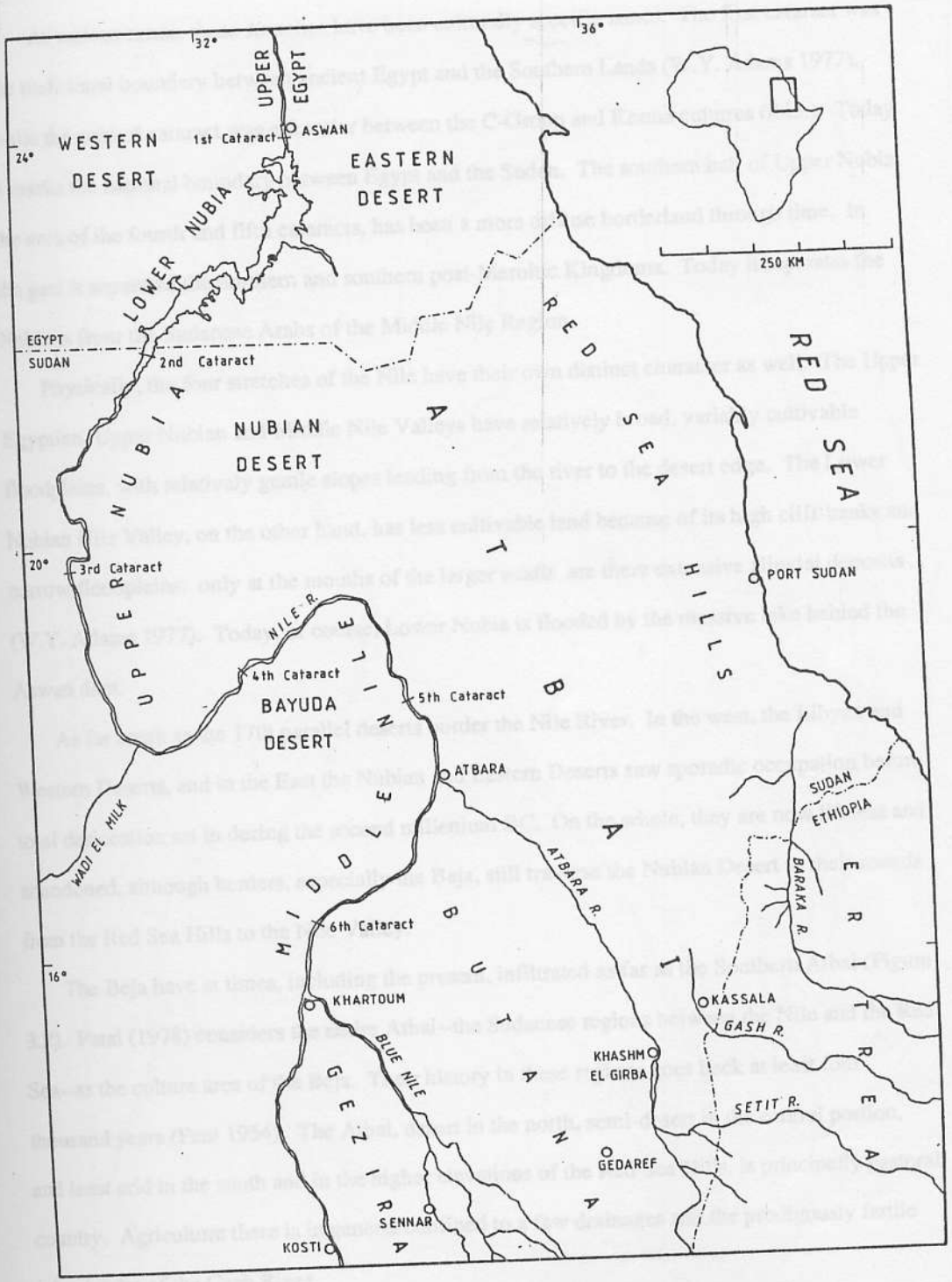

Figure 3.1. Map of Northeast Africa.

At various times, these stretches have been culturally specific zones. The first cataract was the traditional boundary between ancient Egypt and the Southern Lands (W.Y. Adams 1977), while the second cataract was a frontier between the C-Group and Kerma cultures (ibid.). Today it marks the national boundary between Egypt and the Sudan. The southern half of Upper Nubia, the area of the fourth and fifth cataracts, has been a more diffuse borderland through time. In the past it separated the northern and southern post-Meroitic Kingdoms. Today it separates the Nubians from the Sudanese Arabs of the Middle Nile Region.

Physically, the four stretches of the Nile have their own distinct character as well. The Upper Egyptian, Upper Nubian and Middle Nile Valleys have relatively broad, variably cultivable floodplains, with relatively gentle slopes leading from the river to the desert edge. The Lower Nubian Nile Valley, on the other hand, has less cultivable land because of its high cliff-banks and narrow floodplains: only at the mouths of the larger *wadis* are there extensive alluvial deposits (W.Y. Adams 1977). Today, of course, Lower Nubia is flooded by the massive lake behind the Aswan dam.

As far south as the 17th parallel deserts border the Nile River. In the west, the Libyan and Western Deserts, and in the East the Nubian and Eastern Deserts saw sporadic occupation before total desiccation set in during the second millenium BC. On the whole, they are now lifeless and abandoned, although herders, especially the Beja, still traverse the Nubian Desert in their rounds from the Red Sea Hills to the Nile Valley.

The Beja have at times, including the present, infiltrated as far as the Southern Atbai (Figure 3.2). Patai (1978) considers the entire Atbai--the Sudanese regions between the Nile and the Red Sea--as the culture area of the Beja. Their history in these regions goes back at least four thousand years (Paul 1954). The Atbai, desert in the north, semi-desert in the central portion, and least arid in the south and in the higher elevations of the Red Sea Hills, is principally pastoral country. Agriculture there is in general confined to a few drainages and the prodigously fertile inland delta of the Gash River.

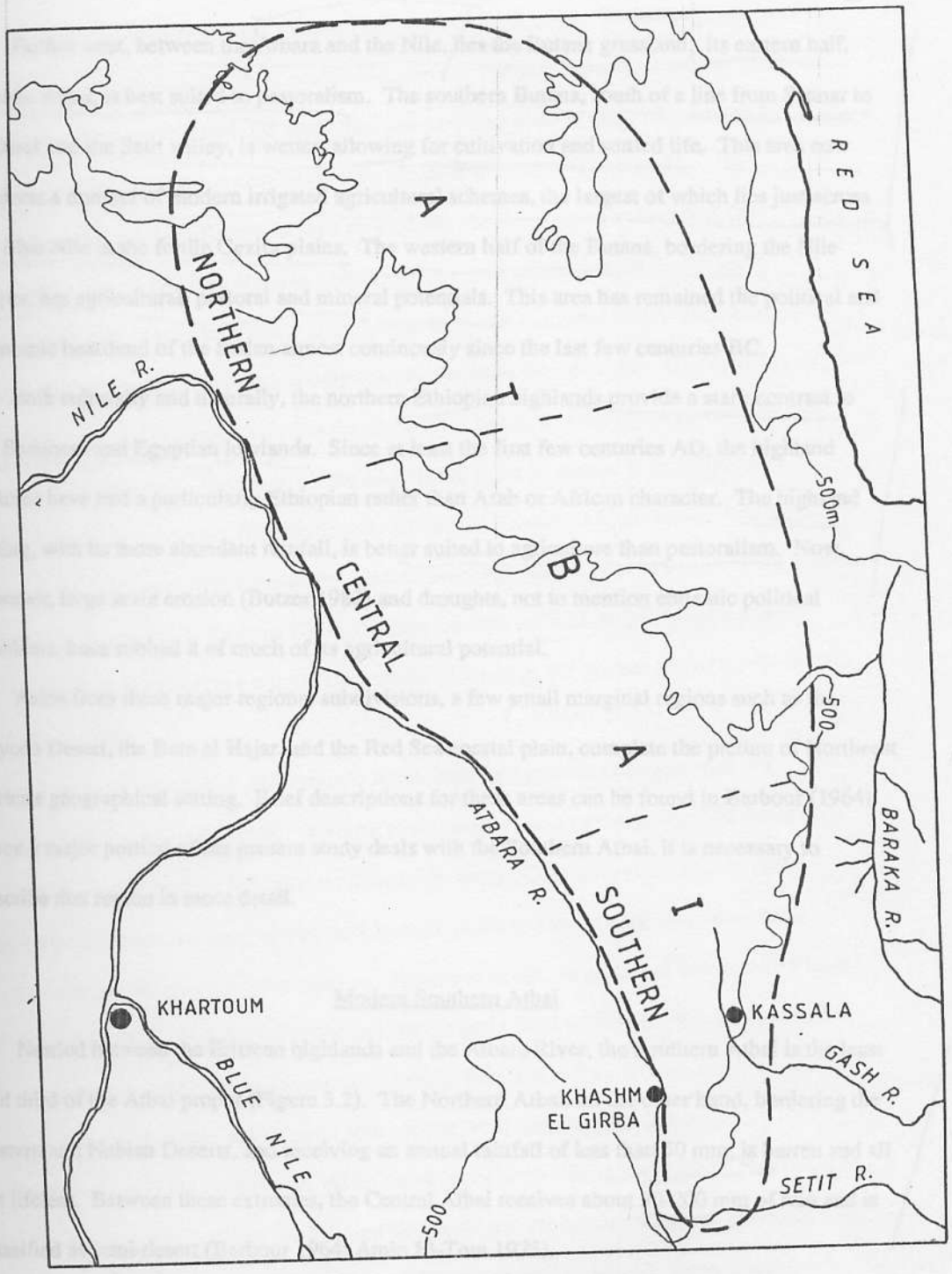

Figure 3.2. The Atbai.

Farther west, between the Atbara and the Nile, lies the Butana grassland. Its eastern half, like the Atbai, is best suited to pastoralism. The southern Butana, south of a line from Sennar to Gedaref and the Setit valley, is wetter, allowing for cultivation and settled life. This area now supports a number of modern irrigated agricultural schemes, the largest of which lies just across the Blue Nile in the fertile Gezira plains. The western half of the Butana, bordering the Nile proper, has agricultural, pastoral and mineral potentials. This area has remained the political and economic heartland of the Sudan almost continously since the last few centuries BC.

Both culturally and naturally, the northern Ethiopian highlands provide a stark contrast to the Sudanese and Egyptian lowlands. Since at least the first few centuries AD, the highland cultures have had a particularly Ethiopian rather than Arab or African character. The highland setting, with its more abundant rainfall, is better suited to agriculture than pastoralism. Now, however, large scale erosion (Butzer 1982) and droughts, not to mention endemic political problems, have robbed it of much of its agricultural potential.

Aside from these major regional subdivisions, a few small marginal regions such as the Bayuda Desert, the Batn el Hajar, and the Red Sea coastal plain, complete the picture of Northeast Africa's geographical setting. Brief descriptions for these areas can be found in Barbour (1964). Since a major portion of the present study deals with the Southern Atbai, it is necessary to describe that region in more detail.

Modern Southern Atbai

Nestled between the Eritrean highlands and the Atbara River, the Southern Atbai is the least arid third of the Atbai proper (Figure 3.2). The Northern Atbai, on the other hand, bordering the Eastern and Nubian Deserts, and receiving an annual rainfall of less than 50 mm, is barren and all but lifeless. Between these extremes, the Central Atbai receives about 50-200 mm of rain and is classified as semi-desert (Barbour 1964; Amin El-Tom 1975).

The Southern Atbai is classified as a low rainfall woodland savanna on clay (Barbour 1964). Vegetation there consists mainly of acacias and scrub bushes, although the banks of the Gash

River and its delta also contain several varieties of broadleaf vegetation. With the exception of the Atbara River valley which has been eroded to a gravelly badland (*karab*), and the Gash River banks and delta which are forested, the study area is a vast clay plain occasionally broken by lines of acacias which mark the course of shallow seasonal drainages (Figure 3.3).

The Gash and the Atbara Rivers, as well as the Setit--the three main drainages of the Southern Atbai--flow in seasonal torrents. All three have their catchments in the Eritrean highlands where rainfall is at least twice as high as in the Southern Atbai itself. This makes for a considerably wetter environment than is suggested by the local rainfall alone. During the rainy season, the Atbara used to carry its load as far as the Nile, but during the dry season boasts only a few pools in its deep bed. The Gash, on the other hand, loses its waters in an inland delta stretching from around the town of Kassala over a hundred kilometers to the north. During the Early Holocene, increased flow allowed the Gash to reach the Atbara (Coltorti et al. 1984; Durante et al. 1980; Cumming 1937; Barbour 1964). During the third millenium BC, however, drier conditions diverted the Gash to a natural basin north of Kassala, the present site of its silt choked delta (Barbour 1964).

At the very eastern edge of the Southern Atbai, scattered granitic outcrops mark the beginning of the Eritrean highlands. The most prominent of these outcrops, the 700 meter high Jebel Kassala, is visible from at least sixty kilometers away. Cumming (1937: 1), no doubt impressed by the sheer enormity of this bald, domed, pinkish mass of rock, described Jebel Kassala as a repulsive geologic phenomenon. Repulsive or not, large settled communities have lived in the shadow of Jebel Kassala since at least the early third millenium BC. Its base is the single most permanently inhabited locale in the entire Southern Atbai. Today, the town of Kassala, a provincial center, sits wedged between the Jebel and the Gash River.

The Kassala area is a borderland. At an elevation of some 500 meters above sea level, it sits astride the dividing line between the Eritrean highlands and the central Sudanese lowlands. North to south, the area is currently on the border between the low rainfall savanna and the semi-desert, although the forested Gash Delta gives it an almost tropical atmosphere.

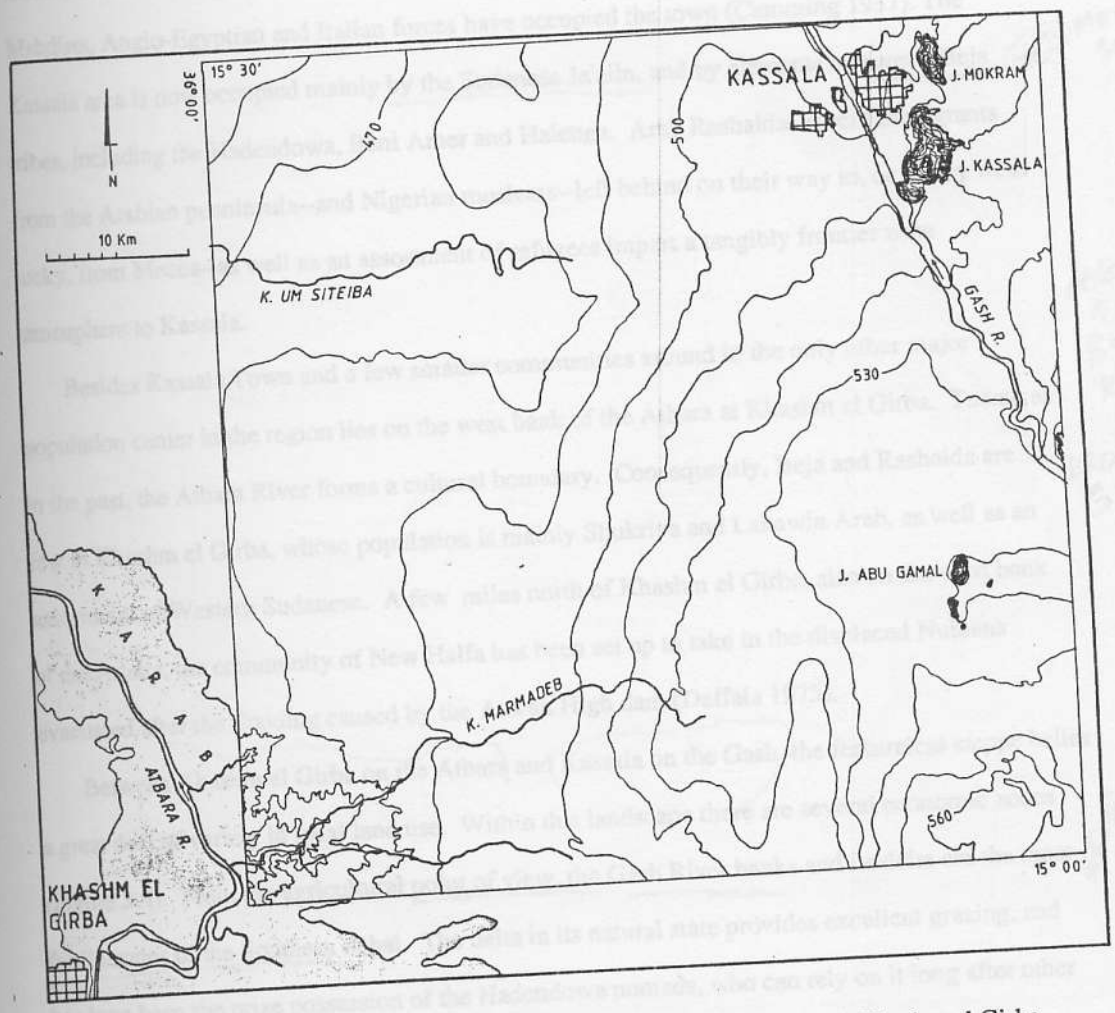

Figure 3.3. Geographical map of the Southern Atbai between Kassala and Khashm el Girba. Contour lines at 10 meter intervals.

Culturally, Kassala is a frontier zone, as well. Today it lies near the border between the modern Sudan and Ethiopia. Since the founding of Kassala town in 1840, Turko-Egyptians, the Mahdists, Anglo-Egyptian and Italian forces have occupied the town (Cumming 1937). The Kassala area is now occupied mainly by the Sudanese Ja'alin, and by elements of several Beja tribes, including the Hadendowa, Beni Amer and Halenga. Arab Rashaida--recent immigrants from the Arabian penninsula--and Nigerian moslems--left behind on their way to, or if they were lucky, from Mecca--as well as an assortment of refugees impart a tangibly frontier zone atmosphere to Kassala.

Besides Kassala Town and a few smaller communities around it, the only other major population center in the region lies on the west bank of the Atbara at Khashm el Girba. Today, as in the past, the Atbara River forms a cultural boundary. Consequently, Beja and Rashaida are few in Khashm el Girba, whose population is mainly Shukriya and Lahawin Arab, as well as an assortment of Western Sudanese. A few miles north of Khashm el Girba, also on the west bank of the Atbara, the community of New Halfa has been set up to take in the displaced Nubians evacuated after the flooding caused by the Aswan High dam (Daffala 1975).

Between Khashm el Girba on the Atbara and Kassala on the Gash, the featureless steppe belies a great deal of variety in local land use. Within this landscape there are several economic zones (Figure 3.4). From the agricultural point of view, the Gash River banks and its delta are the most fertile zones of the Southern Atbai. The delta in its natural state provides excellent grazing, and has long been the prize possession of the Hadendowa nomads, who can rely on it long after other grazing sources have been depleted (Barbour 1964). Most of its grazing potential is now lost to mechanised, irrigated cotton growing schemes, but the Hadendowa continue to profit as land owners. The banks of the Gash, at the apex of the delta around Kassala Town, are dotted with small garden plots (*saqias*), growing sorghum, millet, maize, onions, beans, limes, melons, oranges, bananas, and a host of vegetables (Barbour 1964). The agricultural potential of the Gash Delta and river banks is largely due to the year-round availability of water. The Gash flow eventually

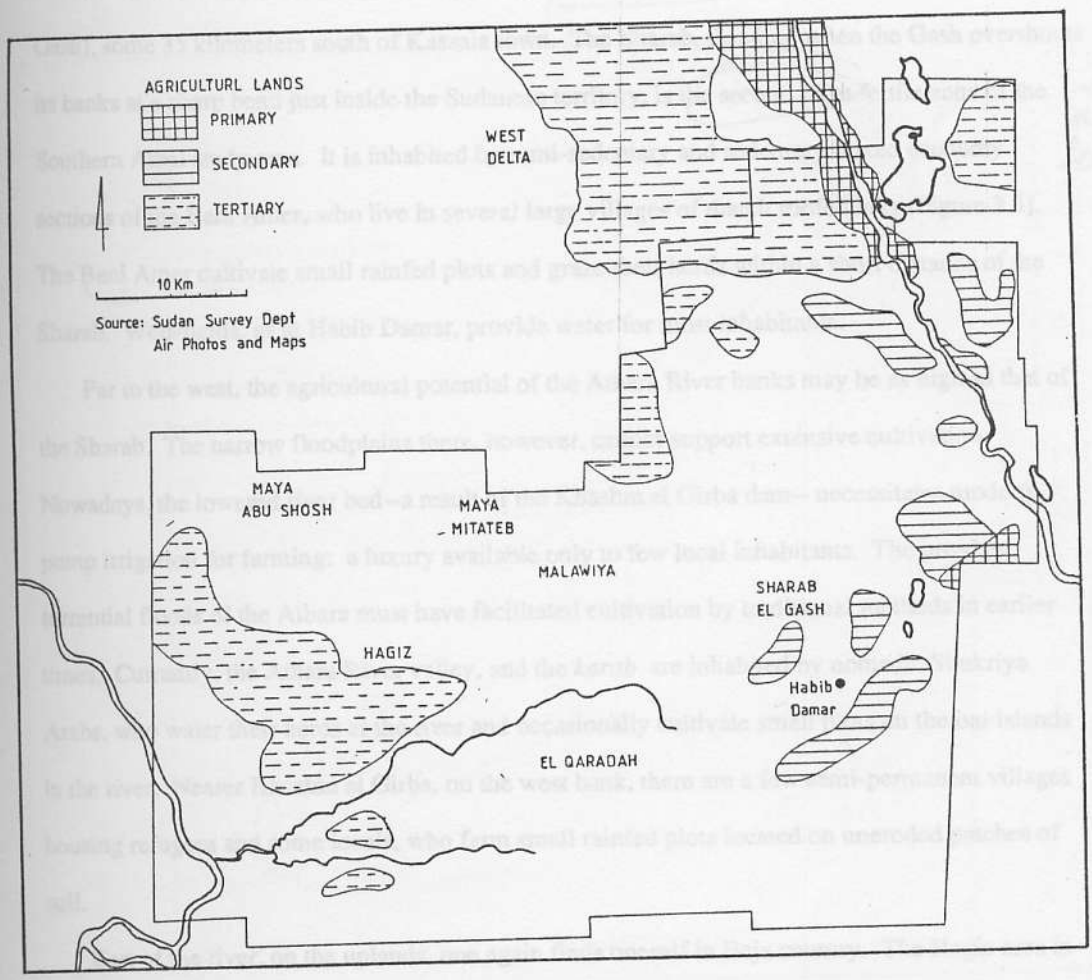

Figure 3.4. The agricultural lands of the Southern Atbai study area.

finds its way into aquifers beneath the silts of the river bed, which can be tapped with wells as shallow as three meters (Saeed 1969, 1972; Barbour 1964).

This subsurface water is also available in the Sharab el Gash (literally wine or drink of the Gash), some 35 kilometers south of Kassala town. The Sharab, flooding when the Gash overshoots its banks at a sharp bend just inside the Sudanese territory, is the second most fertile zone of the Southern Atbai study area. It is inhabited by semi-sedentary and sedentary mixed economy sections of the Beni Amer, who live in several large villages of thatch roofed huts (Figure 3.5). The Beni Amer cultivate small rainfed plots and graze their herds within a short distance of the Sharab. Well-fields, as at Habib Damar, provide water for most inhabitants.

Far to the west, the agricultural potential of the Atbara River banks may be as high as that of the Sharab. The narrow floodplains there, however, cannot support extensive cultivation. Nowadays, the lowered river bed--a result of the Khashm el Girba dam-- necessitates modern pump irrigation for farming: a luxury available only to few local inhabitants. The pre-dam torrential floods of the Atbara must have facilitated cultivation by traditional methods in earlier times. Currently, the Atbara River valley, and the *karab* are inhabited by nomadic Shukriya Arabs, who water their herds at the river and occasionally cultivate small plots on the bar islands in the river. Nearer Khashm el Girba, on the west bank, there are a few semi-permanent villages housing refugees and some locals, who farm small rainfed plots located on uneroded patches of soil.

East of the river, on the uplands, one again finds oneself in Beja country. The Hagiz area is quite fertile and is crammed with rainfed plots farmed by the nomads, as well as a few sedentary folks living in isolated homesteads and small hamlets. The Hagiz fields make up the third most fertile zone of the study area. In productivity, they are comparable to the paleo-delta just west of the present Gash Delta which is crammed with small rainfed plots, occasionally farmed by the migrant Rashaida and Hadendowa.

The intervening land between these primary, secondary and tertiary fertile zones--the steppe--is utilised by the herders from the nomadic and mixed economy societies. On air photos,

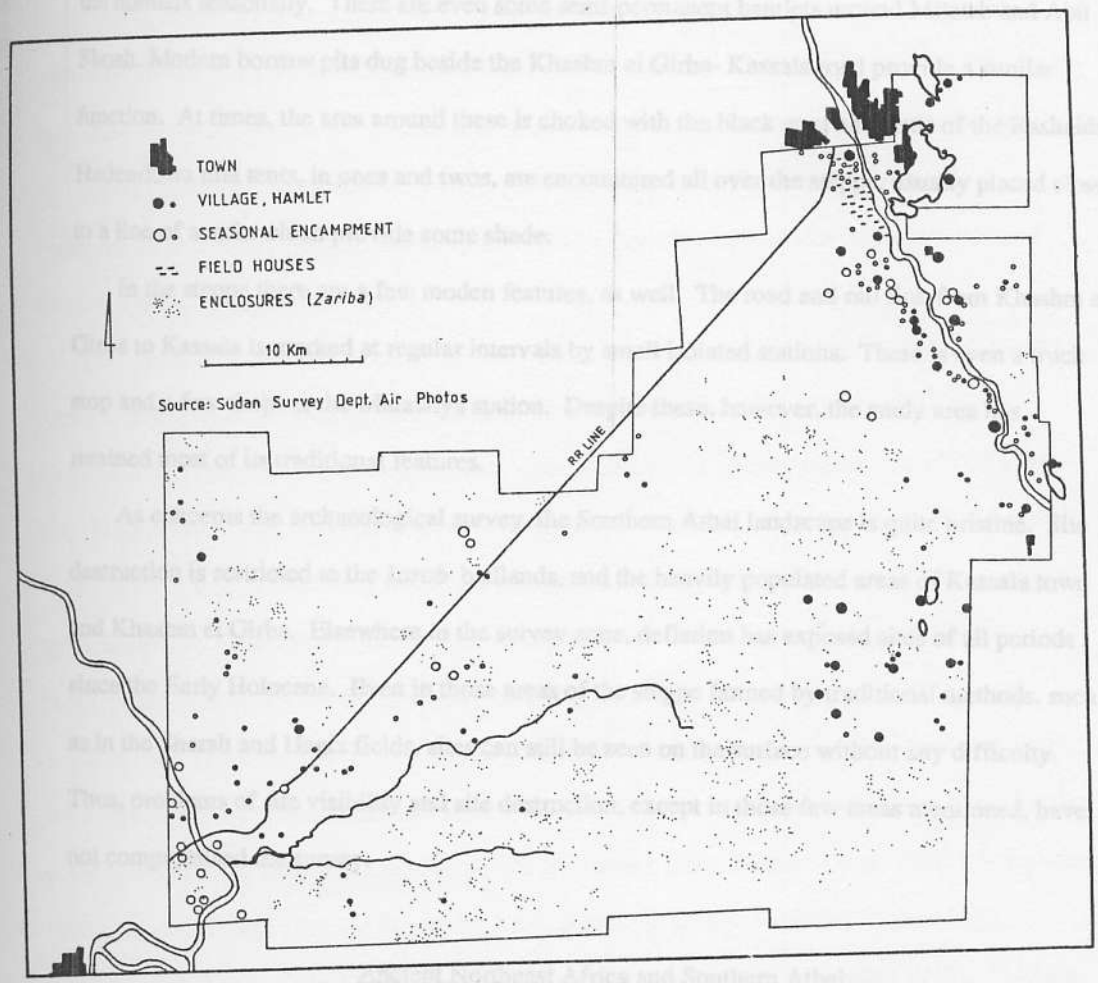

Figure 3.5. Modern settlements in the Southern Atbai study area.

their herding camps, marked by thorn enclosures (*zaribas*), can be seen dotted all over the steppe, and even into some of the less fertile agricultural zones. Several natural depressions in the steppe, as at Malawiya, Mitateb and Abu Shosh (Figure 3.3), provide rain pools which attract the nomads seasonally. There are even some semi-permanent hamlets around Mitateb and Abu Shosh. Modern borrow pits dug beside the Khashm el Girba- Kassala road provide a similar function. At times, the area around these is choked with the black goat hair tents of the Rashaida. Hadendowa mat tents, in ones and twos, are encountered all over the steppe, usually placed close to a line of acacia which provide some shade.

In the steppe there are a few moden features, as well. The road and rail link from Khashm el Girba to Kassala is marked at regular intervals by small isolated stations. There is even a truck stop and a few shops at the Malawiya station. Despite these, however, the study area has retained most of its traditional features.

As concerns the archaeological survey, the Southern Atbai landscape is quite pristine. Site destruction is restricted to the *karab* badlands, and the heavily populated areas of Kassala town and Khashm el Girba. Elsewhere in the survey zone, deflation has exposed sites of all periods since the Early Holocene. Even in those areas of the steppe farmed by traditional methods, such as in the Sharab and Hagiz fields, sites can still be seen on the surface without any difficulty. Thus, problems of site visibility and site destruction, except in those few areas mentioned, have not compromised the survey.

Ancient Northeast Africa and Southern Atbai

The Paleoenvironment

Today, Northeast Africa is arid. Egypt, except for a narrow strip on her Mediterranean seaboard, receives practically no rain at all. Northern Sudan does not fare much better. The Nile River, which receives its waters from tropical Africa and the Ethiopian Highlands, is the sole major source of fresh water there.

The aridity is worsening. Many consider the accompanying "desertification" a result of pastoralism: herds, it is thought, decimate the vegetation, causing erosion, thus leaving the door open to the sands of the Sahara (cf. eg. Stiles 1981). This is an exagerrated claim, at best. The encroaching desert is a symptom of the gradual environmental deterioration which has gripped Northeast Africa since the mid-Holocene. Indeed, during the late Pleistocene, some 14,000 years ago--long before there were any pastoralists--another cycle of desiccation had brought the desert 450 kilometers farther south than its present position at about the 17th and 16th parallels (Wickens 1982). Kosti, Sennar, and Khashm el Girba, had they existed then, would have been located at the very edge of the desert.

That cycle of aridity was over by the early Holocene. Between ca. 10,000-5,500 BC North Africa enjoyed a pluvial climate, with lakes in what is now driest Sahara (Petit-Maire 1979). Since then, the climate has gradually become drier, attaining its present aridity some 2000 years ago. During this drying trend there were several oscillations from wet to dry and back (Muzzolini 1982). Thus the early Holocene wet phase was replaced by the mid-Holocene arid phase, which was followed by the Neolithic humid phase, the post-Neolithic arid phase, the post-Neolithic humid phase, and finally the present arid phase (Figure 3.6).

The early Holocene wet phase (10,000-5500 BC) is evident in, among others, rising lake levels at La Saoure and Mauritania between 10,000-8000 BC (Street and Grove 1976), rise in the levels of the Ethiopian and Rift Lakes around 10,000 BC (Street 1980; Williams et al. 1982; Livingstone 1980), as well as high Nile levels and the Arkin formation around 9500 BC (Butzer 1975; Wendorf et al. 1970). Lake Chad reappeared at about the same time (Muzzolini 1982). The lake at Adrar Bous saw occupation at the 710 m level (A.B. Smith 1976). Lowland forest species in the Sudan advanced to 300-400 kilometers north of their present positions and, by the height of this wet phase rainfall there may have been up to four times as much as at present (Street and Grove 1976; Banks 1984). Some minor oscillations towards a drier climate are evident within this early Holocene wet phase, as shown by sequences in the Eastern Sahara (Wendorf et al. 1980). However, the oscillations did not compromise the overall humid and cool climate.

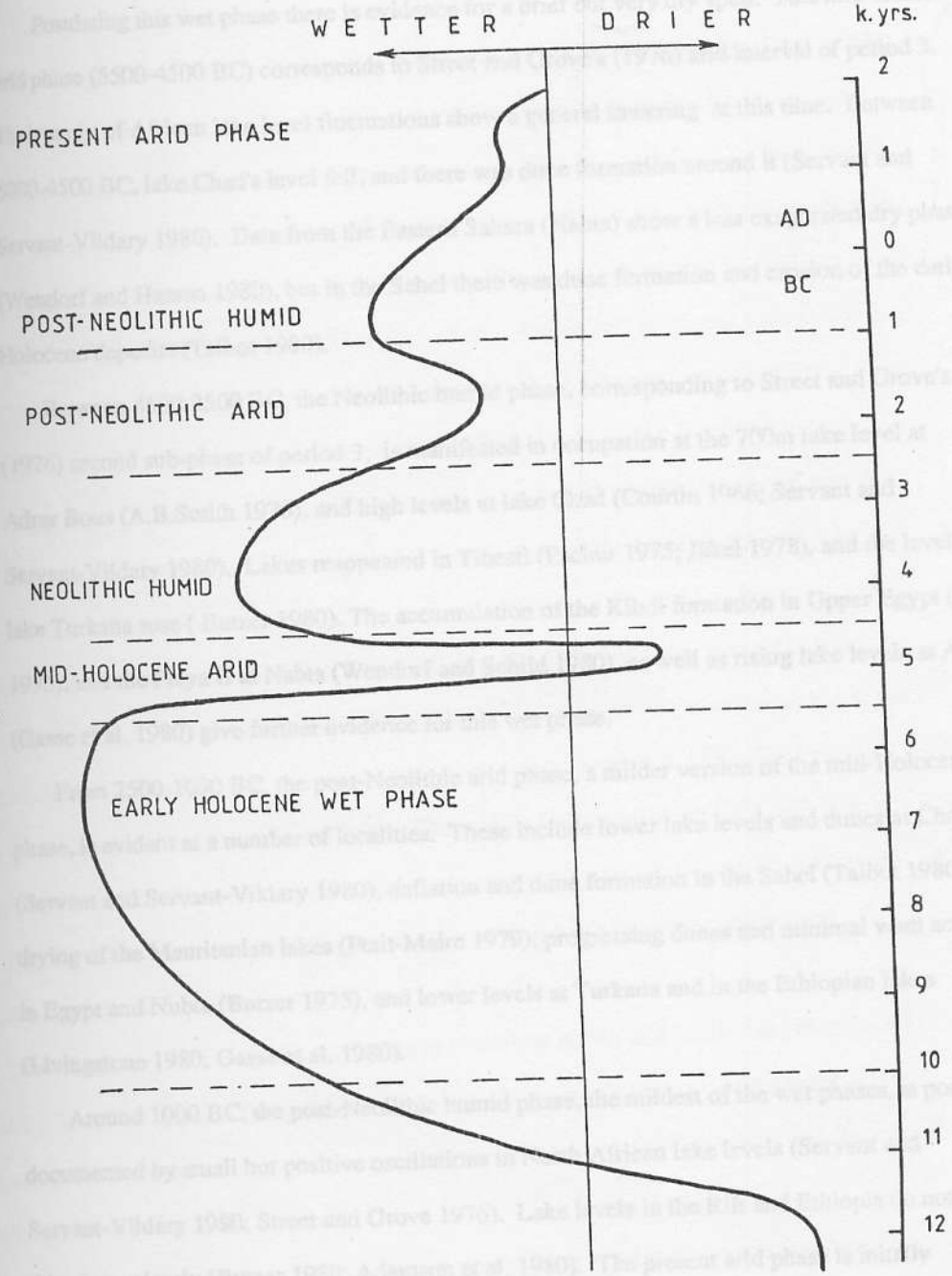

Figure 3.6. Chart of the North African paleo-climates (after Muzzolini 1982).

Postdating this wet phase there is evidence for a brief but very dry spell. This mid-Holocene arid phase (5500-4500 BC) corresponds to Street and Grove's (1976) arid interval of period 3. Their study of African lake level fluctuations show a general lowering at this time. Between 6000-4500 BC, lake Chad's level fell, and there was dune formation around it (Servant and Servant-Vildary 1980). Data from the Eastern Sahara (Nabta) show a less exagerated dry phase (Wendorf and Hassan 1980), but in the Sahel there was dune formation and erosion of the early Holocene deposits (Talbot 1980).

Between 4500-2500 BC, the Neolithic humid phase, corresponding to Street and Grove's (1976) second sub-phase of period 3, is manifested in occupation at the 700m lake level at Adrar Bous (A.B.Smith 1976), and high levels at lake Chad (Courtin 1966; Servant and Servant-Vildary 1980). Lakes reappeared in Tibesti (Pachur 1975; Jäkel 1978), and the level of lake Turkana rose (Butzer 1980). The accumulation of the Kibdi formation in Upper Egypt (Butzer 1975), and the Playa II at Nabta (Wendorf and Schild 1980), as well as rising lake levels at Abhé (Gasse et al. 1980) give further evidence for this wet phase.

From 2500-1000 BC, the post-Neolithic arid phase, a milder version of the mid-Holocene arid phase, is evident at a number of localities. These include lower lake levels and dunes at Chad (Servant and Servant-Vildary 1980), deflation and dune formation in the Sahel (Talbot 1980), drying of the Mauritanian lakes (Petit-Maire 1979), progressing dunes and minimal wadi activity in Egypt and Nubia (Butzer 1975), and lower levels at Turkana and in the Ethiopian lakes (Livingstone 1980; Gasse et al. 1980).

Around 1000 BC, the post-Neolithic humid phase, the mildest of the wet phases, is poorly documented by small but positive oscillations in North African lake levels (Servant and Servant-Vildary 1980; Street and Grove 1976). Lake levels in the Rift and Ethiopia do not show this phase clearly (Butzer 1980; Adamson et al. 1980). The present arid phase is initally observed in lower lake levels at Victoria, and the drying or salinisation of many other Rift lakes (Kendall and Livingstone 1967).

Other data, specifically from the Sudan, mirror the large scale developments in Northern Africa. They also give an indication of the paleoenvironmental conditions in the Southern Atbai. Warren (1970), based on his work on dunes in the Kordofan province, postulated a four phase sequence of environmental change since the late Pleistocene. Period 1 is defined by the terminal Pleistocene arid phase. In period 2 (ca. 10,000-5000 BC) a wet phase was manifested by the shift in rainfall belts to 250 km north of present positions, resulting in a rainfall of 1000-800 mm in the Southern Atbai. Period 3 (ca. 5000-4000 BC) was arid, with a shift in rainfall belts to 200 km south of present positions, bringing annual rainfall down to about 100 mm in the Southern Atbai. Period 4 was a wet phase lasting from about 4000 to 3000 BC, with a shift in rainfall belts to about 100 km north of present positions. This resulted in an annual rainfall of 400-600 mm in the Southern Atbai. Since about 1000 BC rainfall there has been between 200-400 mm p.a.

Wickens' (1982) paleoenvironmental reconstruction (Figure 3.7), based on botanical evidence, is similar but less detailed than Warren's. For the early Holocene wet phase (ca. 10,000- 5000 BC) his interpretations indicate a decidious savanna woodland environment in the Southern Atbai. Essentially, that area would then have been an extension of the flood region which is now confined to the Southern Sudan. The middle Holocene (3000-1000 BC) was a drying period, with the Southern Atbai bearing a savanna environment. In the past 3000 years the drying trend has continued, bringing the Southern Atbai into a savanna environment bordering on semi-desert.

The overall paleoclimatic reconstruction of Northeast Africa and the Sudan provides only a backdrop for the situation in the Southern Atbai. There, the environment was more strongly affected by the local hydrology. This has been described in some detail in Marks and Sadr (in press), and is only summarised below.

That the Gash River originally flowed as far as the Atbara had been known for some time (Cumming 1937; Barbour 1964). Recent geomorphological investigations have confirmed this, showing that during the early Holocene wet phase the Gash formed a tributary of the Atbara, and thus, was part of the overall Nile drainage system (Durante et al. 1980; Coltorti et al. 1984). The

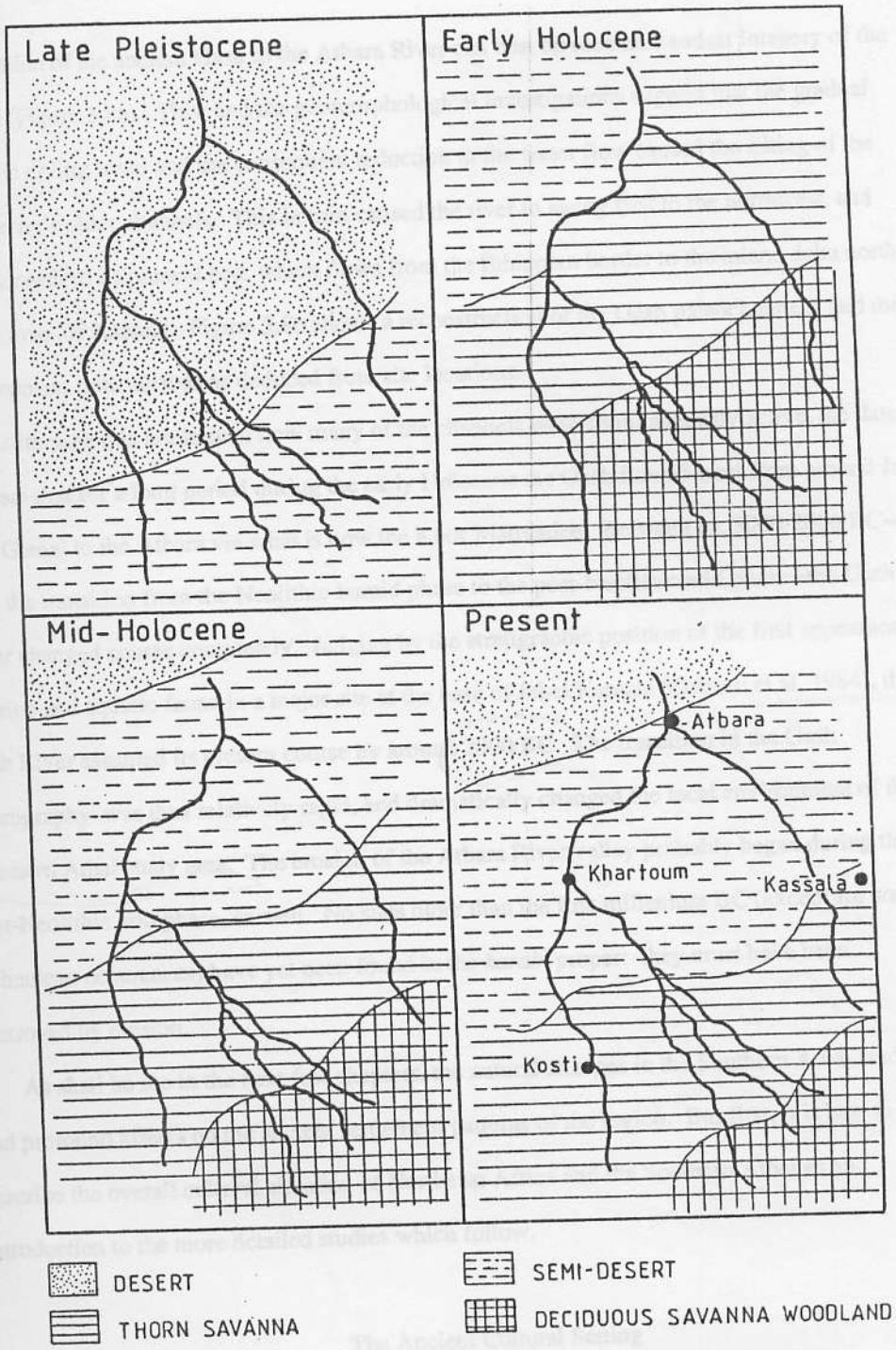

Figure 3.7. Paleoenvironmental reconstruction of the central Sudan (after Wickens 1982).

connection of the ancient Gash to the Atbara River can best be seen on Landsat Imagery of the region (Figure 3.8a). This, and the geomorphological investigations suggest that the gradual climatic drying trend and the consequent reduction in the water flow caused the silting of the Gash river's older channels. This in turn caused the river to swing first to the northwest, and finally north to its present bed, which flows from the Ethiopian border to the inland delta north of the town of Kassala. Figure 3.8b shows a reconstruction of the Gash paleochannels, and their approximate time periods as deduced from site locations.

Although it is not known how many of the channels were simultaneously active, the dates indicate that for a long period during the early Holocene the Gash flowed west from around Jebel Abu Gamal to the Atbara via what is now the Khor Marmadeb. Between ca. 3000-2000 BC--i.e., with the transition from the Neolithic humid phase to the post-Neolithic arid phase--the Gash River changed course completely. Judging by the stratigraphic position of the first appearance of riverine and aquatic fauna in a major site at the base of Jebel Kassala (Coltorti et al. 1984), the Gash River assumed its present course by around 2000 BC. The transition in the Gash hydrography was thus relatively rapid, and dramatically changed the local environment of the Southern Atbai study area. The erosion of the Atbara River valley probably began during the post-Neolithic arid phase, as well. No sites older than the first millenium BC (except for some Acheulean occurences) have yet been found in the *karab* proper: they must have been destroyed by erosion.

As shall be see in the next few chapters, the natural changes in the Southern Atbai study area had profound effects on the ancient settlement patterns of the region. But first, it is best to describe the overall cultural situation of Northeast Africa and the Southern Atbai as an introduction to the more detailed studies which follow.

The Ancient Cultural Setting

Prior to the introduction of food producing economies into Northeast Africa, the Mesolithic cultures of the area relied on a broad based hunting, gathering and fishing subsistence economy.

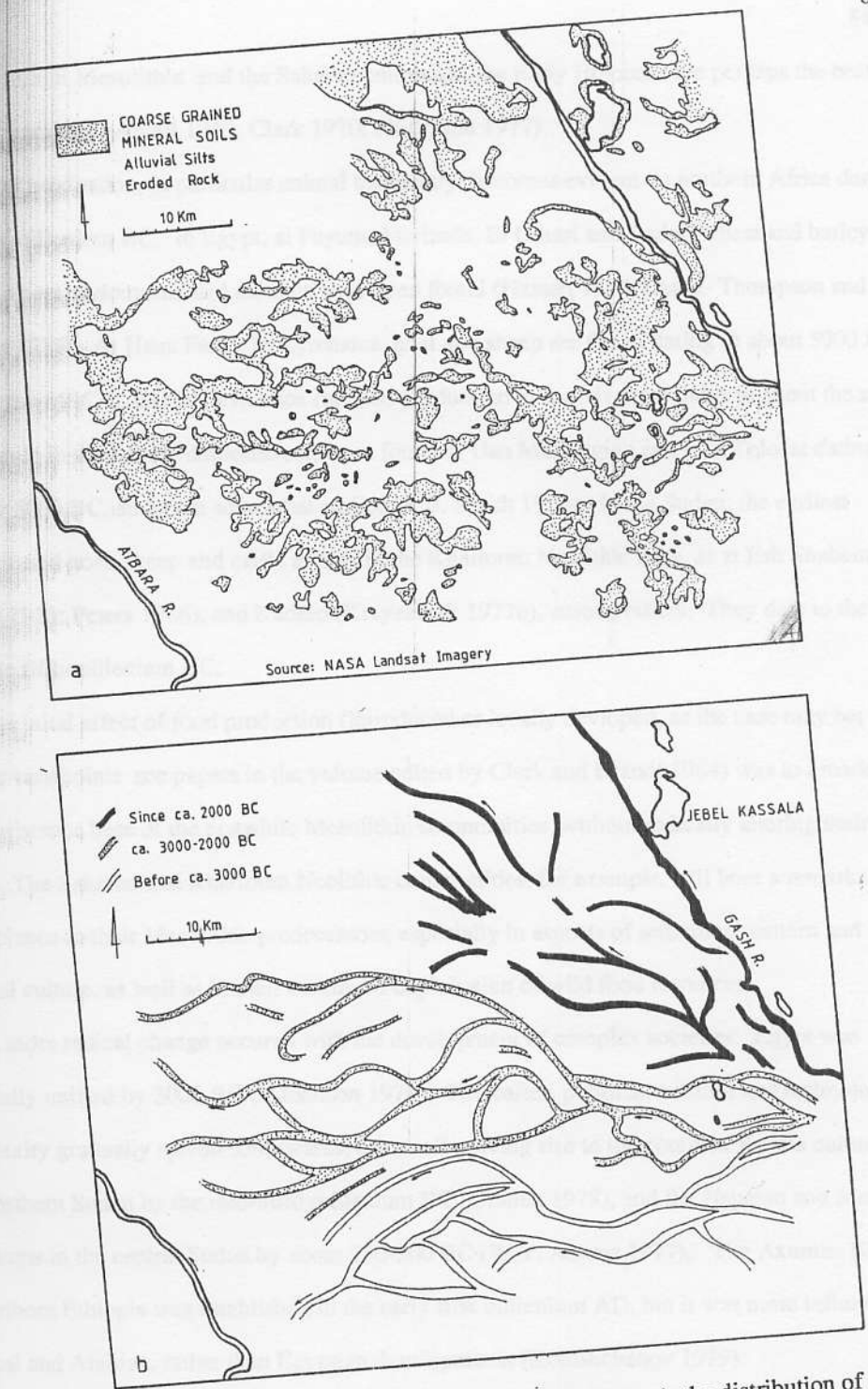

Figure 3.8. The ancient hydrography of the Southern Atbai; a) the distribution of coarse grained mineral soils, as seen on NASA Landsat Imagery; b) reconstructed paleo-channels of the Gash River.

The Khartoum Mesolithic and the Saharan cultures of the Early Holocene are perhaps the best known examples (Arkell 1949; Clark 1970; Phillipson 1977).

Food production, in particular animal husbandry, becomes evident in northern Africa during the fifth millenium BC. In Egypt, at Fayum, Merimde, El Omari and Badari wheat and barley, as well as a host of domesticated animals have been found (Hassan 1984; Caton- Thompson and Gardner 1934). At Haua Fteah, in Cyrenaica, goat and sheep are found dating to about 5000 BC (Mc Burney 1967). Earliest evidence for food production in the Maghreb dates to about the same time, while in the Sahara domestic cattle are found at Uan Muhuggiag and Uan Telocat dating to roughly 5000 BC, and even somewhat earlier (A.B. Smith 1984). In the Sudan, the earliest domesticated goat, sheep and cattle appear in the Khartoum Neolithic sites, as at Esh Shaheinab (Arkell 1953; Peters 1986), and Kadero (Krzyzaniak 1977b), among others. They date to the mid- and late fifth millenium BC.

The inital effect of food production (introduced or locally devloped, as the case may be; for various viewpoints see papers in the volume edited by Clark and Brandt 1984) was to broaden the subsistence base of the erstwhile Mesolithic communities, without radically altering their way of life. The Saharan and Khartoum Neolithic communities, for example, still bore a remarkable resemblance to their Mesolithic predecessors, especially in aspects of settlement pattern and material culture, as well as in their continued exploitation of wild food resources.

A more radical change occured with the development of complex societies. Egypt was politically unified by 3000 BC (P.Johnson 1978). Thereafter, political, cultural and technological complexity gradually spread southwards, eventually giving rise to the complex Kerma culture in the Northern Sudan by the mid-third millenium BC (Gratien 1978), and the Napatan and Meroitic Kingdoms in the central Sudan by about 750-500 BC (W.Y. Adams 1977). The Axumite Kingdom in Northern Ethiopia was established in the early first millenium AD, but it was more influenced by local and Arabian, rather than Egyptian developments (Kobishchanov 1979).

The Neolithic way of life continued in most regions of Northeast Africa up to the time when complex societies emerged close by. Thereafter, as the rural element of the various state societies,

the traditional way of life was preserved, or developed further. But the Neolithic-level societies no longer functioned independently, being caught up in the net of interregional developments directed by the central, sometimes urban, elements of the state level societies. These complex developments cannot be adequately summarised here, but Säve-Söderberg (1941) provides a detailed description of Egypt's long history of political development and its influence on the Southern lands. Chapter eight of this dissertation summarises the Northeast African cultural developments over this time span.

Cultural developments in the Southern Atbai lagged periodically, but at times were ahead of her neighbours'. There are several published preliminary reports on the Southern Atbai cultural sequence (Fattovich, Marks and Ali 1984; Fattovich 1984a and b; Marks, Ali and Fattovich 1986; Marks and Fattovich 1984), and the final reports are forthcoming. The cultural sequence is summarised below (Figure 3.9).

The Mesolithic way of life continued in the Southern Atbai until about the mid- or late fourth millenium BC. The populations of the peceramic, pre-Saroba, and Saroba Phases were engaged in a hunting, gathering, and at times fishing subsistence economy. There are, however, differences between their specific economies, settlement patterns, and material culture.

The preceramic occupations are found in a restricted geomorphic zone just north of the great bend in the Atbara River. Dating between ca 8000-5500 BC, the preceramic population exploited warthog, hippo, equids, and various forms of bovids both large and small, extinct buffalo, giraffe and porcupine. At several sites catfish remains were found (Marks 1987; Marks et al. 1987: Elamin 1986).

Since the first ceramic bearing occupations in the Southern Atbai study area have different lithics than those of the pre-ceramic assemblages, Marks (1987) suggests a developmental break between the two. The earliest ceramic sites, from the pre-Saroba Phase, ca. 5500-5000 BC, are found along the Atbara, and 140 kilometer away near Amm Adam, along the present Gash Delta. The ceramics from these bear some resemblance to contemporaneous examples found along the Nile in the Khartoum province, but also have distinct elements (Marks, Ali and Fattovich 1986).

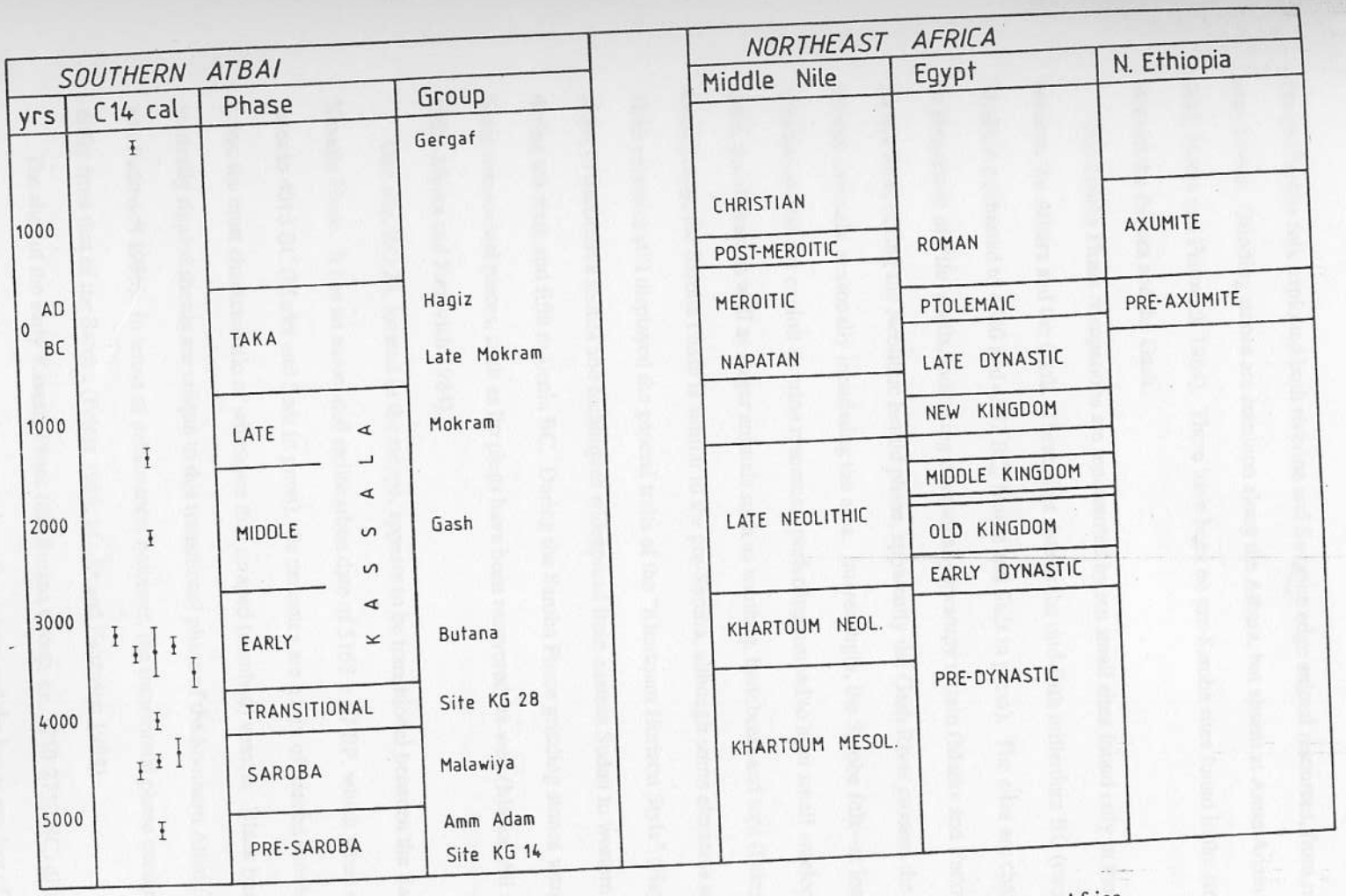

Figure 3.9. The cultural sequence of the Southern Atbai and select regions of Northeast Africa.

The pre-Saroba folk exploited both riverine and Savanna edge animal resources, from molluscs to large bovids. Grinding stones are common along the Atbara, but absent at Amm Adam (Marks 1987; Marks and Fattovich 1984). There have been no pre-Saroba sites found in the steppe between the Atbara and the Gash.

The Saroba Phase occupations are represented by ten small sites found only in the steppe between the Atbara and the Gash. These sites date to the mid-fifth millenium BC (two dates, MASCA calibrated to 4540 and 4552 BC, Marks and Sadr in press). The sites are characterized by an abundance of *Pila* shells, indicating a seasonally swampy terrain (Marks and Fattovich 1984). At this time, during the Neolithic humid phase, apparently the Gash River crossed the steppe in several channels, seasonally inundating the area. Interestingly, the Saroba folk--at least in those sites tested--did not exploit riverine resources, preferring instead to hunt small antelope, dikdik, oribi, and duiker, as well as larger animals such as warthog, hartebeest and topi (Peters 1986). Ceramically, the Saroba Phase is similar to the pre-Saroba, although some elements are absent. Their ceramics still displayed the general traits of the "Khartoum Horizon Style" (Hays 1971): a series of decorative motifs and techniques widespread from eastern Sudan to western Chad during the sixth and fifth millenia BC. During the Saroba Phase grinding stones were common. Some ornamental pieces, such as lip plugs have been recovered, as well (Marks, Ali and Fattovich 1986; Marks and Fattovich 1984).

One site, KG 28, located in the steppe, appears to be transitional between the Saroba and the Kassala Phase. It has an associated radiocarbon date of 5168 ± 67 BP, which when calibrated dates to 4018 BC (Marks and Sadr in press). Its ceramics are a mix of Saroba sherds and new types, the most characteristic of which are thin scraped (combed) vessels. Black burnished, vertically rippled sherds are unique to this transitional phase of the Southern Atbai (Marks, Ali and Fattovich 1986). In terms of subsistence, however, the transitional phase occupations hardly differ from that of the Saroba (Peters 1986; Marks and Fattovich 1984).

The sites of the early Kassala Phase (the Butana Group, ca. 3750-2750 BC) differ tremendously from earlier ones. Located along the Atbara and the lower reaches of the ancient

Gash (presently the Khor Marmadeb) the largest Butana Group sites are over ten hectares in area, with up to two meters of accumulated deposits.

So far, the earliest evidence for food production in the Southern Atbai comes in the form of domesticated animal remains associated with mid- or late third millenium BC Butana Group sites: that is, not at the beginning, but well into the middle of the early Kassala Phase. Presumably these species were originally introduced from the central Sudan, where domesticated animals had already been kept since ca. 4500 BC. Given the tremendous size and depth of some of the Butana sites, some form of agriculture must have been relied upon from the beginning (Marks, Ali and Fattovich 1986). Direct evidence of cultivation, however, is so far unavailable. Even after the introduction of domesticated animals, hunting, as well as fishing, continued to be important activities (Peters 1986).

The characteristic ceramics of the Butana Group are the scraped vessels, and fine red-mouthed burnished pots with an incised herringbone decoration (Winchell, personal communication). One site, N 125, found by Shiner during the late sixties (Shiner 1971a) appears to have been a specialised ceramic production site. Exotic artefacts are associated with the Butana Group, as well. These include abundant lip plugs, and maceheads made on imported porphyry (Marks, Ali and Fattovich 1986). Certain chipped stone picks--which are almost always found with the tip broken off-- are abundant on some of the Butana sites: these may have been used in ground-breaking for cultivation (M'Butu, personnal communication).

By the middle part of the Kassala Phase, ca. 2750-1500 BC, the Gash River had begun its shift northwards and reached its present bed sometime around the end of the third millenium BC. Correspondingly, sites of the Gash Group are found in the central and eastern portions of the steppe, but not in the Atbara Valley. The shift in site locations, however, barely affected the settlement system. Large villages continued to be occupied along the major drainages, with smaller sites elsewhere. The subsistence strategy of the Gash Group remained as varied as that of the Butana, with hunting of hippo, warthog, gazelles, antelopes and birds, fishing, and gathering of *Zizyphus* sp., and *Leguminosae*. *Hordeum* sp. may have been cultivated (it is uncertain

whether their remains represent the domesticated variety; Fattovich personnal communication). Domestic cattle, goat and sheep are fairly common, at least in the later part of this phase (Fattovich 1984b; Geraads 1983).

The main site of the Gash Group, K 1 (Mahal Teglinos), has been under excavation by the Italian Archaeological Mission in Kassala since 1980. The stratigraphic sequence at the site shows fifteen living floors, with five basic archaeological levels (Fattovich 1984b). The pottery of the Gash Group is characterized by scraped sherds. These, however, are found in much higher frequencies than in the Butana Group sites. The rest of the ceramics (some 25% of the decorated assemblage) have simple rouletting, punctations, impressions and incisions around the rim (Fattovich 1984b; D'Alessandro 1985). The characteristic stone implements of the Butana Group--the porphyry mace-heads and chipped stone picks--are absent from the Gash Group lithic assemblage. However, given the similarities betwen the two groups (scraped sherds and large village sites), it is possible that the Gash represents an evolved version of the Butana. Nonetheless, evidence for this transition has not yet been found. Another recently discovered, aspect of the Gash Group is the use of funerary stelae which may have been proto-typical of the later Axumite ones (Cremaschi et al. 1986).

Fattovich (1985), on the basis of several circumstantial lines of evidence, concludes that the Gash Group, indeed the Southern Atbai of the third and second millenium BC, may have been part of the land of Punt. Punt is well known from Egyptian texts as an important trading partner of Egypt. The most important lines of evidence in Fattovich's identification include the occurence of all the recorded products of Punt in or very near the Southern Atbai region, several ceramic links to Kerma--the intermediary culture in Egypt's trade with the southern lands-- and the fact that village occupation in the Southern Atbai ceased about the time Punt disappeared from the Egyptian textual record (Fattovich 1985).

The occupations during the late Kassala Phase (ca. 1500-750 BC), in essence, were a continuation of the Gash Group ones, albeit with new cultural elements. The Gash Group material culture of the region had been replaced by that of a new group; the Mokram. The Mokram Group

ceramics are closely affiliated with those of the Pan-Grave culture of Nubia (Sadr in press). In addition to the new ceramic decorations and vessel types, there were new stone tool types, polished axes, and many fine stone bracelets; the latter two made again on imported porphyry (Marks, Ali and Fattovich 1986). This material change, however, had little effect on subsistence and settlement systems, except perhaps to make them somewhat more complex. The village sites, albeit covering a smaller area, continued to be occupied. There were more smaller dispersed sites. The western half of the steppe, which had been left unoccupied since the early Kassala Phase, once again saw extensive occupation.

Faunal remains are rare on the mostly surficial Mokram Group sites, but cattle are present (Peters 1986). Hunting and gathering appear to have had become less important. There is direct evidence for Sorghum and Millet cultivation (Costantini et al. 1983).

In the next phase--the Taka, ca. 750 BC-AD 350--some small sites of the Late Mokram Group are found in the Sharab zone. Again, there is direct evidence for sorghum cultivation (Costantini et al. 1983). The ceramics of this Group strongly resemble that of the Mokram, but instead of being only mineral tempered, have a fair mix of fiber tempering, as well. The majority of the sites from this Phase, however, belong to the Hagiz Group; the first nomads of the Southern Atbai. The ceramics of the Hagiz Group are fiber tempered and very crude. Interestingly, their main decorative elements--scraping, and rim band motifs--recall the Gash Group's designs. Some pre-Axumite sherds found on the Hagiz Group sites offer a clue to their date. Grinding stones are rare on the Hagiz sites, as indeed are all forms of artefact. The Hagiz sites are the lowest density sites in the Southern Atbai, up till this time. Their overall material culture is also the poorest. Direct subsistence evidence is rare, but some cattle bones have been found on one of the Hagiz Group sites.

After the Taka Phase occupations ceased in most of the Southern Atbai study area. A few graves and cemeteries around the base of Jebel Kassala are the only cultural remains known which postdate the Taka Phase. Some are post-Meroitic in date. There are also some Christian and early Islamic remains (Fattovich 1984 a and b).

It was not until about the 15th century AD that populations returned to the Southern Atbai in numbers. These, the Gergaf Group, have been treated elsewhere (Sadr 1984). Since they are too recent to be included in the present research, they are not described here.

CHAPTER IV

MIXED ECONOMIES IN THE SOUTHERN ATBAI

The early Kassala Phase: ca. 3750-2750 BC

Introduction

All the sites of the early Kassala Phase--Period 1 of the the present study--belong to the so-called Butana archaeological group. This cultural group is identified by a specific ceramic assemblage which contains scraped pots, fine red-mouthed wares with herring-bone incised designs, and a few other minor but characteristic types (F.Winchell, personnal communication). Other characteristic artefacts of the Butana Group include chipped stone picks (examples of which are illustrated in Shiner 1971a, Part II, Figures 10 a-c, 18 b, and 21 f), polished porphyry axes and pointed mace-heads, and curious flat, elongated pitted pebbles (as illustrated ibid., Figure 21 d and g). Perforators on flakes, denticulated end-scrapers, and bi-polar flaking technique characterise the Butana Group lithic assemblage (Marks and M'Butu, personnal communication).

Only nine Butana Group sites have been recorded in the Southern Atbai survey. Five of these were found by Shiner during his reconnaisance of the Khashm el Girba area during the late sixties (Shiner 1971a). The BAP has carried out test excavations at six of the Butana Group sites. The rest, except N 125, have been surface collected. The last, recorded by Shiner, was not revisited by the BAP. Table 4.1 presents some basic information about the Butana Group sites.

Aside from a few burials, a pebble floor at KG 29 is the only known feature associated with Butana Group sites. Nothing is known of intra-site layout. Several chunks of daub found in the largest Butana Group sites suggest the presence of durable structures. Except for the pebble floor at KG 29 and a few ash and charcoal lenses in the strata of KG 23, occupation floors are not visible in the excavated sections of the Butana Group sites.

TABLE 4.1

BUTANA GROUP SITES

Site	Size (Ha)	Depth (cm)	Surface Artefact Density	Total Area Excavated (m^2)	Old No.	Comment
KG 1	0.3	35	High	2	N101 (?)	
KG 5	4.5	40	High	2		
KG 7	8.8	85	High	4	N107	
KG 23	10.2	150	High	11	N123	
KG 29	2.5	40	High	5	N129	Disturbed
KG 50	4.2	0	Low	0	-	Lithic Scatter
KG 56	<1.0	0	Low	0	-	Mixed Site
KG 96	7.0	75	High	3		
N 125	<1.0	100	High	1	N125	Pottery Kiln

The Butana Group is assigned to the early Kassala Phase on the basis of several C14 dates. MASCA calibrated, most date between 3,544 ± 154 BC and 3,152 ± 90 BC (Marks and Sadr in press). A sample from KG 23c level 17 has an unrealistically early date of 4372 BC, while a sample from KG 96 has an unrealistically late date of 984 BC. The C14 dates are presented in Table 4.2.

TABLE 4.2

BUTANA GROUP DATES

Site	Level	C14 Date (BP)	MASCA Cal.	Lab Number
KG 7	16	4,421 ± 93	3,163 BC	SMU 1156
KG 7	16	4,569 ± 68	3,351 BC	SMU 1151
KG 23a	18	4,542 ± 253	3,319 BC	SMU 1155
KG 23c	17	5,460 ± 130	4,372 BC	SMU 1194
KG 23c	23	4,519 ± 67	3,283 BC	SMU 1188
KG 23c	27	4,727 ± 154	3,544 BC	SMU 1201
KG 96	lowest	2,755 ± 107	984 BC	SMU 1187
N 125	?	4,410 ± 90	3,152 BC	Tx 445

The reliable dates, when viewed in their proper stratigraphic position (Figure 4.1), suggest that the occupation at KG 7, 23 and N 125 overlapped. KG 29, an otherwise undated site, can be considered partially contemporaneous with the upper levels of KG 23, as judged by a certain rare rim form which they share (Winchell, personnal communication). A seriation of the Butana Group ceramics shows that KG 29, 5 and 96 are somewhat younger than KGs 7 and 23 (ibid.). KG 1, 50, and 56 are undated. The C14 dates suggest that the Butana Group sites were occupied during the North African Neolithic humid phase (see Chapter 3). Rainfall in the Southern Atbai at that time would have been ca. 400-600 mm p.a.(Warren 1970). The sites, located primarily along the Atbara River and the Khor Marmadeb (Figure 4.2), were presumably occupied at a time when the Gash River flowed westwards across the steppe as far as the Atbara.

The excavated faunal remains suggest that hunting was a major aspect of the Butana Group's subsistence strategy. Sites along the Atbara contain riverine fauna. Bones of domestic cattle and small livestock are found in the upper strata of KGs 23 and 7, and throughout the strata of KGs 29, 5 and 96 (Peters 1986). The percentage frequencies from sites KG 29, 5 and 96 suggest that domesticated animals were more heavily relied on in the latter half of Period 1. Table 4.3 presents a detailed faunal list for three of the Butana Group sites.

The list shows that Period 1 subsistence relied on a very broad base of hunted game. As for other aspects of the Butana Group's subsistence, the presence of numerous grinding stones and stone picks (apparently used for ground breaking, Shiner 1971a: 341; M'Butu, personal communication) suggest that cultivation also played a major role. The size and permanence of the main settlements, as well as the fact that all Butana sites were located in optimal zones, support the case for cultivation. However, there is as yet no direct macro-botanical evidence of domesticated plants during Period 1.

Early Kassala Phase Settlement Patterns

Figure 4.2 shows the settlement distribution by size for this Phase. During Period 1 there were five large village sites in the survey zone. Of these, KG 23 and 7 (Figure 4.3) are quite

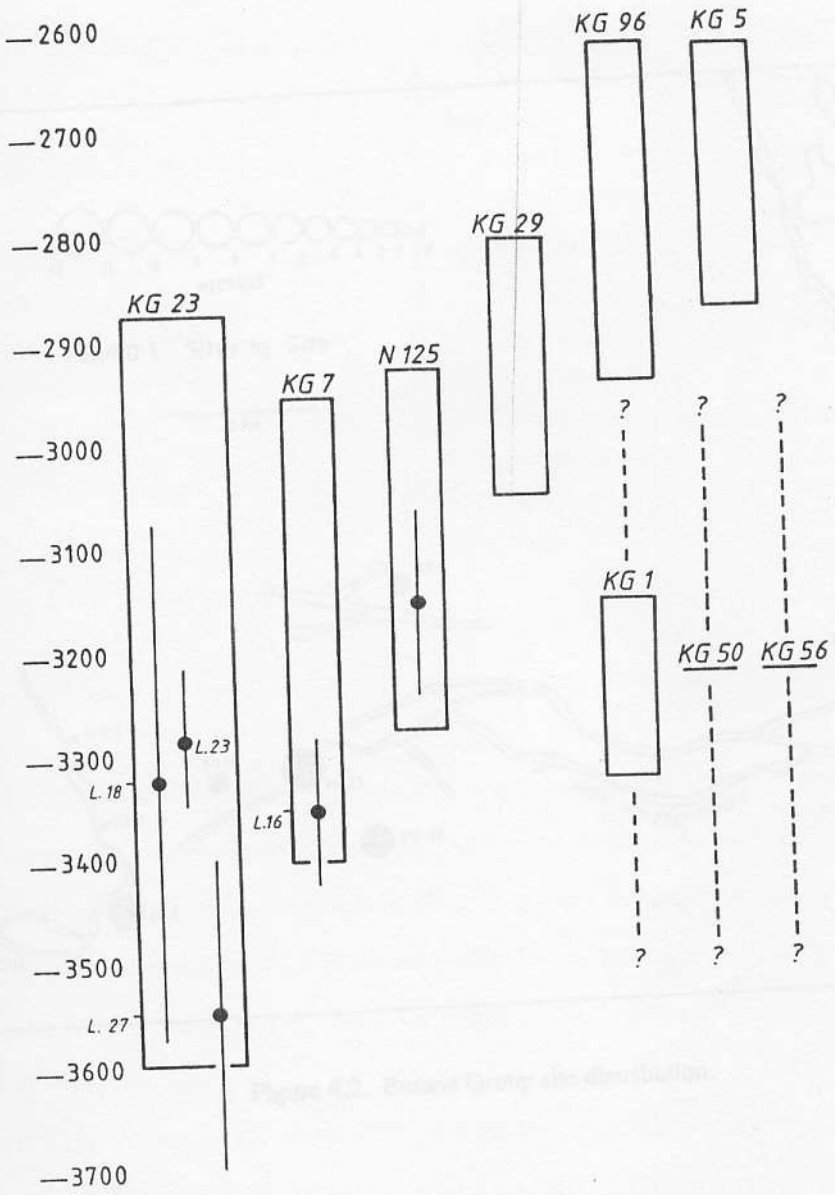

Figure 4.1. Butana Group sites in approximate temporal order.

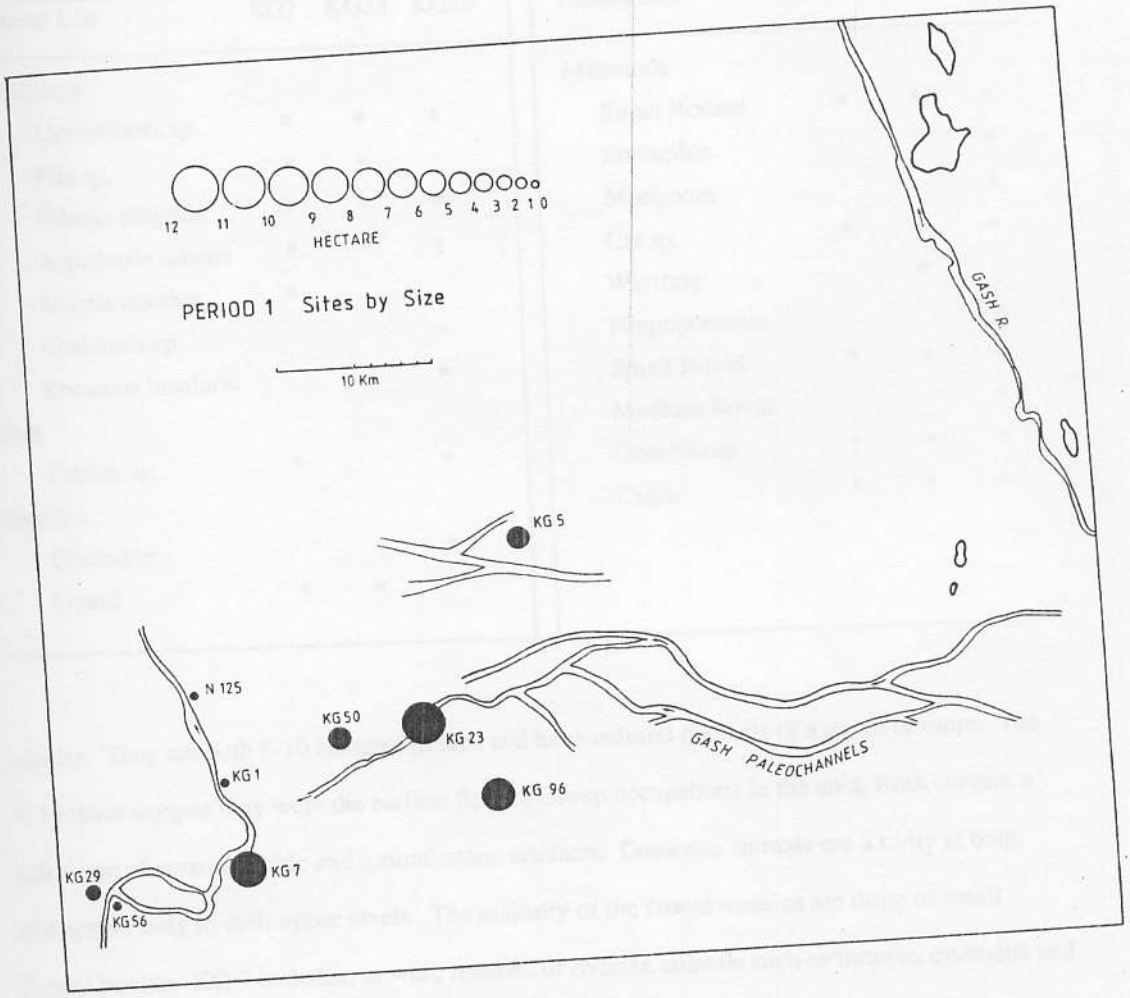

Figure 4.2. Butana Group site distribution.

TABLE 4.3

BUTANA GROUP FAUNAL REMAINS

Faunal List	KG7	KG23	KG29	Faunal List	KG7	KG23	KG29
Molluscs				Mammals			
Limocolaria sp.	*	*	*	Small Rodent	*	*	*
Pila sp.	*	*		Porcupine			*
Etheria elliptica	*	*	*	Mongoose			*
Aspatharia rubens	*	*	*	Cat sp.	*	*	*
Mutela nilotica	*			Warthog		*	
Corbicula sp.			*	Hippopotamus			*
Zootecus insularis			*	Small Bovid	*	*	*
Fish				Medium Bovid			*
Catfish sp.	*		*	Goat/Sheep	*	*	*
Reptiles				Cattle	*	*	*
Crocodile			*				
Lizard	*	*					

similar. They are both 8-10 hectares in area and have cultural deposits of a meter or more. The C 14 dates suggest they were the earliest Butana Group occupations in the area. Both contain a full range of ceramic, lithic and ground-stone artefacts. Domestic animals are a rarity at both, and appear only in their upper levels. The majority of the faunal remains are those of small hunted bovids. KG 7 includes, as well, remains of riverine animals such as tortoise, crocodile and hippo (Peters 1986).

Shiner (1971a) had suggested the possibility that the same population migrated seasonally between these two village sites. He based this on the location of KG 23 far away from the Atbara, where water would have been difficult to find during the drier seasons. In view of the ancient hydrography of the Southern Atbai, however, this point can now be rejected: KG 23 was actually located beside a channel of the Paleo-Gash River and as such would not have suffered water shortage during the dry season.

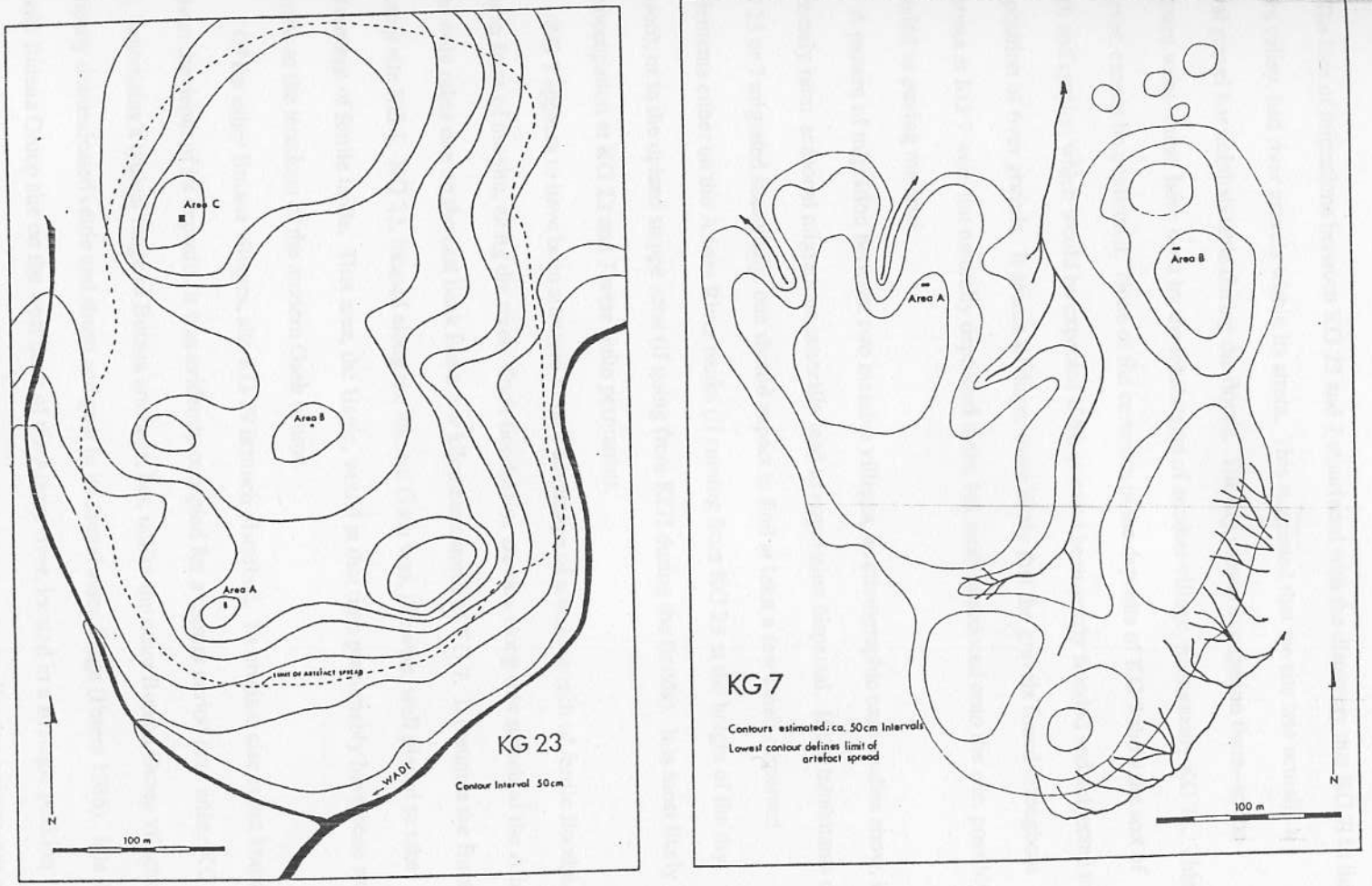

Figure 4.3. Butana Group sites KG 23 and 7.

The idea of migrations between KG 23 and 7 resurfaced with the discovery that KG 7, in the Atbara valley, had river gravels within its strata. This suggested that the site was actually a natural gravel bar uninhabitable during the floods. The dry season occupation there--so the argument went--must have been by the inhabitants of another village, presumably KG 23. This, however, cannot be confirmed. None of the ceramics in the deposits of KG 7 show the sort of polish and erosion which would be expected if the site had been yearly flooded and subjected to a deposition of river gravels. It seems, perhaps, more likely that the gravels found throughout the strata at KG 7 were not naturally deposited there, but were introduced onto the site, possibly intended as paving material.

A pattern of migration between two massive villages, as ethnographic case studies show, is extremely rare: seasonal migrations generally lead to population dispersal. If the inhabitants of KG 23 or 7 migrated seasonally, one should expect to find at least a few small dispersed settlements either on the Atbara River banks (if coming from KG 23 at the height of the dry season), or in the upland steppe zone (if going from KG7 during the floods). It is most likely that the occupation at KG 23 and 7 were quite permanent.

KG 7 appears to have been situtated to take advantage of a wide stretch of fertile floodplain just in front of the site, along the river. Such floodplains are rare along this stretch of the Atbara. The only other one on the east bank lies a few kilometers north of KG 7. It contains the Butana Group site KG 1. KG 23, located along the ancient Gash was, likewise, well placed to take advantage of fertile lands. That area, the Hagiz, would at that time presumably have been as fertile as the terminus of the modern Gash is now.

Of the other Butana villages, site KG 29 is much disturbed. Its original size is not known, but given the depth of its deposits, it was evidently occupied for a shorter period than either KG 23 or 7. It contains a typical range of Butana artefacts, but, unlike the other Butana Group vilages, has mostly domesticated cattle and sheep and goat in its faunal assemblage (Peters 1986). It is the only Butana Group site on the west bank of the Atbara river, located in a strategic position overlooking the mouth of the Atbara gorge, near one of the few fords allowing easy access to the

east bank. It is not located in prime agricultural land as are the other major Butana Group sites; the nearest modern fields are about five kilometers away from the site. Its location, and the predominance of domesticated animals suggest that KG 29 may have been more reliant on herding.

KGs 5 and 96 also have less than 1 meter of occupation debris: their occupations were apparently not as long lived as at the early Period 1 sites such as KGs 7 and 23. Also, as at KG 29, KGs 5 and 96 have quite a few remains of domesticate animals.

Of the other Butana Group sites, KG 1 is located some six kilometers north of KG 7, in a floodplain bordering the Atbara River. The site is only about a third of a hectare in area, and has a cultural depth of some 35 cm. Since it contains a range of artefacts and faunal remains similar to those of KG 23 and 7, KG 1 can be considered an early Period 1 isolated habitation site: a homestead or small hamlet set apart from the main villages.

KG 50 is a large site without any depth of deposits, located about halfway between site KG 23 and the Atbara. The site contains a typical Butana Group assemblage of lithic and groundstone artefacts, but has no ceramics on the surface at all. This aspect, in stark contrast to all other Butana Group sites, suggests that KG 50 must have been some kind of special purpose camp. The abundance of lithics and ground stone may suggest quarrying activities, although there are no known gravel bars or other raw material sources in its vicinity. Since it is strictly a surface site, no faunal remains have been recovered. Its exact function remains unknown.

Likwise, site KG 56, a small surficial site, remains enigmatic. The Butana artefacts are mixed with those of later Phases. Its location, across the ford by KG 29, may suggest some connections to the latter site.

Finally, site N 125, recorded by Shiner (1971a) has been described as a small knoll, partially natural, located a few hundred meters from the edge of the Atbara. The site surface was apparently covered with sherds and charcoal, and very little else. Excavations there showed a depth of about one meter; ceramics and charcoal were continuously the predominant cultural materials. On this basis, Shiner interpreted the site as a specialised ceramic production center.

Period 1 Relations and Interactions

Notwithstanding the special purpose sites such as KG 50 and N 125, the Butana Group settlements all have a very similar range of ceramic vessels: of the 14 major Butana ceramic types, all are present in each settlement (F. Winchell, personnal communication). No one site has a monopoly on exotic wares or rare ceramic types which may signify an unequal distribution of wealth. Likewise, the exotic lithic artefacts such as lip-plugs and polished stone mace-heads are found on all the major Butana sites. This situation is quite different from what pertains in later Periods. In the middle and late Kassala Phase, for example, the restricted distribution of exotic and rare types points to significant differences in the wealth of settlements. One cannot but reach the conclusion that in terms of material culture, the Butana peoples were a relatively egalitarian lot.

The absence of distinct site hierarchies in the Butana Group settlement patterns fortifies this assumption. Although there are differences in site sizes and depths, most of this variation can be explained in terms of site function, rather than as an indicator of societal complexity. Smaller sites such as KG 50 and N 125 were clearly special purpose sites, while KG 56 may have been one as well. Only KG 1 stands out as an anomaly, forming a small permanent settlement quite distinct from the three large village sites.

During the Period 1, subsistence and production specialisation occured among sites within much the same ecological zone. KG 29 provides a good example. It was apparently occupied during the latter half of the Phase, at a time when a few domesticated animals were beginning to appear in the deposits of KG 23 and 7. KG 29 itself mostly had domesticated animals in its faunal inventory. Given its location, it is possible that it acted as a conduit for getting domesticated animals across to the other Butana Group villages. It may have been primarily concerned with pastoralism, or it may have obtained the pastoral goods from other groups farther west. Nevertheless, the presence of a typical range of grinding stones and picks suggests that cultivation still played a major role in subsistence at KG 29. Despite its apparent specialisation in acquiring livestock, the similarities in its artefacts and site type to those of other Butana villages

suggests that they all participated in much the same adaptive strategy. Certainly, there is nothing to suggest that an agro-pastoral level of subsistence specialisation had been achieved during Period 1. Specialised production, and hence exchange, during Period 1 appears to have been restricted to the inter- and intra-site scales. The evidence suggests that, in the classification of pastoralism presented at the end of Chapter 1, the Butana Group is best viewed as a mixed economy population.

The middle Kassala Phase: ca. 2750-1500 BC

This part of the Kassala Phase--Period 2 of the present analyses--dates from the early third to the mid-second millenium BC. During that time, the Southern Atbai was occupied by the so-called Gash Group. This Group is identified by a ceramic assemblage dominated by scraped vessels (up to 75% of the decorated sherds from late Period 2 levels, D'Alessandro 1985). These vessels bring to mind the scraped ceramics of the Butana Group, but in their respective frequencies, paste and vessel forms the two differ considerably. Other Gash Group ceramics are decorated with various rim band designs: punctations, roulettes, and incisions are the main techniques used (Figure 4.4 a-f). In the uppermost layers of the major Gash Group sites, i.e., late in Period 2, a wide rim band decor of horizontal parallel incisions, sometimes zoned with punctations (Figure 4.4 g-h) is encountered with some regularity.

Of the other characteristic artefact types, there are many ground stone and polished stone implements associated with the Gash Group. However, neither the polished stone mace-heads of the Butana Group, nor their chipped stone picks have yet been found in a Gash Group context. The lithics of the Gash Group are currently under analysis; it is not yet known how they compare to those of the Butana Group.

Although as an assemblage the Gash Group artefacts differ from that of the Butana Group, the presence of scraped ceramics and the occupation of large village sites suggest some degree of cultural continuity between the two. The actual transition, however, assuming there is one, has not yet been discovered.

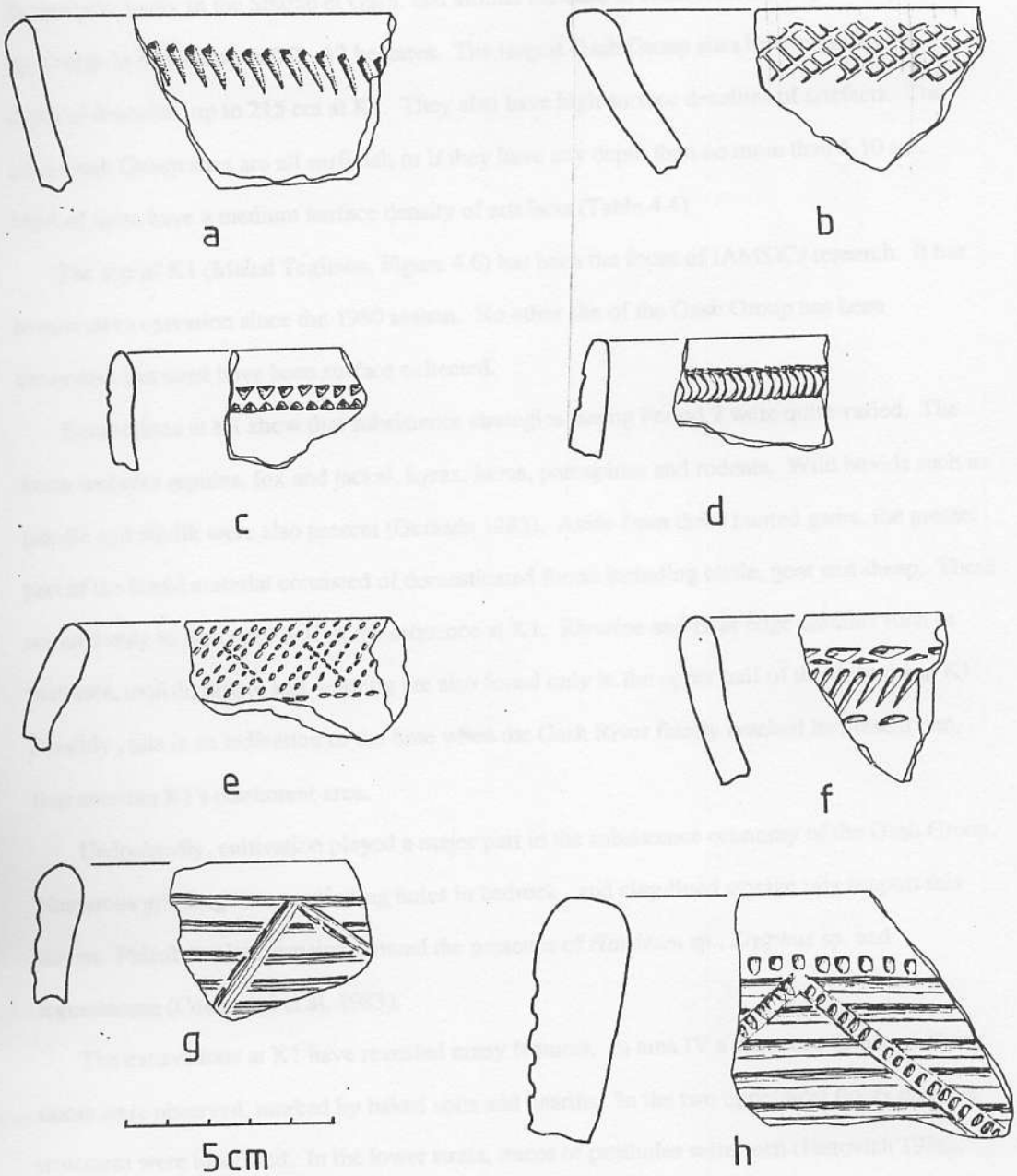

Figure 4.4. Some rim band decorated sherds of the Gash Group.

So far, 31 Gash Group sites have been recorded in the Southern Atbai survey. They are located principally in the Sharab el Gash, and around the base of Jebel Kassala (Figure 4.5). The sites range in size between 0.2 - 12 hectares. The largest Gash Group sites have considerable depth of deposits: up to 215 cm at K1. They also have high surface densities of artefacts. The other Gash Group sites are all surficial, or if they have any depth then no more than 5-10 cm. Most of these have a medium surface density of artefacts (Table 4.4).

The site of K1 (Mahal Teglinos, Figure 4.6) has been the focus of IAMSK's research. It has been under excavation since the 1980 season. No other site of the Gash Group has been excavated, but most have been surface collected.

Excavations at K1 show that subsistence strategies during Period 2 were quite varied. The fauna includes reptiles, fox and jackal, hyrax, hares, porcupines and rodents. Wild bovids such as gazelle and dikdik were also present (Geraads 1983). Aside from these hunted game, the greater part of the bovid material consisted of domesticated forms including cattle, goat and sheep. These occured only in the upper half of the sequence at K1. Riverine and river edge animals such as molluscs, catfish, hippo, and warthog are also found only in the upper half of the deposits at K1. Possibly , this is an indication of the time when the Gash River finally reached its present bed, thus entering K1's catchment area.

Undoubtedly, cultivation played a major part in the subsistence economy of the Gash Group. Numerous grinding stones, grinding holes in bedrock , and clay-lined storage pits support this notion. Paleobotanical remains showed the presence of *Hordeum* sp., *Ziziphus* sp. and leguminosae (Costantini et al. 1983).

The excavations at K1 have revealed many features. In area IV a sequence of fifteen living floors were observed, marked by baked soils and hearths. In the two uppermost floors possible structures were identified. In the lower strata, traces of postholes were seen (Fattovich 1986). The surface of the eastern half of K1 is covered with small tumuli, each about one meter in diameter. One, excavated during the 1984 season, proved to be a circular stone enclosure built of two or three courses of rock, and filled with grinding implements! The function of these features

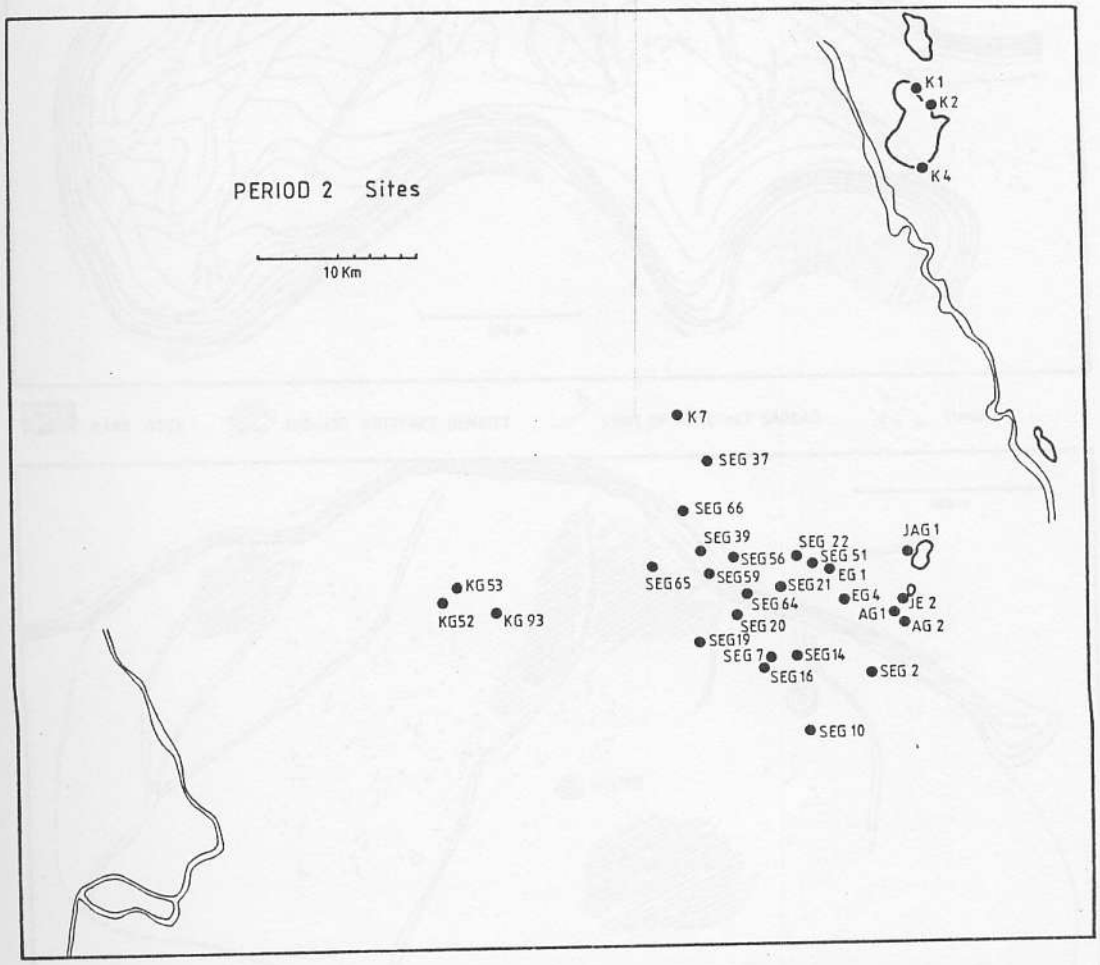

Figure 4.5. Gash Group site distribution.

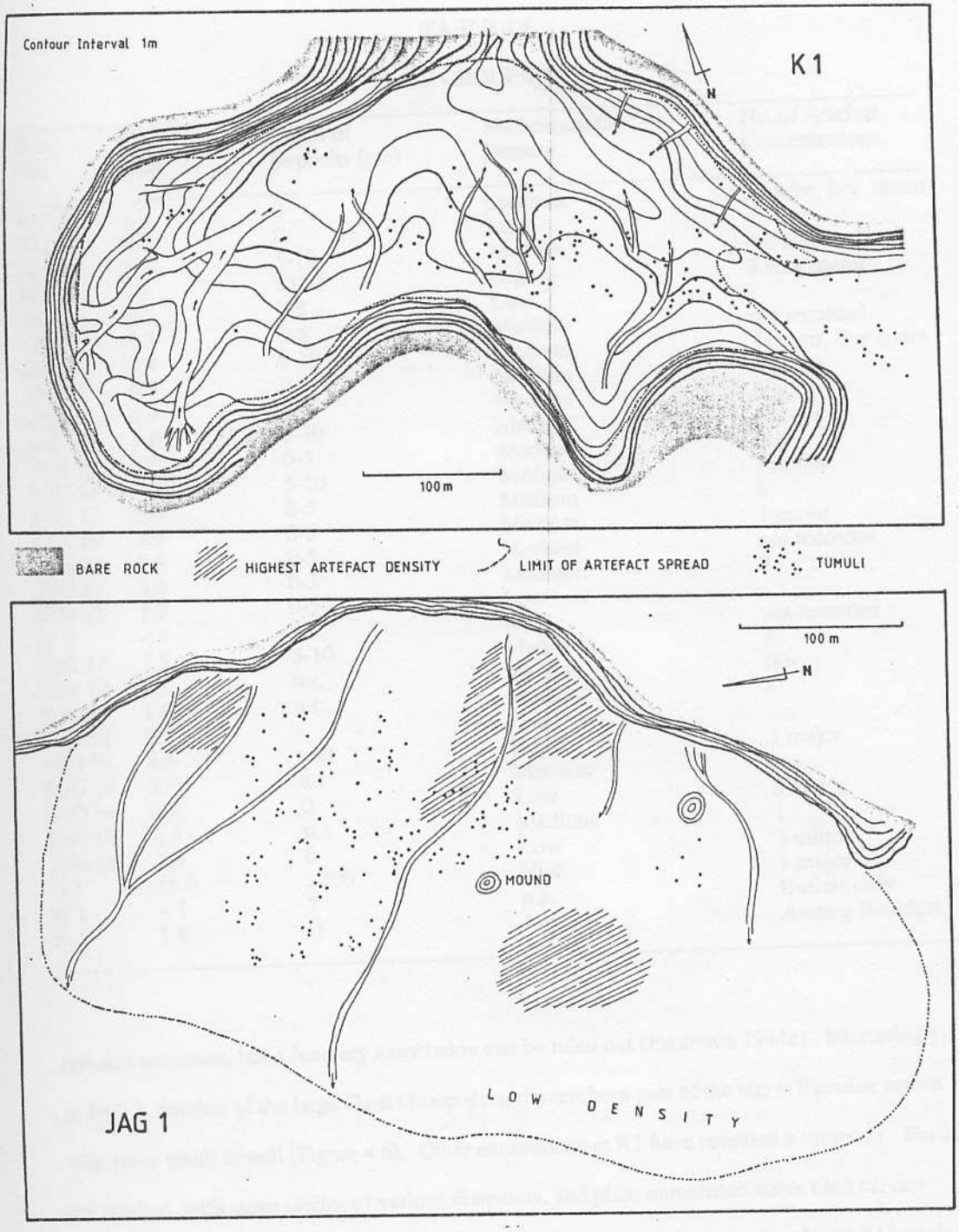

Figure 4.6. Gash Group sites K1 and JAG1.

TABLE 4.4

GASH GROUP SITES

Site No.	Size (Ha)	Depth of Deposits (cm)	Surface artefact Density	No. of Artefact Concentrations
KG 52	1.2	0	Medium	2 major, few minor
KG 53	0.5	0	Low	-
KG 93	1.7	5-10	Medium	not recorded
JAG 1	12	>100	High	3 very major
AG 1	0.5	0-5	Low	-
AG 2	0.3	0-5	Medium	not recorded
EG 1	0.9	0-10	Medium	3 major, few minor
EG 4	0.7	0-5	Medium	1 major
SEG 2	1.9	0-5	Medium	few
SEG 7	7.6	5-10	Medium	6 major
SEG 10	0.2	0-5	Medium	few
SEG 14	7.2	5-10	Medium	7 major
SEG 16	3.0	0-5	Medium	8
SEG 19	3.9	0-5	Medium	1 major
SEG 20	0.5	0-5	Medium	not recorded
SEG 21	3.0	0-5	Medium	3
SEG 22	1.7	0-5	Low	-
JE 2	< 1	n.r.	n.r.	not recorded
SEG 37	1.5	5-10	Medium	3
SEG 39	3.1	n.r.	Medium	few
SEG 51	1.8	n.r.	Medium	4
SEG 55	0.5	-	Low	-
SEG 56	8.5	>50	High	1 major
SEG 59	2.6	n.r	Medium	4
SEG 64	0.4	0	Low	3 minor
SEG 65	0.3	n.r.	Medium	1
SEG 66	1.0	0	Low	3 minor
K 1	11.0	>200	High	1 major
K 2	< 1	?	n.a.	Burials only
K 4	1.8	0	Low	Among Boulders

remains unknown, but a funerary association can be ruled out (Fattovich 1984c). Interestingly, at JAG 1, another of the large Gash Group sites, the northern part of the site is likewise strewn with these small tumuli (Figure 4.6). Other excavations at K1 have revealed a cemetery. Burials are marked with stone circles of various diameters, and plain monolithic stelae each ca. one meter in height. By the end of the 1986 season 35 stelae were found associated with 24 burials in a 92 m^2 excavation area (Fattovich 1986). None of the graves contained any burial goods.

Stelae similar to those at K1 have been identified from as far afield as Aqiq on the Red Sea coast near the Ethiopian border (Fattovich 1986). At Agordat in Eritrea, a series of sites recorded by Arkell (1954), proved to contain a typical range of Gash Group-like ceramics. The stelae at Aqiq, and the Agordat ceramics indicate the wide extent of the Gash Group archaeological culture.

Fattovich (1985), on the basis of several separate lines of evidence identifies this cultural area with the ancient region of Punt, known from Egyptian texts of the fifth to the twentieth dynasties (ca. 2500-1100 BC). In this light, the Southern Atbai is identified as a province of Punt, and the site of K1 is seen as the main port in Punt's overland trade network (Fattovich 1985). If these conclusions are correct, then the Southern Atbai during Period 2 must have been quite rich and organised along fairly complex social and economic lines. The settlement pattern analyses which follow support this conclusion. They show that the Gash Group sites were arranged in a complex hierarchy, with settled village communities at the top, and dispersed agricultural and pastoral communities at the base of the hierarchy.

Before the settlement patterns are described in detail, it is necessary to briefly discuss the chronology of the Gash Group. There is only one radiocarbon date from the site of K1. The sample was recovered at 155 cm below the surface. It gives a reading of 3860 ± 60 BP. When MASCA calibrated, it dates to 2180 BC (Fattovich 1984b). The ceramics of the Gash Group suggest, likewise, a dating of third/second millenium BC (ibid.). Some ceramics similar to those of the Kerma culture (ca. 2500-1500 BC, Bonnet et al. 1986) are found throughout the sequence at K1 (Fattovich, personnal communication). A possible terminal date for the Gash Group occupation in the Southern Atbai can be established by correlating the cultural change from Gash to Mokram Groups (i.e., the transition from Period 2 to 3), with the early New Kingdom (ca. 1500 BC) Egyptian texts which hint at a takeover of Punt by the Medjay of the Eastern Desert. Elsewhere (Sadr in press), this correlation has been presented in detail. The absolute date for the Period 3 Mokram Group agrees with a ca. 1500 BC terminal date for the Period 2 Gash Group occupation.

Assuming, for the time being, that the surface of K1 area IV--where there are no overlying Mokram Group occupations--dates to about 1500 BC; considering that the date of 2180 BC was acquired at 155 cm below the surface, and keeping in mind that the maximum depth of deposits at K1 IV is 215 cm, then, assuming a fairly even rate of cultural deposition, one can calculate that the Gash Group occupation in that part of K1 began roughly around 2450 BC; i.e., in the mid-third millenium BC. Now, considering that K1 is located along the present course of the Gash River, and that the Gash Group village site of SEG 56 is located along an older channel, one can assume that the Gash Group occupation of the Southern Atbai began some time before the mid-third millenium BC. Since the Period 1 Butana Group sites dating to around 3000 BC are located along an even older channel of the Gash River, one can estimate that the Gash Group occupation in the Southern Atbai began some time between 3000-2500 BC. Give or take, 2750 BC seems a reasonable starting date.

The environmental reconstructions of North Africa, presented in the last chapter, suggest that during the Gash Group occupation there was a drying trend which culminated in the Post-Neolithic Arid Phase. At worst, it seems that during the mid second millenium BC the Southern Atbai was about as dry as it is today. The studies of Warren (1970) and Wickens (1982), dealing specifically with the paleoenvironments of the Sudan, do not show such a marked dry phase but do postulate a drying trend, as well. The gradual shift of the Gash River during Period 2, a result of reduced flow and silt deposition, provides yet another line of evidence confirming the drying trend.

Middle Kassala Phase Settlement Patterns

Sites by Size. Figure 4.7 shows the distribution of Gash Group sites arranged by size. The Southern Atbai during this Period was dominated by three large permanent village occupations: K1, JAG1, and SEG 56. There are other sites large enough to be considered villages, such as SEG 14 and 7, but they have little or no depth to their deposits, and with a medium density of surface artefacts are classified as semi-permanently occupied. In the Sharab there were also hamlet and

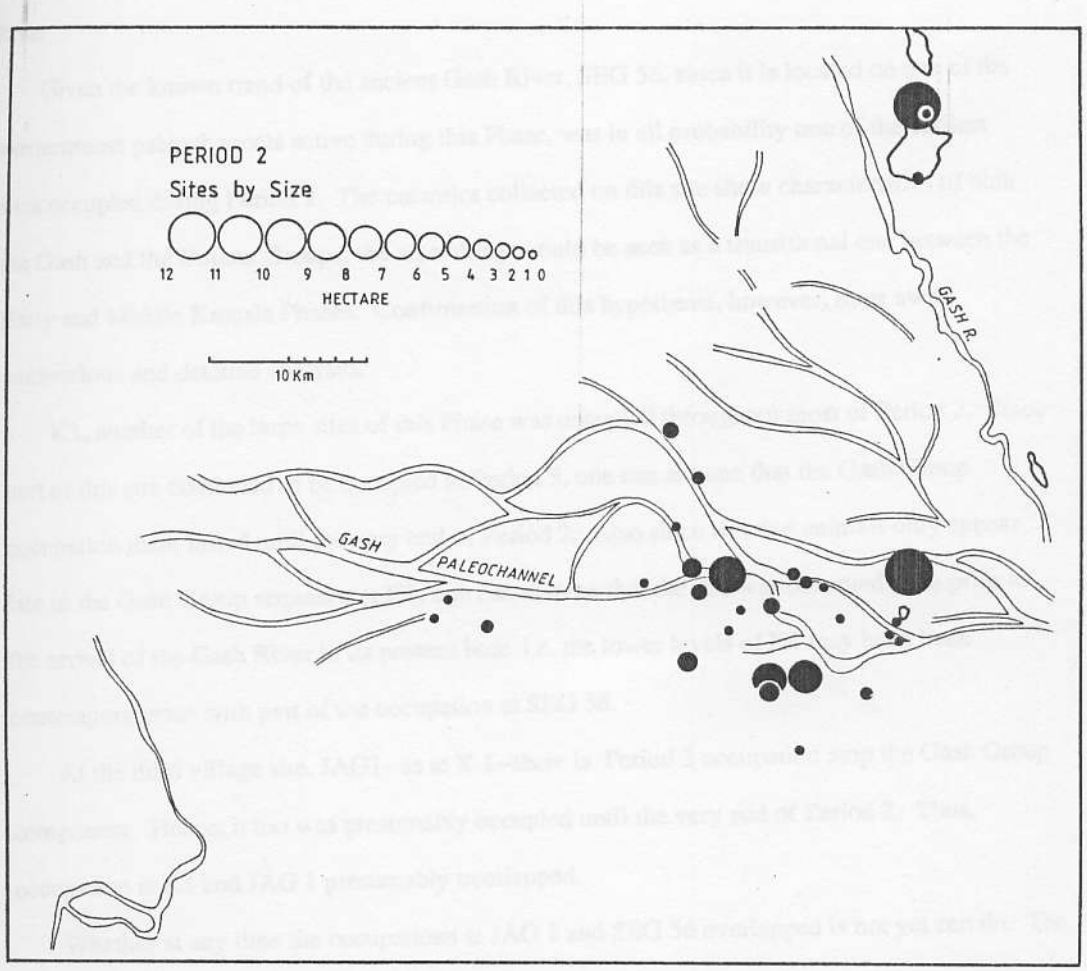

Figure 4.7. The distribution of Gash Group sites by size.

homestead sized settlements which were occupied semi-permanently. A few small sites have quite low densities of surface artefacts and may have been occupied for only a very short time. Almost all the sites of this Period are aligned to the paleochannels and present course of the Gash River.

Given the known trend of the ancient Gash River, SEG 56, since it is located on one of the westernmost paleochannels active during this Phase, was in all probability one of the earliest sites occupied during Period 2. The ceramics collected on this site show characteristics of both the Gash and the Butana Groups; the assemblage could be seen as a transitional one between the Early and Middle Kassala Phases. Confirmation of this hypothesis, however, must await excavations and detailed analyses.

K1, another of the large sites of this Phase was occupied throughout most of Period 2. Since part of this site continued to be occupied in Period 3, one can assume that the Gash Group occupation there lasted until the very end of Period 2. Also since riverine animals only appear late in the Gash Group sequence at K1, one can assume that the site was occupied even prior to the arrival of the Gash River in its present bed: i.e. the lower levels of K1 may have been contemporaneous with part of the occupation at SEG 56.

At the third village site, JAG1--as at K 1--there is Period 3 occupation atop the Gash Group component. Hence, it too was presumably occupied until the very end of Period 2. Thus, occupation at K1 and JAG 1 presumably overlapped.

Whether at any time the occupations at JAG 1 and SEG 56 overlapped is not yet certain. The site proxemics of this Period (Figure 4.8) suggest that, for at least a short time, they were simultaneously occupied. Within the Sharab el Gash the three largest centers (SEG 7 and 14, due to similarity and proxemity being considered as one center) are located between 8-12 km apart; resulting in site catchments roughly 5 km in radius. The even spacing suggest that at some point all three--K1, JAG 1, and SEG 7/14--were occupied simultaneously. The majority of the smaller sites around the three centers are located along the catchment boundaries of the large centers. Only the smaller sites around SEG 56 do not conform to this pattern; possibly (as indeed the

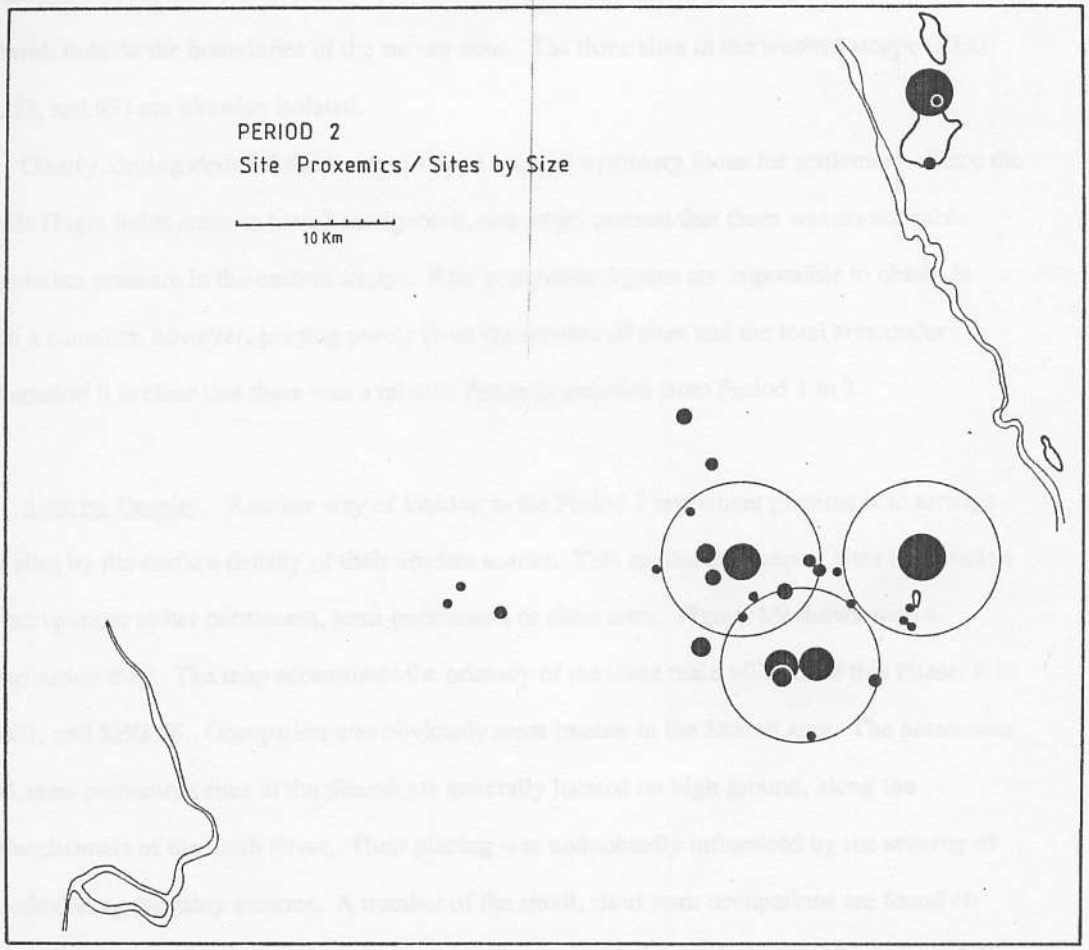

Figure 4.8. Gash Group site proxemics.

presence of certain ceramic markers suggest) they were occupied after SEG 56 had already been abandoned.

Away from the Sharab, the village site of K1 is so isolated that one must wonder whether it participated in the network of relations of the Sharab site, or whether it was part of another network outside the boundaries of the survey zone. The three sites in the western steppe (KEG 52, 53, and 93) are likewise isolated.

Clearly, during Period 2 the western steppe was not a primary focus for settlement. Since the fertile Hagiz fields seem to have been ignored, one might assume that there was no noticable population pressure in the eastern steppe. Raw population figures are impossible to obtain in such a situation, however, judging purely from the number of sites and the total area under occupation it is clear that there was a relative rise in population from Period 1 to 2.

Sites by Density. Another way of looking at the Period 2 settlement patterns is to arrange the sites by the surface density of their artefact scatter. This results in a map of sites by duration of occupation; either permanent, semi-permanent, or short term. Figure 4.9 shows such a distribution map. The map accentuates the primacy of the three main villages of this Phase, K1, JAG1, and SEG 56. Occupation was obviously most intense in the Sharab area. The permanent and semi-permanent sites in the Sharab are generally located on high ground, along the paleochannels of the Gash River. Their placing was undoubtedly influenced by the severity of floods during the rainy seasons. A number of the small, short term occupations are found on lower ground, an indication that they may have been occupied only during the drier parts of the year. They probably functioned as temporary riverside camps; a settlement pattern often associated with the Type 2 and 3 modern Sudanese pastoralists (see Chapter 2).

The site proxemics are even clearer when superimposed on site by density distributions. Most of the semi-permanent sites in the Sharab fall on the catchment boundaries of the major centers, while the short term camps are scattered indiscriminantly. Interestingly, SEG 7 and 14, being semi-permanent occupations, fit within the proxemic patterns as if they were permanent

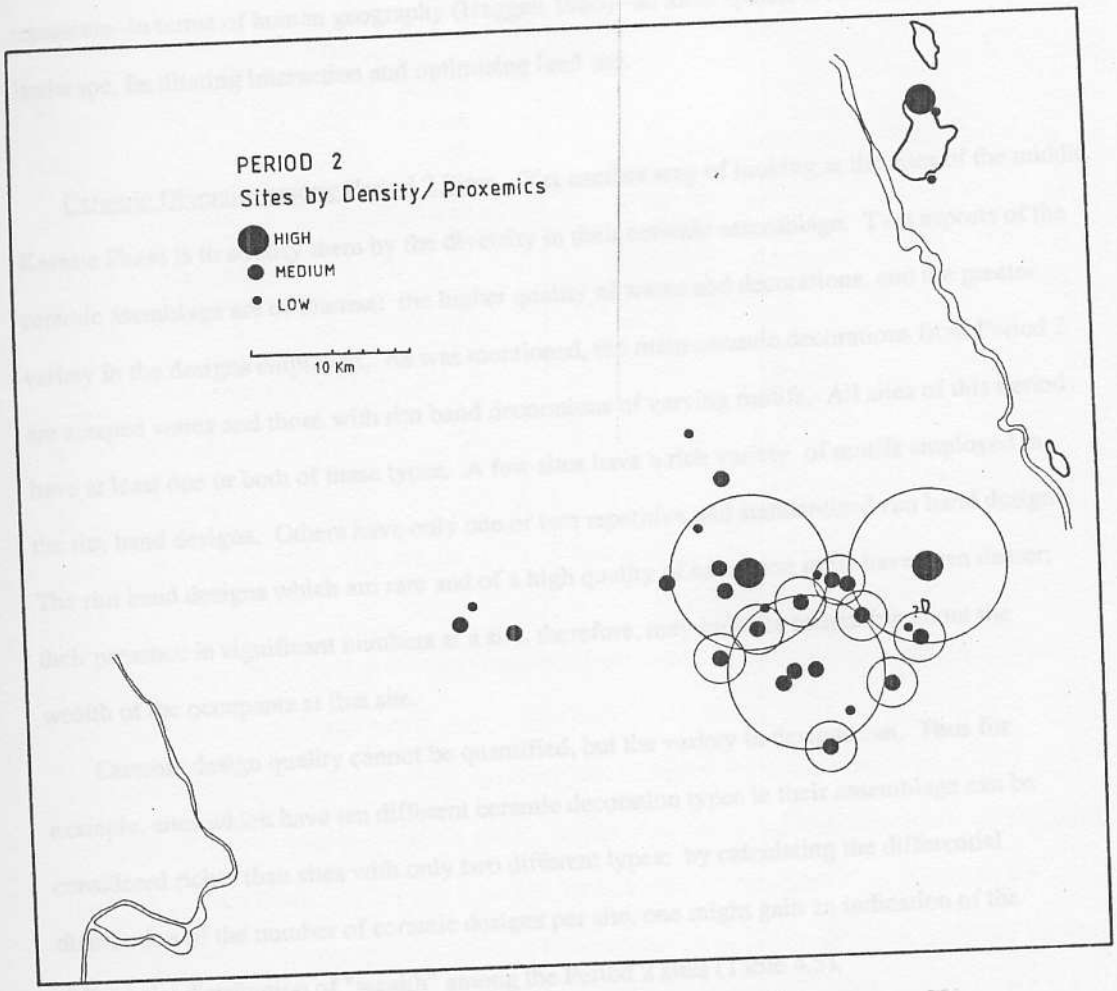

Figure 4.9. Proxemics and the distribution of Gash Group sites by surface artefact density.

village occupations. They may actually have been permanently occupied if one considers the possibility that one or the other was a daughter settlement of the original village; a case of horizontal rather than vertical stratigraphy. The equidistant spacing between Period 2 sites represents--in terms of human geography (Haggett 1965)--an ideal spatial division of the landscape, facilitating interaction and optimising land use.

Ceramic Diversity among Period 2 Sites. Yet another way of looking at the sites of the middle Kassala Phase is to stratify them by the diversity in their ceramic assemblage. Two aspects of the ceramic asemblage are of interest: the higher quality of wares and decorations, and the greater variety in the designs employed. As was mentioned, the main ceramic decorations from Period 2 are scraped wares and those with rim band decorations of varying motifs. All sites of this Period have at least one or both of these types. A few sites have a rich variety of motifs employed in the rim band designs. Others have only one or two repetitive and standardised rim band designs. The rim band designs which are rare and of a high quality of execution must have been dearer; their presence in significant numbers at a site, therefore, may indicate something about the wealth of the occupants at that site.

Ceramic design quality cannot be quantified, but the variety in designs can. Thus for example, sites which have ten different ceramic decoration types in their assemblage can be considered richer than sites with only two different types: by calculating the differential distribution of the number of ceramic designs per site, one might gain an indication of the differential distribution of "wealth" among the Period 2 sites (Table 4.5).

Obviously, the duration of occupation has to be taken into account, so that one does not compare a site with 500 years of variation in ceramic types, against one with only a decade's worth. In the present analysis, this problem is by-passed through the sole use of surface collected, rather than excavated sample: i.e., even for a permanently occupied site, only one 'level' is used in the comparisons of wealth. Also, the size of the ceramic sample has to be taken into account to make sure that the wealthier sites are not simply those with the largest samples.

TABLE 4.5

NUMBER OF CERAMIC DESIGN TYPES ON GASH GROUP SITES

Site	Surface Artefact Density	No. of Design Types	Sample Size
K1	High	9	36
SEG 56	High	8	118
JAG 1	High	7	38
SEG 14	Medium	4	37
SEG 7	Medium	4	31
AG 2	Medium	4	14
KG 52	Medium	3	33
KG 93	Medium	3	30
SEG 19	Medium	3	37
SEG 20	Medium	3	20
SEG 21	Medium	3	7
SEG 22	Low	3	11
JE 2	Medium	3	58
SEG 51	Medium	3	29
K 7	Low	2	55
EG 4	Medium	2	17
SEG 2	Medium	2	11
SEG 16	Medium	2	21
SEG 37	Medium	2	12
SEG 39	Medium	2	11
SEG 59	Medium	2	36
SEG 64	Low	2	45
SEG 65	Medium	2	7
SEG 66	Low	2	10
KG 53	Low	1	6
AG 1	Low	1	1
EG 1	Medium	1	2
SEG 10	Medium	1	10
SEG 55	Low	1	6
K 2	not recorded----------		
K 4	not recorded----------		

Sample size refers only to the total number of decorated sherds per site. In cases of multi-component sites, sample size refers only to the Gash Group part of the collected materials. To measure the relation between the two variables (no. of design types and sample size) Kendall's tau b statistic was employed (Kendall 1948). In this, a perfectly positive association between two variables yields a result of +1, while a perfect inverse association yields a -1. A value of 0 reflects practically independent variables. The computation of this statistic for Table 4.5 yielded a result of 0.532, indicating positive association. An examination of certain sites (e.g., K1 and SEG 64), however, suggests that design variability is not solely a function of sample size.

As Table 4.5 and Figure 4.10 show, wealth--as defined by higher design diversity--during Period 2 was concentrated in the three main village sites. The middle level of wealth was represented at lesser centers in the Sharab, and in the western steppe. The poorest sites are found on the periphery of the Sharab el Gash zone. The correlation to the settlement patterns shows, in general, that the largest, most long term occupations were also the wealthiest, while

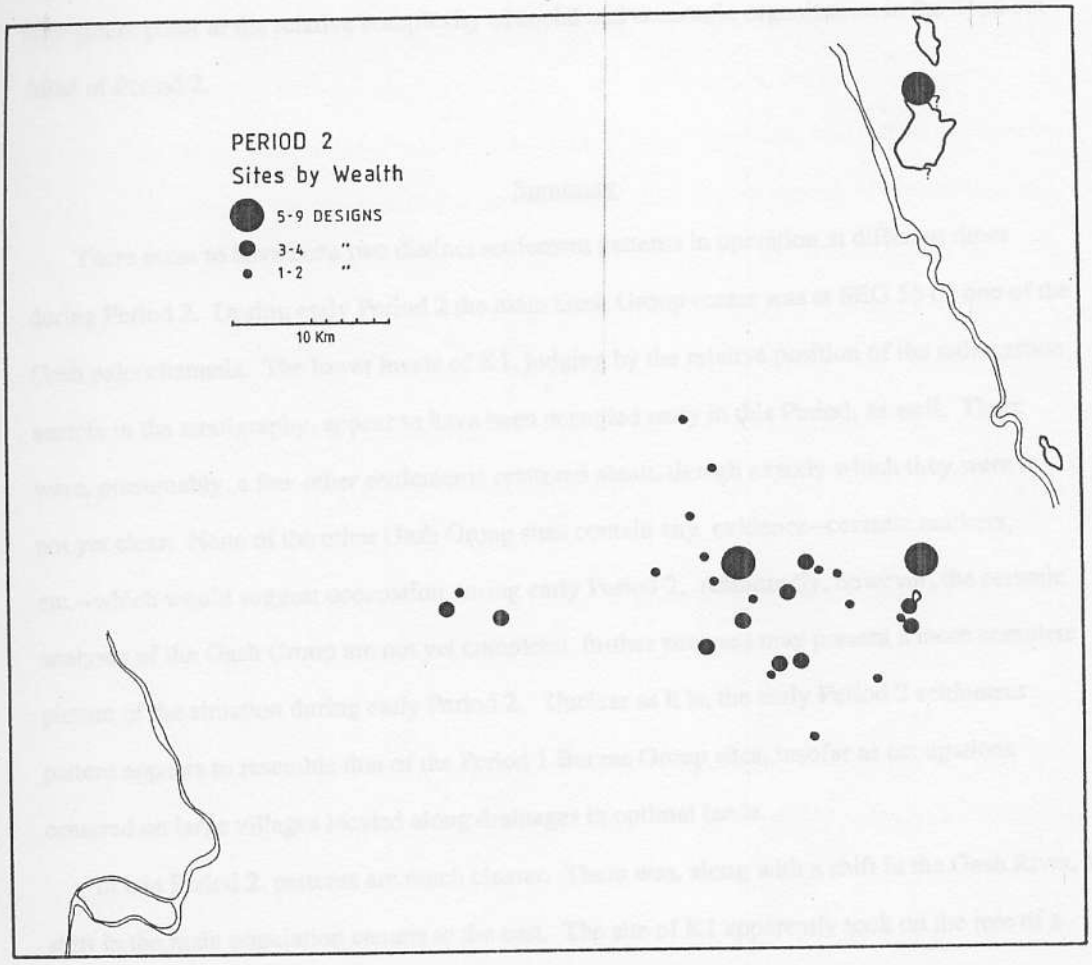

Figure 4.10. The distribution of Gash Group sites by "wealth".

the smallest, shortest occupations were generally the poorest in the area. The middle level of wealth was most often represented at the semi-permanent hamlets and villages. Such parallel hierarchies in different aspects of the Gash Group sites, as well as their well-defined proxemic arrangment point to the relative complexity of social and economic organisation in the Southern Atbai of Period 2.

Summary

There seem to have been two distinct settlement patterns in operation at different times during Period 2. During early Period 2 the main Gash Group center was at SEG 56 on one of the Gash paleochannels. The lower levels of K1, judging by the relative position of the radiocarbon sample in the stratigraphy, appear to have been occupied early in this Period, as well. There were, presumably, a few other settlements scattered about, though exactly which they were is not yet clear. None of the other Gash Group sites contain any evidence--ceramic markers, etc.--which would suggest occupation during early Period 2. Admittedly, however, the ceramic analyses of the Gash Group are not yet complete: further analyses may present a more complete picture of the situation during early Period 2. Unclear as it is, the early Period 2 settlement pattern appears to resemble that of the Period 1 Butana Group sites, insofar as occupations centered on large villages located along drainages in optimal lands.

In late Period 2, patterns are much clearer. There was, along with a shift in the Gash River, a shift in the main population centers to the east. The site of K1 apparently took on the role of a major center, as did JAG 1. Aside from these centers, several smaller, dispersed sites appear to have been inhabited in the Sharab. By this time, both K1 and JAG 1 were not only much larger and more permanently occupied than other sites, but were both situated prominently at the base of jebels, enjoyed more wealth, and also contained various features (such as the small tumuli and burials marked with stelae) not present on any of the other sites of this Period. In other words, a form of settlement hierarchy had emerged.

Following the pattern set in Period 1, the major centers were located in the optimal zones. The occupation of the dispersed semi-permanent sites, located in what had by late Period 2 become a less optimal zone, presents a departure from Period 1, and possibly early Period 2, settlement patterns. The gradual climatic drying trend may have had something to do with this. One might postulate that with the degradation of the local environment, the shrunken optimal zones could no longer accomodate everyone, and so part of the population was forced to disperse into less optimal zones. But in view of the fact that during late Period 2 much of the optimal land on the banks of the Gash remained unoccupied, the population dispersal into more marginal lands cannot be wholly explained by reference to overpopulation and ecological degradation. Part of the population dispersal during late Period 2 could perhaps be accounted for by a heavier reliance on pastoral production. Faunal anlyses from the sequence at K1 shows domesticated cattle and small livestock were more abundant during late Period 2. Thus, it seems possible that late in Period 2, there may have been a gradual shift in subsistence strategies away from a broad ranged household mixed economy, to a more specialised production regime wherein optimal zone populations were more concerned with cultivation, while those in less optimal lands relied more on pastoral production.

The above hypothesis remains largely undocumeneted: one cannot yet categorically state that the shift from mixed economies towards agro-pastoralism had already commenced during late Period 2. However, as shall be presented in the next Chapter, by Period 3, a subsistence strategy with specialised producers occupying separate ecological zones--agro-pastoralism--was in full swing.

CHAPTER V

AGRO-PASTORALISTS IN THE SOUTHERN ATBAI

The late Kassala Phase: ca. 1500-750 BC

In the late Kassala Phase--Period 3 of the present analyses--the Southern Atbai was occupied by the Mokram Group. Their sites are identified by an artefact assemblage which includes ceramics similar to those of the Pan-Grave culture of Nubia (cf.eg. W.Y. Adams 1977; Trigger 1976; Bietak 1966. For a detailed comparison of the two assemblages see Sadr in press). Characteristic Mokram ceramics include black-mouthed red slipped wares, often decorated with a cross incised net pattern (Figure 5.1 a,b). Others are decorated with a groove-carved design of parellel lines (Figure 5.1 c,d). Fine red-slipped and burnished ceramics, sometimes decorated with a narrow rim band design, are also characteristic of the Mokram ceramic assemblage (Figure 5.1 e,f). There are, in addition, a host of minor types (Figure 5.1 g, h shows two examples). Aside from the ceramics the Mokram Group is characterised by a preference for agate as lithic raw material, and fine porphyry for polished stone-ring bracelets and axes. Grinding implements are common but undiagnostic in form.

The Mokram Group is assigned to the late Kassala Phase on the basis of one radiocarbon date and other lines of evidence. The date, obtained by Shiner (1971a) from site N 120 (now known as the Mokram Group site KG 20), is 3050 ± 90 BP (Tx. 446). When MASCA calibrated, it translates to 1350 BC (Marks and Sadr in press). Other evidence includes Egyptian early New Kingdom texts (ca. 1500 BC) which refer to the takeover of Punt by the Medjay. Apparently, the archaeological manifestation of the Medjay is the Pan-Grave culture of Nubia (Säve-Söderbergh 1941; Trigger 1976). Since, the ceramics of the Mokram Group are quite similar to the Pan-Grave culture's (Sadr in press), and since the Southern Atbai has been provisionally identified as part of

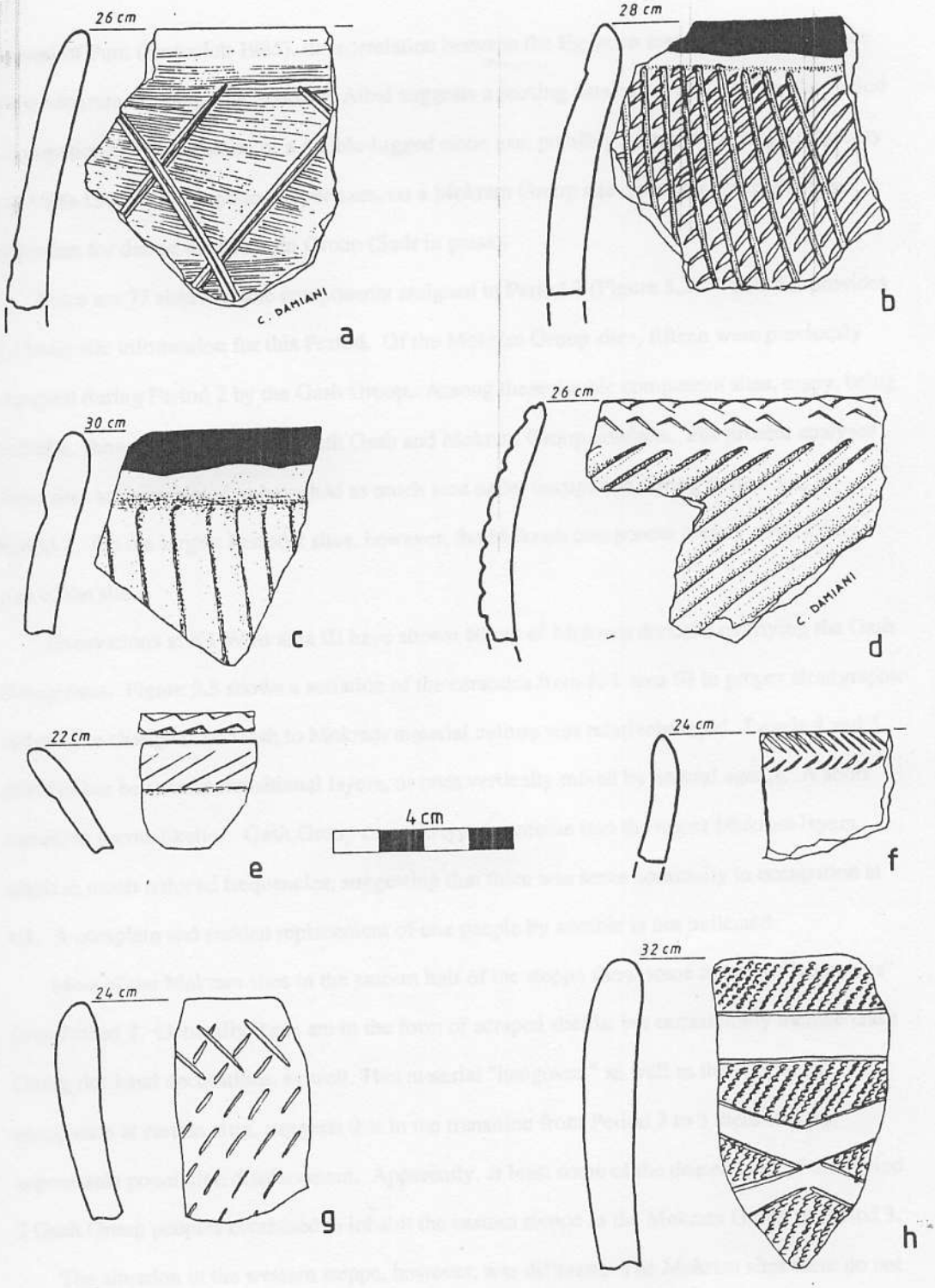

Figure 5.1. Some characteristic Mokram Group ceramic decorations.

the land of Punt (Fattovich 1985), the correlation between the Egyptian texts and the appearance of the Mokram Group in the Southern Atbai suggests a starting date of ca. 1500 BC for the Period 3 occupations. The presence of a double-lugged stone axe, possibly a copy of eighteenth dynasty (ca. 1500-1300 BC) Egyptian copper axes, on a Mokram Group site provides another indirect indication for dating the Mokram Group (Sadr in press).

There are 77 sites and site components assigned to Period 3 (Figure 5.2). Table 5.1 provides the basic site information for this Period. Of the Mokram Group sites, fifteen were previously occupied during Period 2 by the Gash Group. Among these double component sites, many, being surficial, show only a mixture of both Gash and Mokram Group artefacts. For present analyses these sites are considered to have had as much area under occupation during Period 3 as in Period 2. On the largest Period 2 sites, however, the Mokram component clearly covers only a part of the site.

Excavations at K1 West area III have shown 60 cm of Mokram deposits overlying the Gash Group ones. Figure 5.3 shows a seriation of the ceramics from K 1 area III in proper stratigraphic order. The change from Gash to Mokram material culture was relatively rapid. Levels 4 and 5 could either be seen as transitional layers, or ones vertically mixed by natural agents. A short transition seems likelier: Gash Group ceramic types continue into the upper Mokram layers, albeit in much reduced frequencies, suggesting that there was some continuity in occupation at K1. A complete and sudden replacement of one people by another is not indicated.

Most of the Mokram sites in the eastern half of the steppe show some material "hangovers" from Period 2. Generally these are in the form of scraped sherds, but occasionally include Gash Group rim band decorations, as well. This material "hangover," as well as the continued occupation at certain sites, suggests that in the transition from Period 2 to 3 there was no appreciable population displacement. Apparently, at least some of the descendants of the Period 2 Gash Group peoples continued to inhabit the eastern steppe as the Mokram Group of Period 3.

The situation in the western steppe, however, was different. The Mokram sites there do not show the Gash material "hangovers"--perhaps understandably so, in view of the fact that the

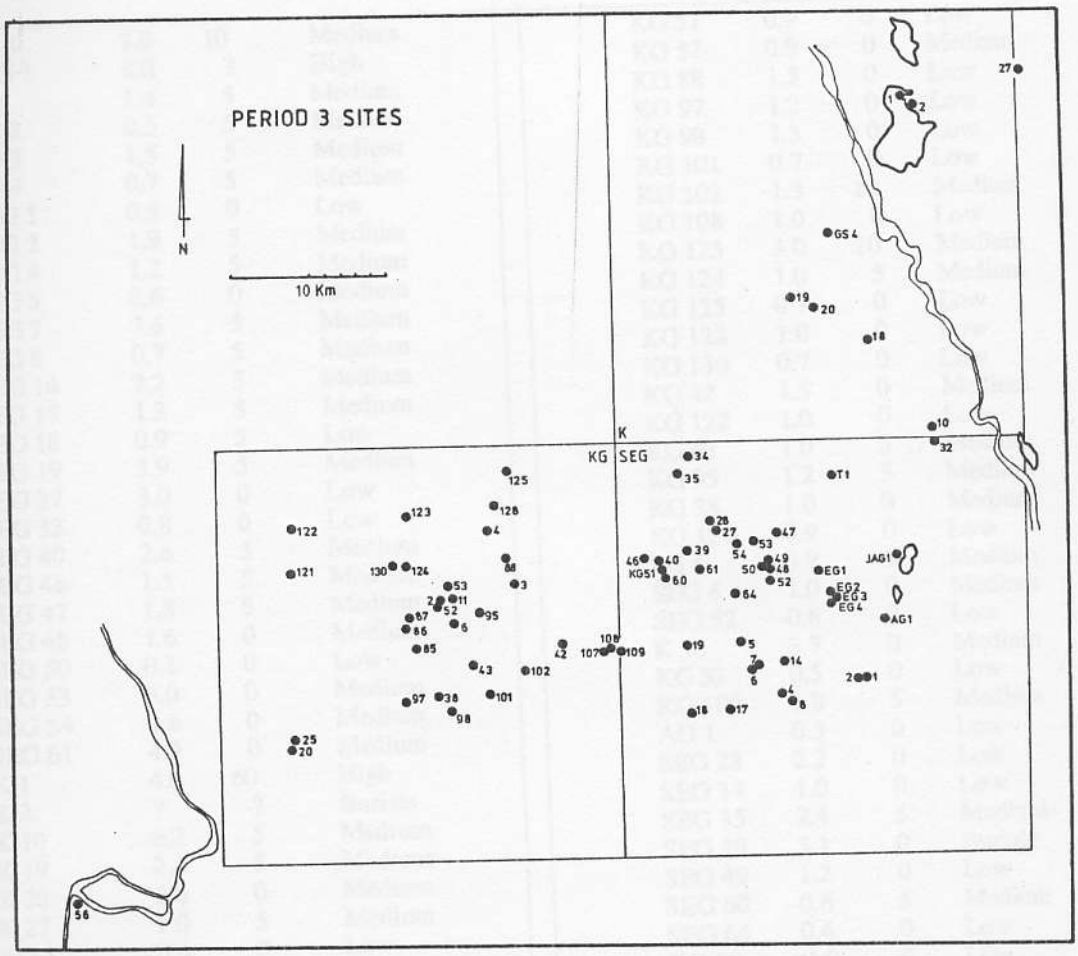

Figure 5.2. The sites of Period 3.

TABLE 5.1

PERIOD 3 SITE DATA

Site	Size (Ha)	Depth (cm)	Density
GS 4	1.0	10	Medium
JAG 1	8.0	?	High
T 1	1.4	5	Medium
EG 2	0.5	5	Medium
EG 3	1.5	5	Medium
EG 4	0.7	5	Medium
SEG 1	0.5	0	Low
SEG 2	1.9	5	Medium
SEG 4	1.2	5	Medium
SEG 5	0.6	0	Medium
SEG 7	7.6	5	Medium
SEG 8	0.7	5	Medium
SEG 14	7.2	5	Medium
SEG 17	1.3	5	Medium
SEG 18	0.9	5	Low
SEG 19	3.9	5	Medium
SEG 27	3.0	0	Low
SEG 32	0.8	0	Low
SEG 40	2.6	5	Medium
SEG 46	1.5	5	Medium
SEG 47	1.8	5	Medium
SEG 48	1.6	0	Medium
SEG 50	0.1	0	Low
SEG 53	3.0	0	Medium
SEG 54	0.6	0	Medium
SEG 61	4.9	0	Medium
K 1	4.0	60	High
K 2	?	?	Burials
K 10	6.2	5	Medium
K 19	2.8	5	Medium
K 20	2.6	0	Medium
K 27	1.0	5	Medium
KG 2	0.4	0	Low
KG 3	3.1	0	Low
KG 4	0.2	0	Low
KG 6	0.8	0	Low
KG 11	0.2	0	Low
KG 20	3.0	10	Medium
KG 25	3.0	0	Low
KG 51	0.9	0	Low
KG 52	0.9	0	Medium
KG 88	1.5	0	Low
KG 97	1.2	0	Low
KG 98	1.3	0	Low
KG 101	0.7	0	Low
KG 102	1.3	10	Medium
KG 108	1.0	0	Low
KG 123	3.0	10	Medium
KG 124	1.0	5	Medium
KG 125	0.7	0	Low
KG 128	1.0	0	Low
KG 130	0.7	0	Low
KG 42	1.5	0	Medium
KG 122	1.0	0	Low
KG 43	1.0	5	Medium
KG 95	1.2	5	Medium
KG 38	1.0	0	Medium
KG 121	0.9	0	Low
EG 1	0.9	5	Medium
SEG 6	1.0	0	Medium
SEG 52	0.6	0	Low
K 18	3.7	0	Medium
KG 53	0.5	0	Low
KG 109	1.8	5	Medium
AG 1	0.5	0	Low
SEG 28	2.2	0	Low
SEG 34	1.0	0	Low
SEG 35	2.4	5	Medium
SEG 39	3.1	0	Burials
SEG 49	1.2	0	Low
SEG 60	0.6	5	Medium
SEG 64	0.4	0	Low
KG 56	<1.0	0	Low
KG 85	0.1	0	Medium
KG 86	0.3	0	Low
KG 87	0.1	0	Low
KG 107	0.5	0	Low

western steppe was only very sparsely occupied by the Gash population. One might speculate that what incoming population there was during Period 3, settled primarily in the western steppe

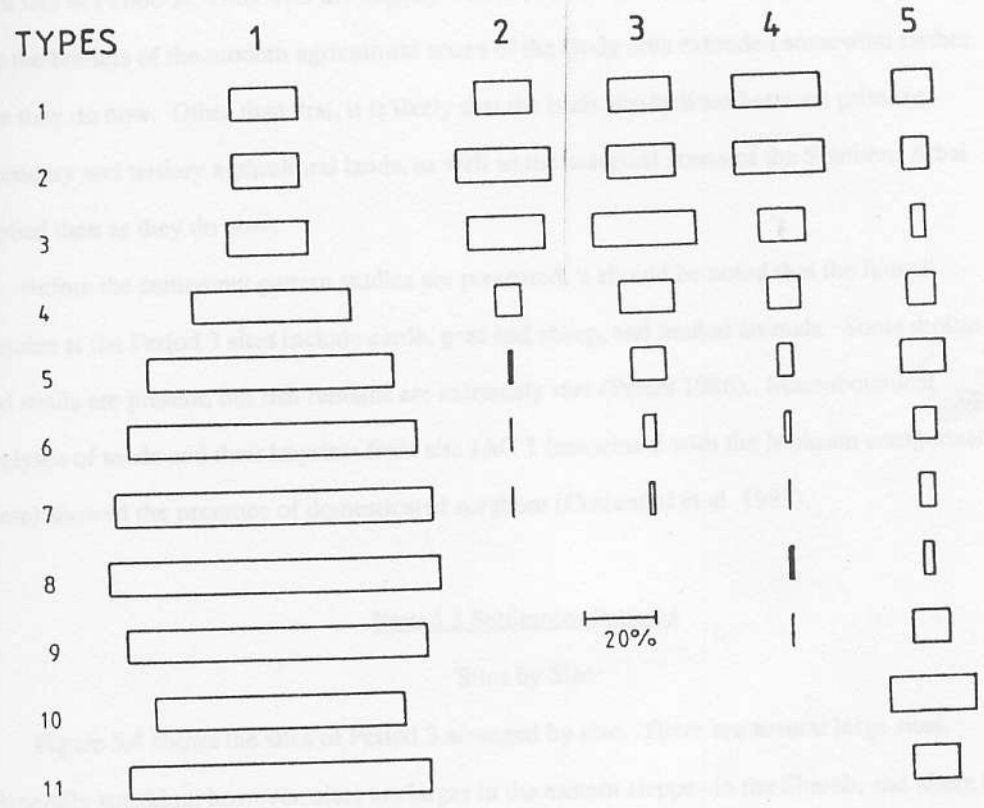

Figure 5.3. Seriation of decorated ceramics at K1 West area III. Types: 1) Scraped; 2) Wiped; 3) Groove-Carved; 4) Net-pattern cross-incised; 5) Rim Band Decorations (compiled from D'Alessandro 1985).

The reconstruction of North African paleoclimates indicates that Period 3 began with the Post-Neolithic Humid Phase, a time when the climate was slightly wetter than today. Since the late second millenium BC to the present day a gradual drying trend has been in effect (Warren 1970, Wickens 1982). Locally, the hydrography of the Southern Atbai had achieved its present form late in Period 2. Thus with the slightly wetter conditions during Period 3, one may assume that the borders of the modern agricultural zones of the study area extended somewhat farther than they do now. Other than that, it is likely that the basic distinctions between primary, secondary and tertiary agricultural lands, as well as the marginal zones of the Southern Atbai applied then as they do now.

Before the settlement pattern studies are presented, it should be noted that the faunal remains at the Period 3 sites include cattle, goat and sheep, and hunted animals. Some molluscs and snails are present, but fish remains are extremely rare (Peters 1986). Macrobotanical analyses of seeds and their imprints from site JAG 1 (associated with the Mokram component there) showed the presence of domesticated sorghum (Costantini et al. 1983).

Period 3 Settlement Patterns

Sites by Size

Figure 5.4 shows the sites of Period 3 arranged by size. There are several large sites. Generally speaking, however, sites are larger in the eastern steppe--in the Sharab, and along the Gash River--and smaller in the western steppe. In the eastern steppe, several of the large sites were already occupied during Period 2. However, by Period 3 some of them had been reduced in size. For example, of the 11 hectares of Period 2 occupation at K 1, only about 4 were occupied in Period 3. Other settlements had spread out into areas previously unoccupied by the Gash Group--notably into the areas west of the Gash River, between the Sharab and Kassala town. In areas farther west, around Malawiya, Mitateb, and Hagiz, where there had been only a few sites in Period 2, the number of settlements soared during Period 3. Overall, the change in population

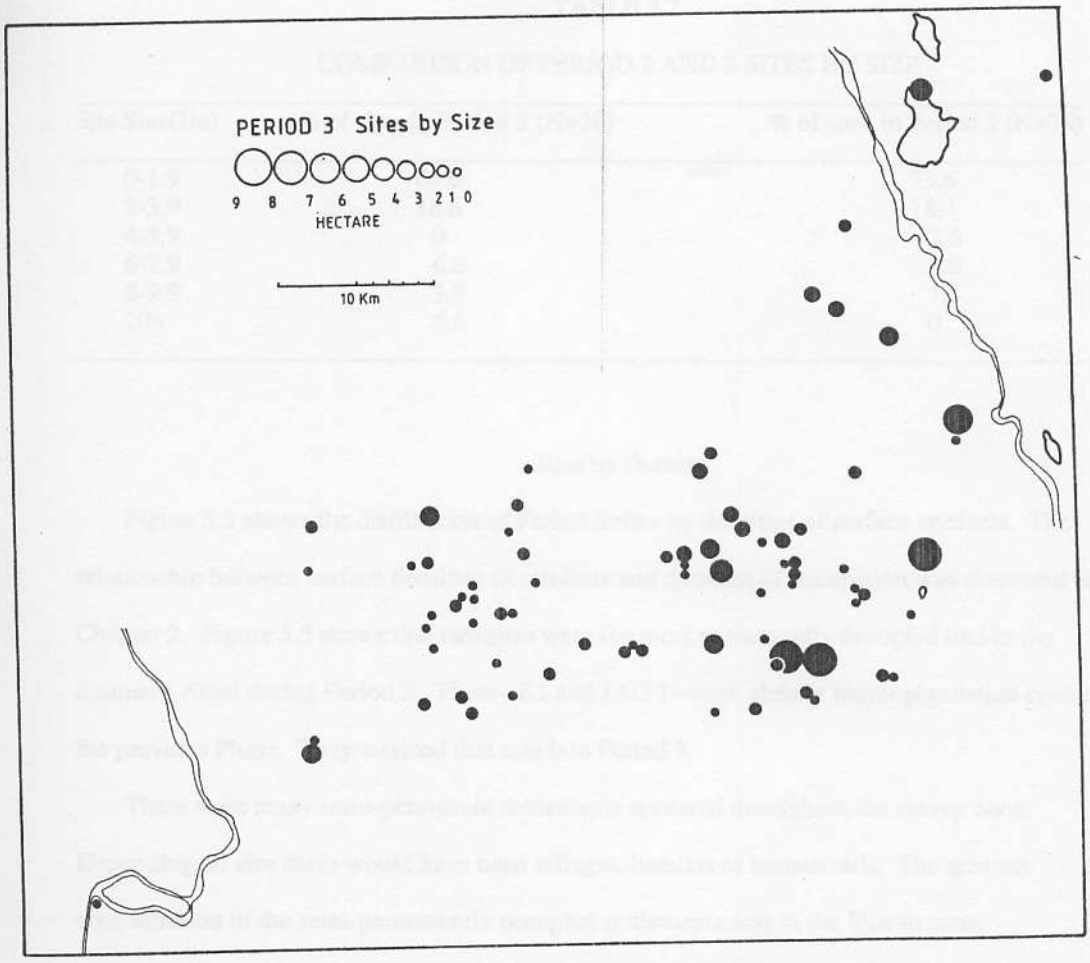

Figure 5.4. The distribution of Period 3 sites by size.

distribution between Periods 2 and 3 can be described as an increase in population dispersal. This is shown numerically in Table 5.2.

TABLE 5.2

COMPARISON OF PERIOD 2 AND 3 SITES BY SIZE

Site Size(Ha)	% of sites in Period 2 (N=30)	% of sites in Period 3 (N=76)
0-1.9	66.6	73.6
2-3.9	16.6	18.4
4-5.9	0	2.6
6-7.9	6.6	3.9
8-9.9	3.3	1.3
10+	6.6	0

Sites by Density

Figure 5.5 shows the distribution of Period 3 sites by densities of surface artefacts. The relationship between surface densities of artefacts and duration of occupation was discussed in Chapter 2. Figure 5.5 shows that two sites were the most permanently occupied loci in the Southern Atbai during Period 3. These--K1 and JAG 1--were already major population centers in the previous Phase. They retained that role into Period 3.

There were many semi-permanent settlements scattered throughout the survey zone. Depending on size these would have been villages, hamlets or homesteads. The greatest concentration of the semi-permanently occupied settlements was in the Sharab zone. Interestingly, unlike the Sharab semi-permanent settlements of Period 2, those of Period 3 are not exclusively situated on high ground. The severity of seasonal floods must have been greatly reduced.

Low density sites, designating short term settlements, are scattered throughout the study area. The majority are located at the edges of the optimal zones and farther in the steppe. As Table 5.1 showed, most of the low density sites were also the smallest; they were presumably the camps of herding groups.

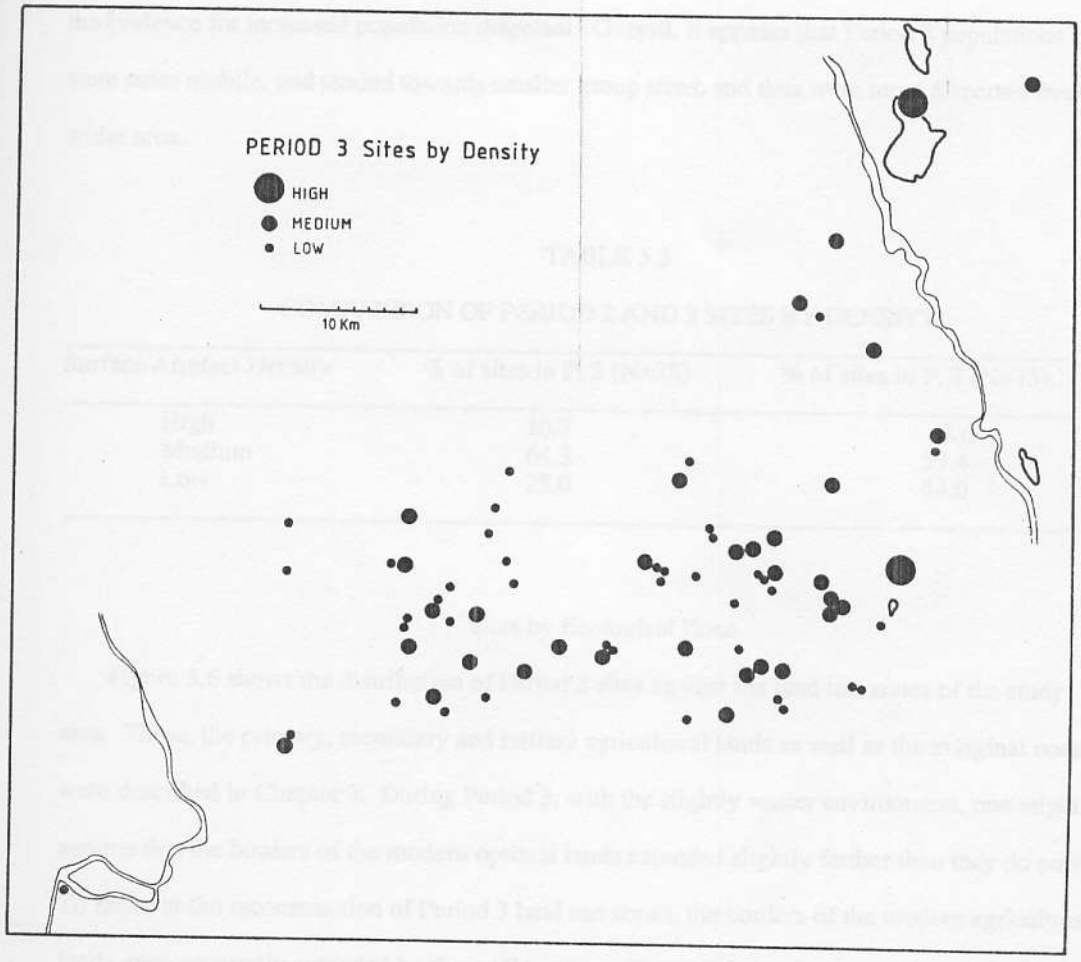

Figure 5.5. The distribution of Period 3 sites by density of surface artefacts.

A comparison of site by density distributions for Periods 2 and 3 is instructive. As Table 5.3 shows, there were relatively more permanent and semi-permanent settlements during Period 2, while short-term settlements were distinctly more common during Period 3. This pattern echoes the evidence for increased population dispersal. Overall, it appears that Period 3 populations were more mobile, and tended towards smaller group sizes, and thus were more dispersed over a wider area.

TABLE 5.3

COMPARISON OF PERIOD 2 AND 3 SITES BY DENSITY

Surface Artefact Density	% of sites in P. 2 (N=28)	% of sites in P. 3 (N=75)
High	10.7	2.6
Medium	64.3	53.4
Low	25.0	44.0

Sites by Ecological Zone

Figure 5.6 shows the distribution of Period 3 sites against the land use zones of the study area. These, the primary, secondary and tertiary agricultural lands as well as the marginal ones were described in Chapter 3. During Period 3, with the slightly wetter environment, one might assume that the borders of the modern optimal lands extended slightly farther than they do now. To arrive at the reconstruction of Period 3 land use zones, the borders of the modern agricultural lands were arbitrarily extended by three kilometers. Figure 5.6 clearly shows that a fair proportion of Period 3 sites were located within marginal lands, or at best, at the very edge of the productive lands. This contrasts sharply with Period 2 when most sites were situated in the optimal zones of the study area. Table 5.4 shows a numerical comparison. The sites of Period 2 were classified according to the ecological zones reconstructed for Period 3, although the local environment in the former actually would have been wetter. Presumably, in Period 2 the borders of the optimal lands extended even farther than they did in Period 3. Thus, the

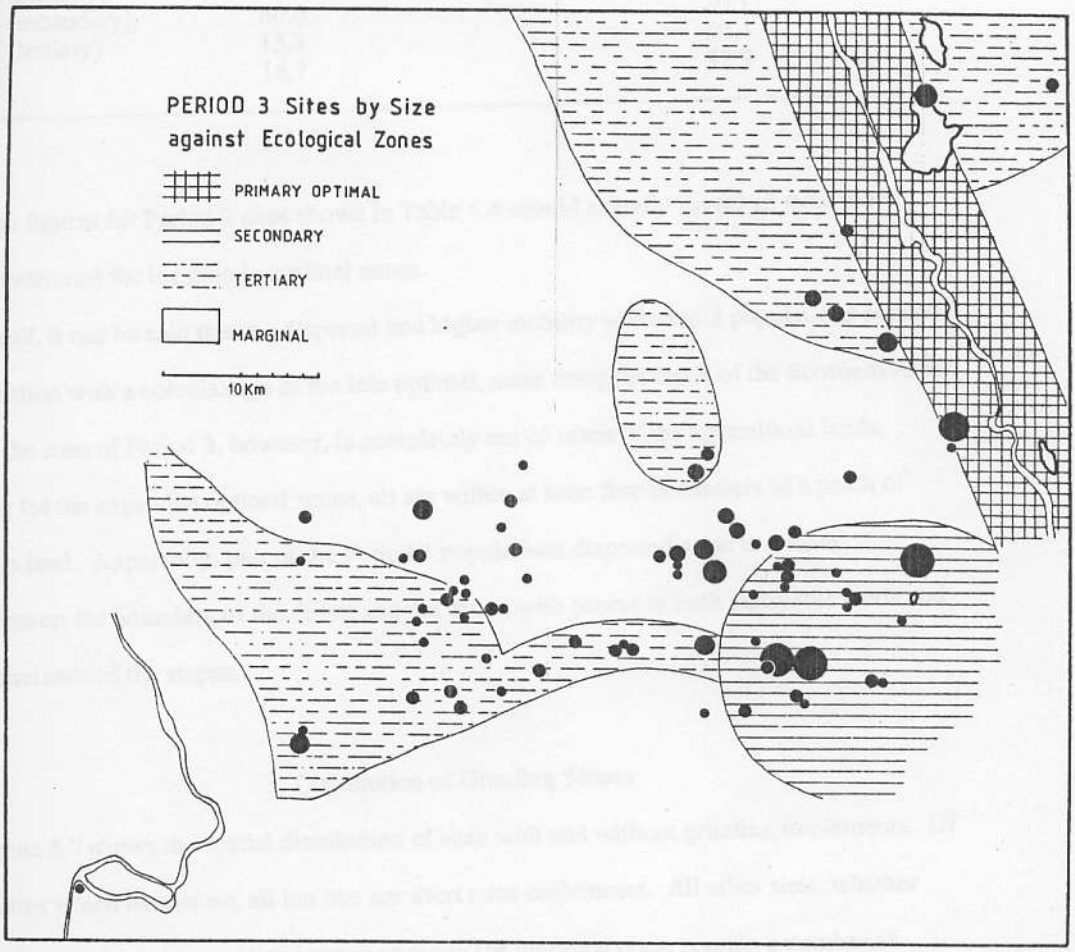

Figure 5.6. The distribution of Period 3 sites against land use zones.

TABLE 5.4

COMPARISON OF PERIOD 2 AND 3 SITES BY ECOLOGICAL ZONE

Ecological Zone	% of sites in Period 2 (N=30)	% of sites in Period 3 (N=79)
Optimal (primary)	10.0	7.6
(secondary)	60.0	29.1
(tertiary)	13.3	30.4
Marginal	16.7	32.9

percentage figures for Period 2 sites shown in Table 5.4 should actually reveal an even more marked preference for location in optimal zones.

Overall, it can be said that the dispersal and higher mobility of Period 3 populations occurred in conjunction with a colonisation of the less optimal, more marginal lands of the Southern Atbai. None of the sites of Period 3, however, is completely out of reach of the agricultural lands. Allowing for the expanded optimal zones, all are within at least five kilometers of a patch of cultivable land. Apparently, part of the Period 3 populations dispersed so as to situate themselves on the boundary of the desert and the sown, with access to both cultivable lands and the pasturelands of the steppe.

Distribution of Grinding Stones

Figure 5.7 shows the spatial distribution of sites with and without grinding implements. Of the 11 sites which have none, all but one are short term settlements. All other sites, whether located in one of the three optimal zones or out in the marginal ones, contain a number of grinders each. This tends to suport the notion that all the sites in the study area had some access to agricultural products.

Distribution of Earthen Mounds

Associated with 36 Period 3 sites there are 47 earthen mounds. The function of the mounds is not entirely clear. They are circular, generally 10-20m in diameter and up to 60 cm tall with a

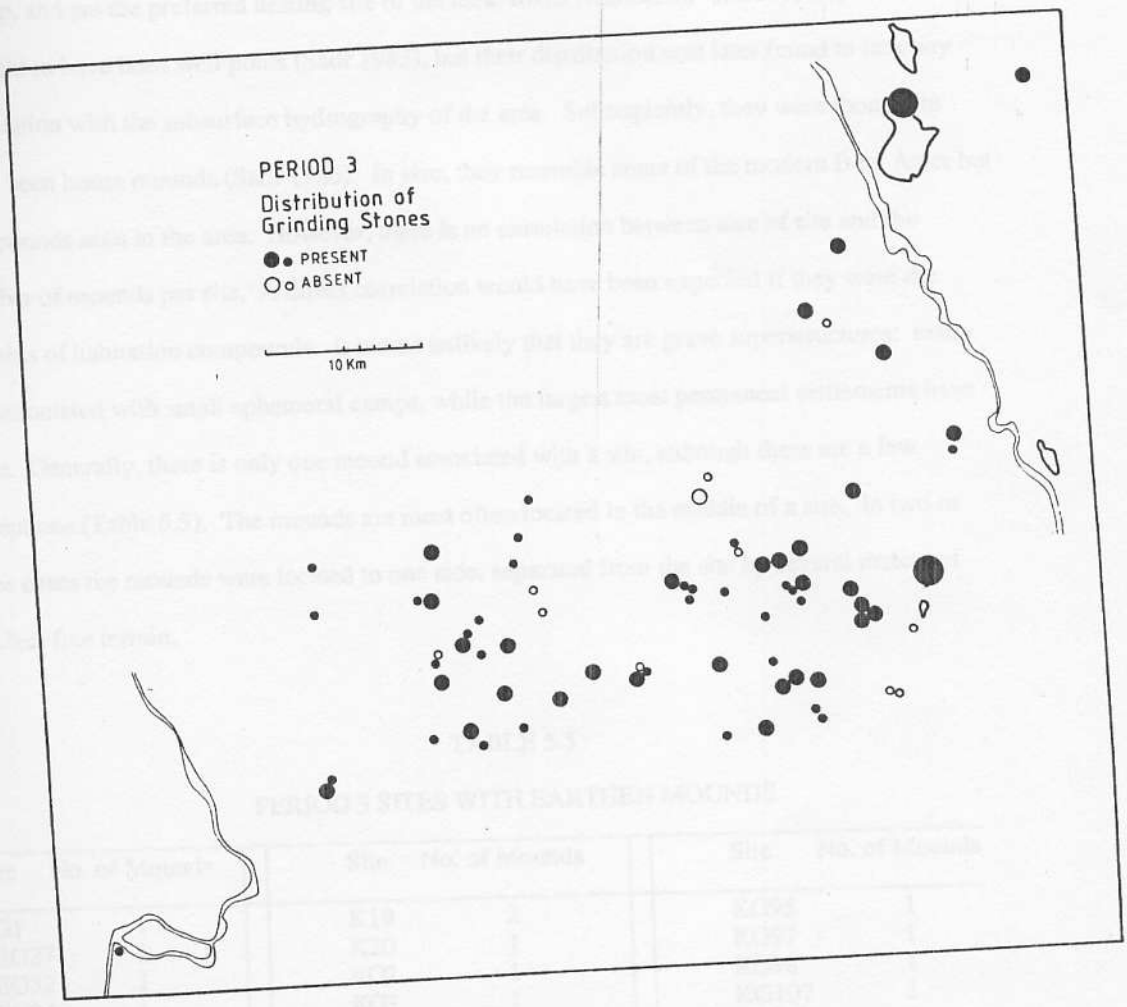

Figure 5.7. The distribution of grinding stones.

raised lip around the edges (Figure 5.8). A small test trench excavated in one showed that they are composed of earth, contain an occasional artefact in the fill, are completely bare of artefacts on top, and are the preferred nesting site of the local foxes (fennechs). Initially, they were thought to have been well pools (Sadr 1983), but their distribution was later found to lack any correlation with the subsurface hydrography of the area. Subsequently, they were thought to have been house mounds (Sadr 1986). In size, they resemble some of the modern Beni Amer hut compounds seen in the area. However, there is no correlation between size of site and the number of mounds per site. A direct correlation would have been expected if they were the remains of habitation compounds. It seems unlikely that they are grave superstructures: many are associated with small ephemeral camps, while the largest most permanent settlements have none. Generally, there is only one mound associated with a site, although there are a few exceptions (Table 5.5). The mounds are most often located in the middle of a site. In two or three cases the mounds were located to one side, separated from the site by several meters of artefact free terrain.

TABLE 5.5

PERIOD 3 SITES WITH EARTHEN MOUNDS

Site	No. of Mounds	Site	No. of Mounds	Site	No. of Mounds
EG1	1	K19	2	KG95	1
SEG27	1	K20	1	KG97	1
SEG32	1	KG2	1	KG98	1
SEG34	1	KG3	1	KG107	1
SEG35	1	KG6	1	KG109	1
SEG48	2	KG42	1	KG121	1
SEG52	1	KG43	1	KG122	1
SEG53	3	KG52	1	KG123	1
SEG61	1	KG53	1	KG124	2
SEG64	1	KG85	1	KG125	1
K10	6	KG86	2	KG128	1
K18	1	KG88	1	KG130	1

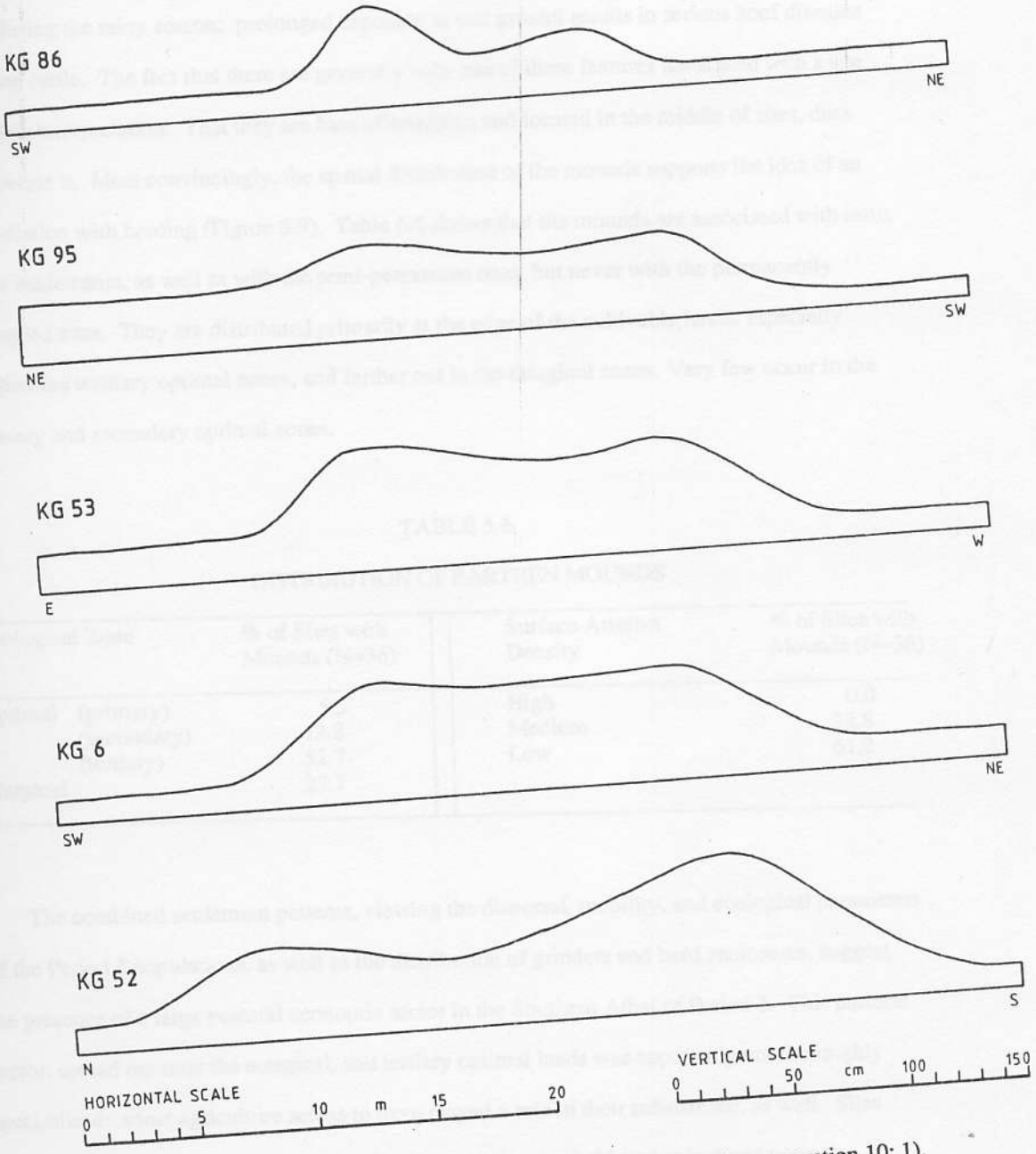

Figure 5.8. Five earthen mounds in cross-section (vertical exaggeration 10: 1).

One remaining possible interpretation is that the mounds functioned as animal enclosures. They may have been built to provide an elevated surface on which cattle could keep their hooves dry during the rainy season: prolonged exposure to wet ground results in serious hoof diseases among cattle. The fact that there are generally only one of these features associated with a site fits this interpretation. That they are bare of artefacts, and located in the middle of sites, does not refute it. Most convincingly, the spatial distribution of the mounds supports the idea of an association with herding (Figure 5.9). Table 5.6 shows that the mounds are associated with short term settlements, as well as with the semi-permanent ones, but never with the permanently occupied sites. They are distributed primarily at the edge of the cultivable lands, especially around the teritiary optimal zones, and farther out in the marginal zones. Very few occur in the primary and secondary optimal zones.

TABLE 5.6

DISTRIBUTION OF EARTHEN MOUNDS

Ecological Zone	% of Sites with Mounds (N=36)	Surface Artefact Density	% of Sites with Mounds (N=36)
Optimal (primary)	5.5	High	0.0
(secondary)	13.8	Medium	38.8
(tertiary)	52.7	Low	61.2
Marginal	27.7		

The combined settlement patterns, viewing the dispersal, mobility, and ecological parameters of the Period 3 populations, as well as the distribution of grinders and herd enclosures, suggest the presence of a large pastoral economic sector in the Southern Atbai of Period 3. This pastoral sector, spread out over the marginal, and tertiary optimal lands was apparently not thoroughly speciaslised: some agriculture seems to have played a role in their subsistence, as well. Sites located in the primary and secondary optimal zones were probably more inclined towards cultivation. The following analyses explore the relations between these economic sectors.

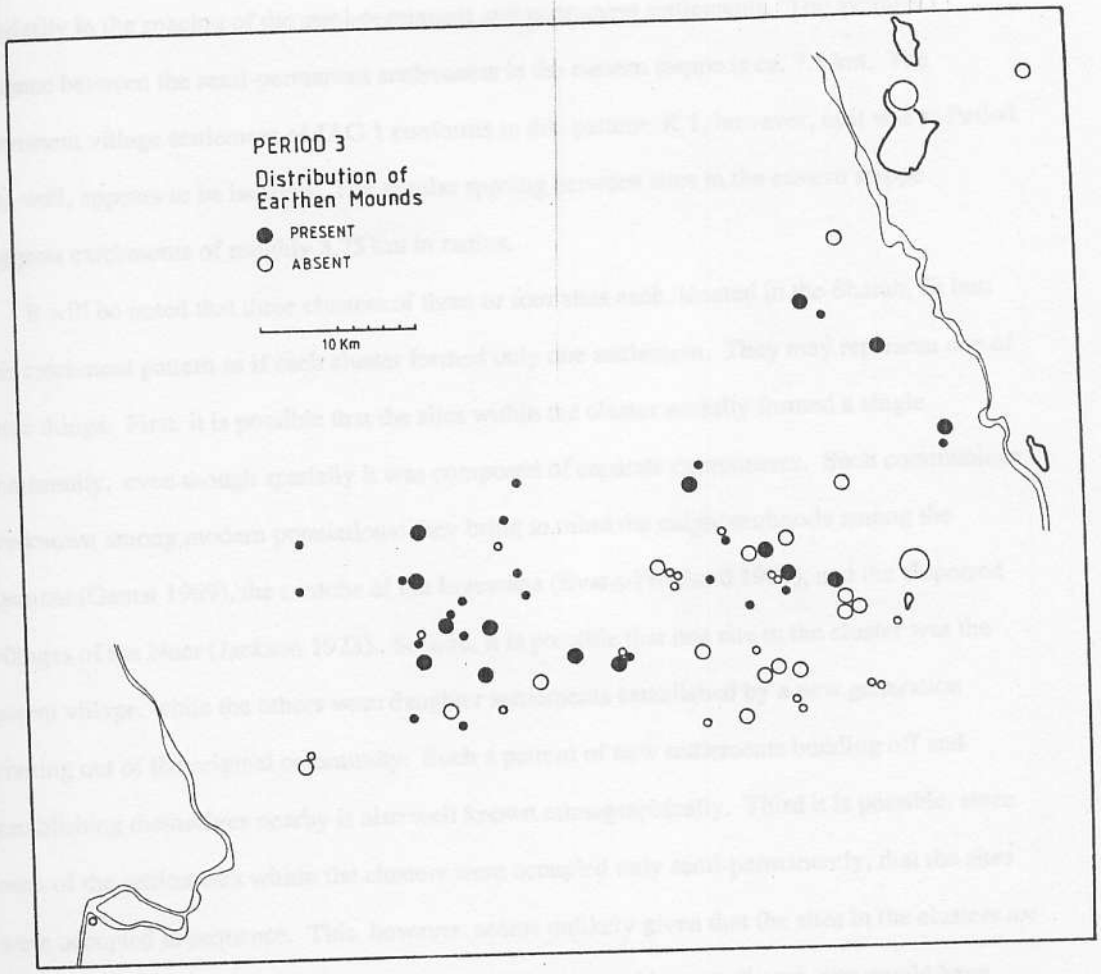

Figure 5.9. The distribution of earthen mounds.

Period 3 Site Proxemics

The proxemics of Period 3 settlements are best seen against the distribution of sites by duration of occupation (Figure 5.10). Throughout the survey zone there is a great deal of regularity in the spacing of the semi-permanent and permanent settlements. The average distance between the semi-permanent settlements in the eastern steppe is ca. 7.5 km. The permanent village settlement of JAG 1 conforms to this pattern; K 1, however, as it was in Period 2 as well, appears to be isolated. The regular spacing between sites in the eastern steppe suggests catchments of roughly 3.75 km in radius.

It will be noted that three clusters of three or four sites each, located in the Sharab, fit into this catchment pattern as if each cluster formed only one settlement. They may represent one of three things. First, it is possible that the sites within the cluster actually formed a single community, even though spatially it was composed of separate components. Such communities are known among modern populations; they bring to mind the neighbourhoods among the Qemant (Gamst 1969), the cantons of the Ingessana (Evans-Pritchard 1927), and the dispersed villages of the Nuer (Jackson 1923). Second, it is possible that one site in the cluster was the parent village, while the others were daughter settlements established by a new generation coming out of the original community. Such a pattern of new settlements budding off and establishing themselves nearby is also well known ethnographically. Third it is possible, since each of the settlements within the clusters were occupied only semi-permanently, that the sites were occupied in sequence. This, however, seems unlikely given that the sites in the clusters are of varying sizes: if one settlement regularly shifted around in a small area, one would have expected all the sites to be more or less the same size. No matter which model is the best approximation, the sites within the clusters appear closely related. If one only picks the central settlement in each cluster, they conform well to the Period 3 settlement proxemics in the Sharab.

In the western steppe different rules of proxemics were at play. There, several semi-permanent settlements are arranged in a very regular fashion along the Khor Marmadeb and beyond. The average distance between the semi-permanent dispersed settlements in the

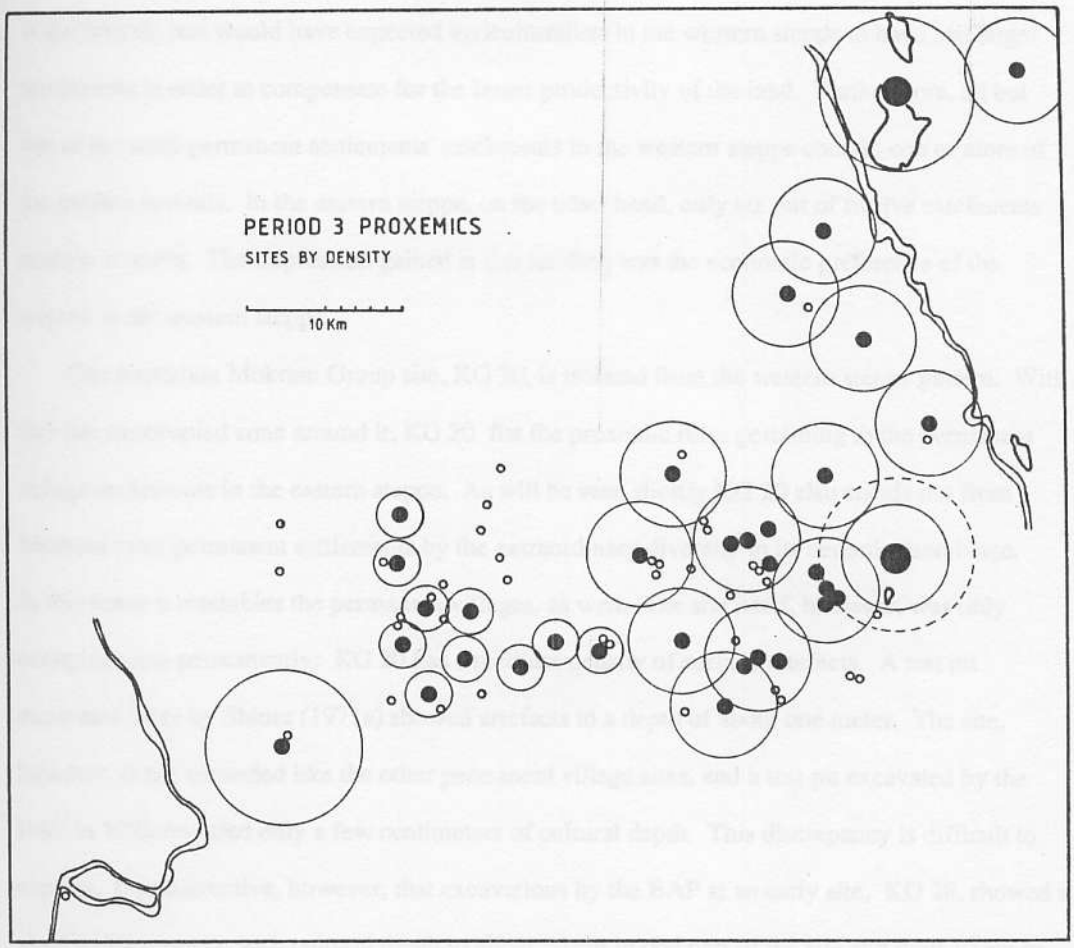

Figure 5.10. Period 3 site proxemics.

western steppe is only about four kilometers, providing for catchments about 2 km in radius. This can be taken to indicate that agriculture was not the focal point of these semi-permanent sites' subsistence strategy. Given that they are located in a much less fertile zone than the sites in the Sharab, one would have expected agriculturalists in the western steppe to have had larger catchments in order to compensate for the lesser productivity of the land. Furthermore, all but one of the semi-permanent settlements' catchments in the western steppe contain one or more of the earthen mounds. In the eastern steppe, on the other hand, only six out of twelve catchments contain mounds. The impression gained is that herding was the economic preference of the settlers in the western steppe.

One important Mokram Group site, KG 20, is isolated from the western steppe pattern. With a five km unoccupied zone around it, KG 20 fits the proxemic rules pertaining to the permanent village settlements in the eastern steppe. As will be seen shortly KG 20 also stands out from Mokram semi-permanent settlements by the extraordinary diversity in its ceramic asemblage. In this sense it resembles the permanent villages, as well. The site itself, however, was only occupied semi-permanently: KG 20 has a medium density of surface artefacts. A test pit excavated there by Shiner (1971a) showed artefacts to a depth of about one meter. The site, however, is not mounded like the other permanent village sites, and a test pit excavated by the BAP in 1982 revealed only a few centimeters of cultural depth. This discrepancy is difficult to explain. It is instructive, however, that excavations by the BAP at an early site, KG 28, showed a similar discrepancy, with cultural depth to about 50 cm in one part of the site and only 10 cm in another nearby test pit. This may have been the result of trash pits dug into the site, or ancient runoff channels filled with trash.

Whichever was the case, it seems certain that KG 20 was not occupied for as long as the permanent village sites of this Period. Nor, in any case, is it as large as the Mokram villages of K1 and JAG1. As the farthest outlier of the Mokram Group, KG 20 may have acted as an intermediary in contacts between the Mokram centers on the Gash River and the populations west of the Atbara River.

The low density sites-- short term occupations--are peppered across the survey zone without regard for the proxemic rules. They are not positioned with any regularity relative to other low density sites, or to semi-permanent and permanent occupations. This is to be expected for sites occupied only temporarily.

Sites by "Wealth"

Arranging the sites of Period 3 by the relative richness of their ceramic assemblages allows for the viewing of a number of other important patterns. In the previous Chapter it was proposed that settlements with higher quality and more diverse ceramics may in some sense have had wealthier occupants. The number of varied types in Period 3 settlements is much higher than in the previous Period, and there are more rare and exotic decorations present. Table 5.7 shows the number of ceramic decoration types per site.

Sample sizes refer only to the total number of decorated sherds per site. In cases of multi-component sites, only the Period 3 decorated sherds are counted in the sample size. Only surface collected semples have been used here. A quick glance at the table shows that the richest sites are generally those that have the largest samples, while the poorest sites are those with the smaller samples. Appropriately, Kendall's tau b rank correlation statistic (Kendall 1948) yields a value of 0.535, suggesting a positive correlation between the two variables. However, such rank correlation techniques cannot account for the abnormally high number of design types seen at such sites as K1 and JAG 1. These high values show that the progressive increase in the number of design types is not solely a function of sample size. Clearly, some sites had much more variety in ceramic decorations than sample size alone warrants. Significantly, it is at these sites where the quality of the ceramics is highest as well. It seems reasonable to suppose that the occupants of these enjoyed higher wealth.

In this sense, Figure 5.11 shows the distribution of Period 3 sites by wealth. The permanently occupied Mokram villages are by far the richest sites in the area, followed by the western Mokram outlier KG 20. The rest of the sites, all with less than half the ceramic diversity,

TABLE 5.7

NUMBER OF CERAMIC DECOR TYPES ON PERIOD 3 SITES

Site	Number of Decor Types	Sample Size	Site	Number of Decor Types	Sample Size
JAG 1	30	116	K 10	4	41
K 1	21	163	K 27	4	31
KG 20	15	117	KG 52	4	26
K 19	12	80	KG 121	4	42
SEG 14	10	54	SEG 2	3	25
SEG 19	10	41	SEG 8	3	16
KG124	10	166	SEG 34	3	10
EG 4	9	25	SEG 54	3	52
KG 109	9	62	K 18	3	25
KG 123	9	131	KG 107	3	27
SEG 4	8	35	KG 128	3	13
SEG 17	8	53	EG 2	2	9
SEG 40	8	75	SEG 5	2	14
SEG 47	8	126	SEG 18	2	6
SEG 53	8	56	SEG 28	2	9
KG 25	8	34	SEG 32	2	13
KG 42	7	53	SEG 60	2	25
KG 88	7	30	SEG 64	2	37
T 1	6	18	KG 2	2	30
EG 3	6	21	KG 3	2	6
SEG 6	6	18	KG 4	2	17
SEG 7	6	35	KG 6	2	16
SEG 27	6	43	KG 11	2	16
KG 38	6	30	KG 51	2	11
KG 43	6	49	KG 86	2	13
KG 53	6	63	KG 97	2	43
KG 102	6	79	KG 125	2	36
GS 4	5	71	KG 130	2	27
EG 1	5	9	AG 1	1	1
SEG 1	5	20			
SEG 46	5	74			
KG 56	5	17			
KG 85	5	50	SEG 35	no data	no data
KG 95	5	17	SEG 50	nd	nd
KG 101	5	21	K 2	nd	nd
SEG 39	4	10	K 20	nd	nd
SEG 48	4	59	KG 87	nd	nd
SEG 49	4	13	KG 108	nd	nd
SEG 52	4	46	KG 122	nd	nd
SEG 61	4	39	KG 98	nd	nd

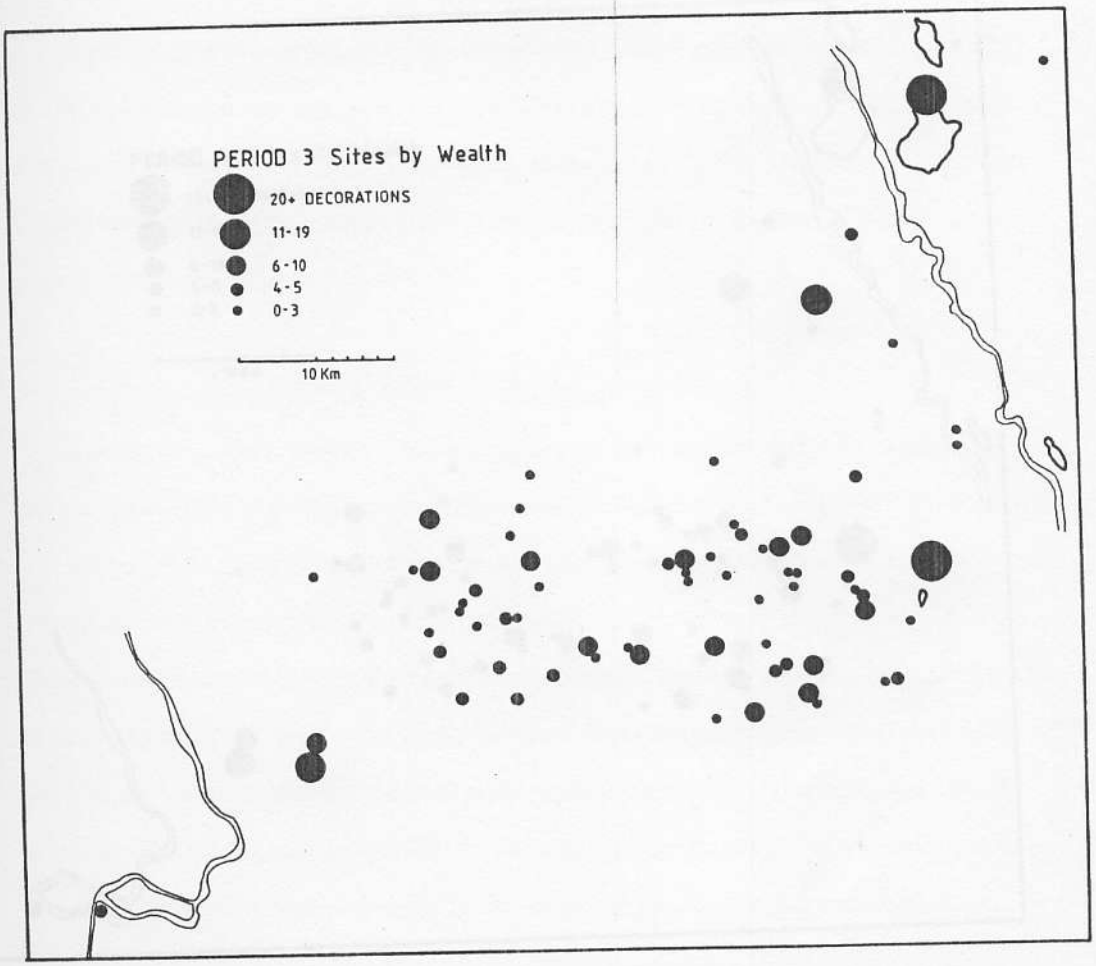

Figure 5.11. The distribution of Period 3 sites by "wealth".

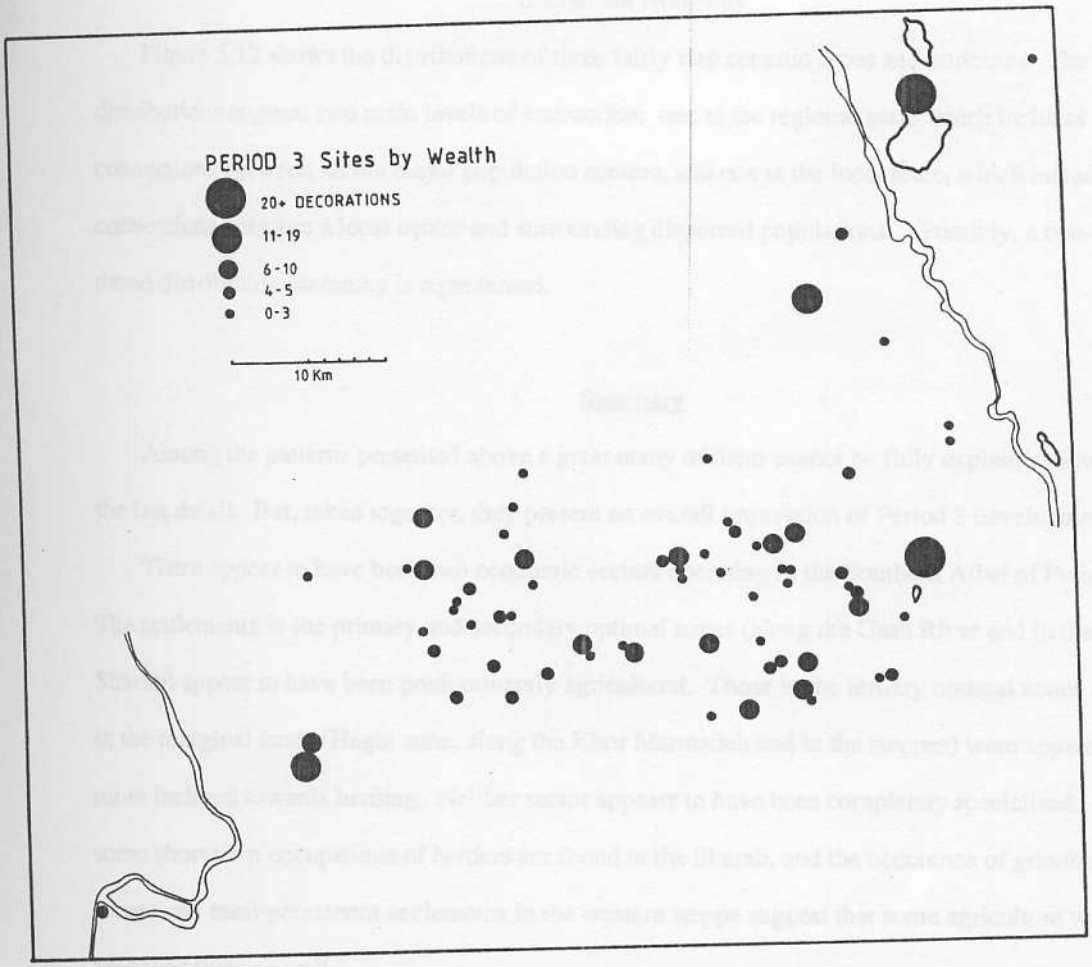

Figure 5.11. The distribution of Period 3 sites by "wealth".

are scattered throughout the survey zone. One can conclude that there was an unequal distribution of wealth during Period 3.

Interaction Networks

Figure 5.12 shows the distributions of three fairly rare ceramic types and attributes. The distributions suggest two main levels of interaction: one at the regional scale which includes connections between all the major population centers, and one at the local scale, which includes connections between a local center and surrounding dispersed populations. Possibly, a two-tiered distribution hierarchy is represented.

Summary

Among the patterns presented above a great many of them cannot be fully explained down to the last detail. But, taken together, they present an overall impression of Period 3 developments.

There appear to have been two economic sectors operating in the Southern Atbai of Period 3. The settlements in the primary and secondary optimal zones (along the Gash River and in the Sharab) appear to have been predominantly agricultural. Those in the tertiary optimal zones and in the marginal lands (Hagiz zone, along the Khor Marmadeb and in the steppes) were apparently more inclined towards herding. Neither sector appears to have been completely specialised: some short term occupations of herders are found in the Sharab, and the occurence of grinding stones and semi-permanent settlements in the western steppe suggest that some agriculture was practiced there as well.

The distribution of ceramic markers suggests some exchange between the populations of different ecological zones and, thus, between different economic sectors. Although, only exchange in ceramics has been documeneted, it seems fair to assume that exchange of other goods, notably agricultural and pastoral products, may have followed a similar traffic pattern.

Judging by the fact that the different economic sectors each occupy a space in the range of a few hundred square kilometers, one might be justified in assuming that they represent

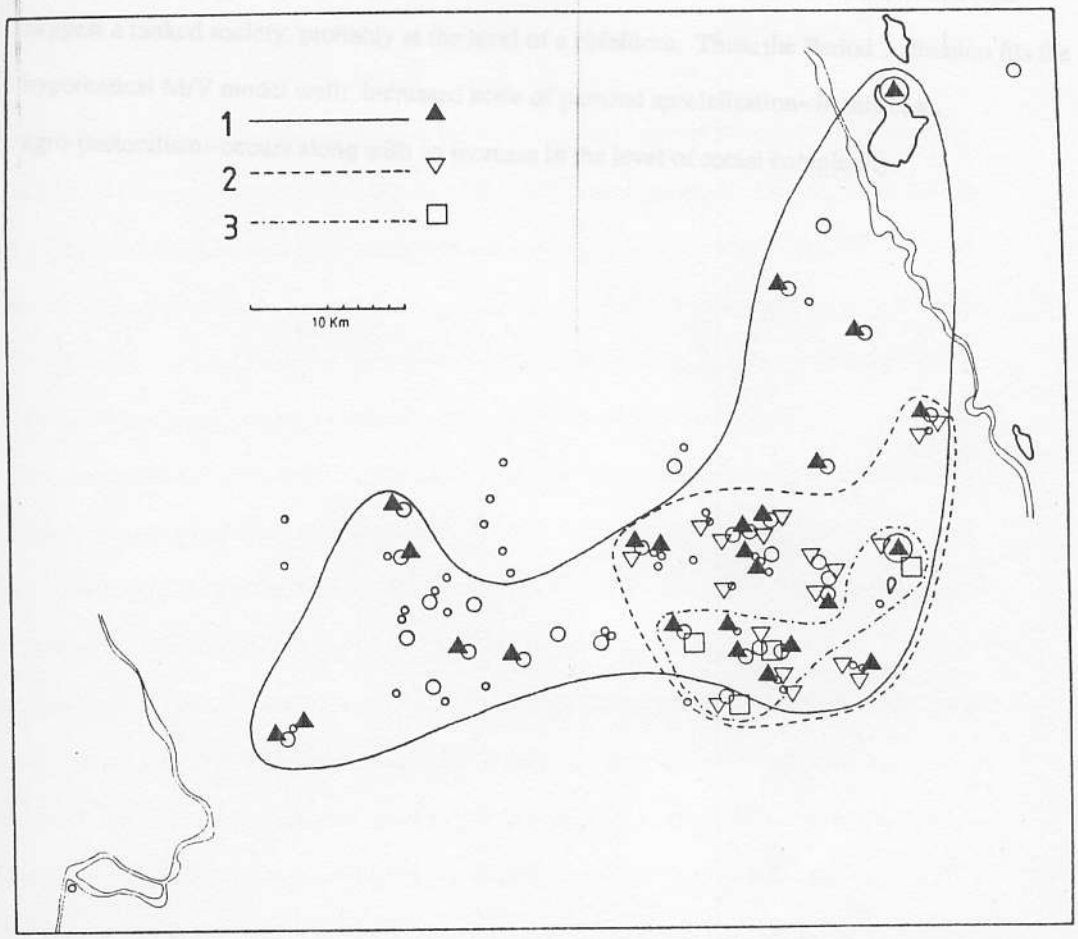

Figure 5.12. The distribution of three ceramic markers: Marker 1) Zig-zag rim top relief decoration (see Figure 5.1 e); Marker 2) Single row punctation rim band decoration; Marker 3) Mat-impressed body decoration.

something like tribal sections. In view of this, it seems reasonable to assume that an agro-pastoral adaptation existed during Period 3.

The Period 3 events were unfolding in the context of a fairly complex society. The site proxemics, variations in ceramic diversity, and the possible two-tiered distribution networks suggest a ranked society, probably at the level of a chiefdom. Thus, the Period 3 situation fits the hypothetical M/V model well: increased scale of pastoral specialisation--in this case, agro-pastoralism--occurs along with an increase in the level of social complexity.

CHAPTER VI

NOMADS IN THE SOUTHERN ATBAI

The Taka Phase, ca. 750 BC-AD 350

During the Taka Phase, the Southern Atbai seems to have been occupied by two separate archaeological Groups. One of these, the Late Mokram, is recognised by a ceramic assemblage which in terms of decoration is quite similar to that of the Period 3 Mokram Group. Technologically, however, the two assemblages differ. The Late Mokram pottery is tempered with a mix of fiber and mineral particles; that of the Mokram Group (and indeed all other archaeological Groups of the area to this Phase) was solely mineral tempered.

The similarities between the Period 3 and 4 Mokram assemblages include groove-carved decorations (see previous chapter, Figure 5.1 c,d). The net patterned cross-incised decorations also remained popular, but during Period 4 were applied only as a wide rim band, rather than as a whole body decoration (Figure 6.1 b, f). Mat-impressed decorations (Figure 6.1 a), which in the Mokram Group of Period 3 were one of the minor design types, are encountered more frequently in Late Mokram samples. Other artefacts, such as clay figurines and polished stone axes continued in use. Porphyry bracelets became rare or disappeared altogether. Grinding stones are common on Late Mokram Group sites, but are, as usual, undiagnostic in form.

The other Group occupying the Southern Atbai during Period 4, the Hagiz, has a completely different ceramic assemblage. It is most readily identifiable by heavily fiber-tempered pottery with a pink/orange paste. Relative to other assemblages from the Southern Atbai, the Hagiz Group ceramics are poorly made and carelessly decorated. The main decoration, if it can be called that, is a scraped surface. Other decorations include rim band notches and punctations (Figure 6.1 c-e). It is interesting that both these decorations were previously associated with the Gash

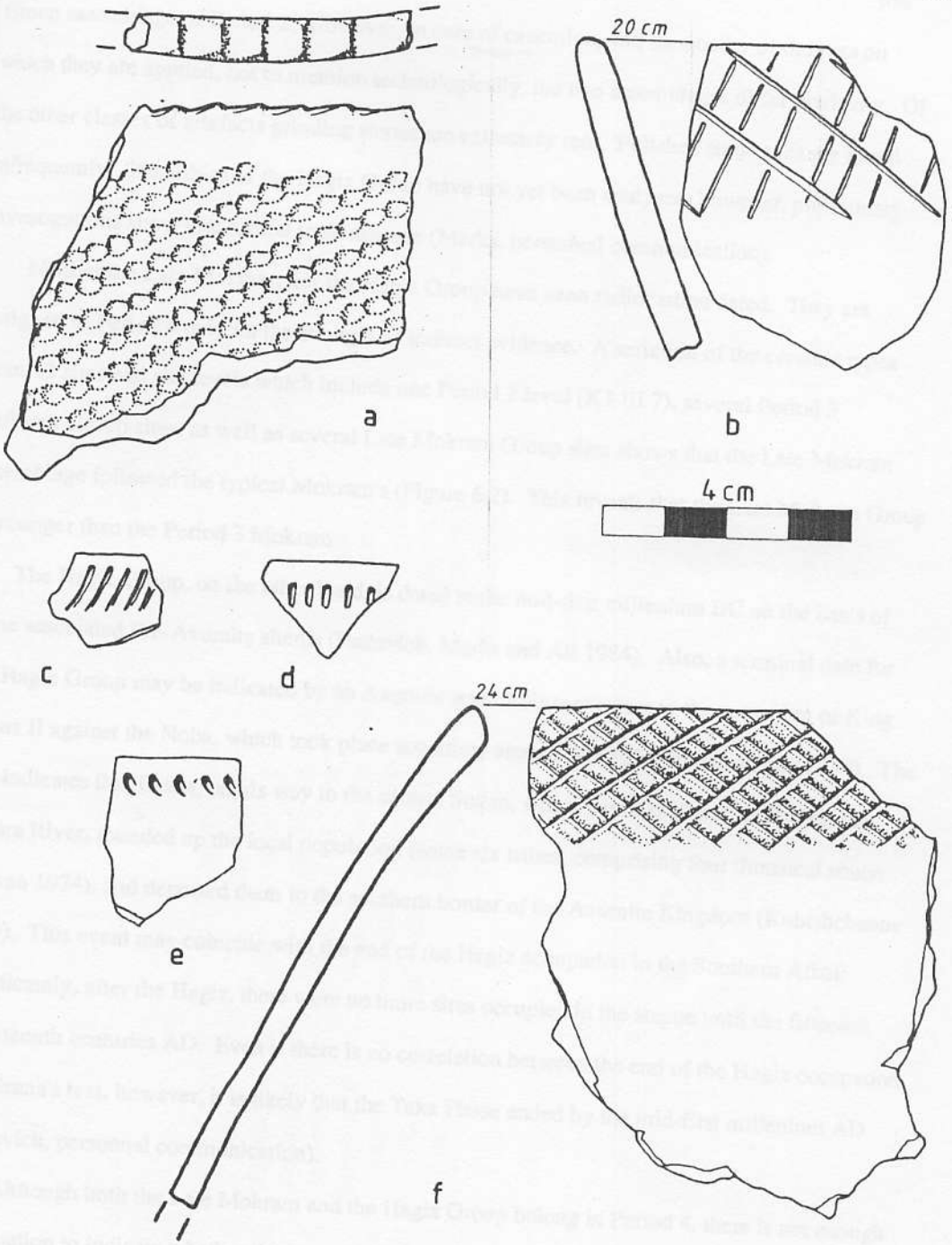

Figure 6.1. Some Period 4 ceramic decorations.

Group assemblage of Period 2. However, in care of execution, and the quality of the pots on which they are applied, not to mention technologically, the two assemblages differ markedly. Of the other classes of artefacts grinding stones are extremely rare. Polished stone axes are found infrequently. The lithics of the Hagiz Group have not yet been analysed, however, preliminary investigations show that formal tools are rare (Marks, personnal communication).

Neither the Late Mokram, nor the Hagiz Group have been radiocarbon dated. They are assigned to Period 4 only on the strength of indirect evidence. A seriation of the ceramic types from 13 sites and site levels which include one Period 2 level (K1 III 7), several Period 3 Mokram Group sites, as well as several Late Mokram Group sites shows that the Late Mokram assemblage followed the typical Mokram's (Figure 6.2). This reveals that the Late Mokram Group is younger than the Period 3 Mokram.

The Hagiz Group, on the other hand, is dated to the mid-first millenium BC on the basis of some associated Pre-Axumite sherds (Fattovich, Marks and Ali 1984). Also, a terminal date for the Hagiz Group may be indicated by an Axumite text. This text refers to the campaign of King Ezana II against the Noba, which took place sometime around AD 325 (Kobishchanov 1979). The text indicates that Ezana, on his way to the central Sudan, won a battle at Kemalke ford on the Atbara River, rounded up the local population (some six tribes, comprising four thousand souls: Kirwan 1974), and deported them to the southern border of the Axumite Kingdom (Kobishchanov 1979). This event may coincide with the end of the Hagiz occupation in the Southern Atbai: significantly, after the Hagiz, there were no more sites occupied in the steppe until the fifteenth or sixteenth centuries AD. Even if there is no correlation between the end of the Hagiz occupation and Ezana's text, however, it is likely that the Taka Phase ended by the mid-first millenium AD (Fattovich, personnal communication).

Although both the Late Mokram and the Hagiz Group belong in Period 4, there is not enough information to indicate whether they occupied the study area simultaneously. It is quite possible that the Late Mokram Group dates to the earliest part of Period 4, while the Hagiz dates to the middle and later parts.

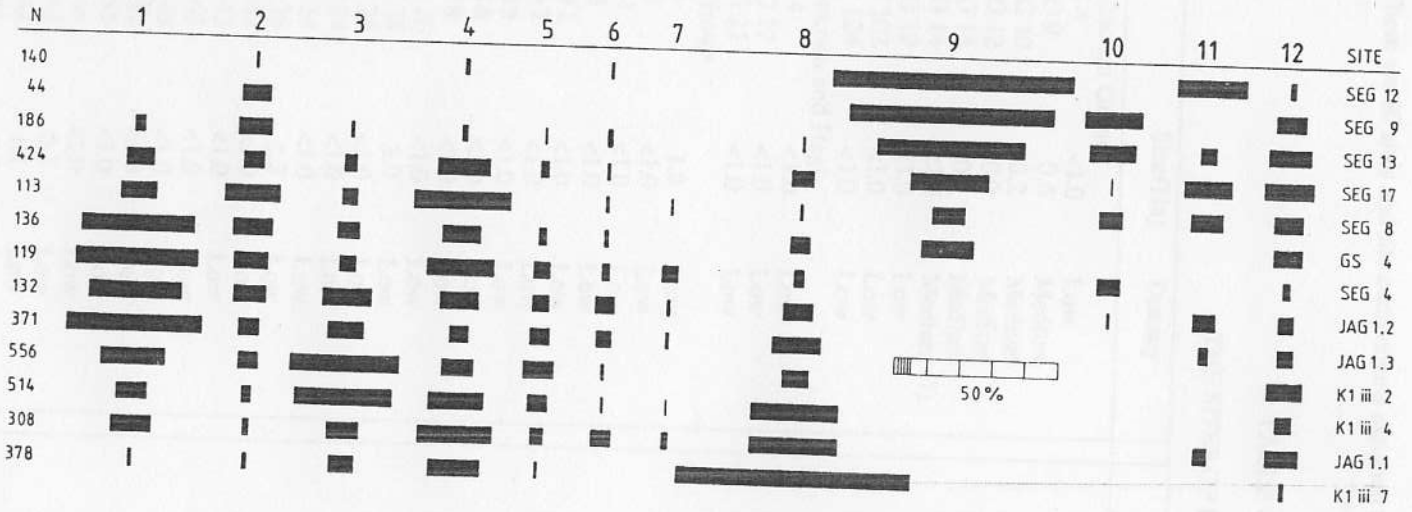

Figure 6.2. Seriation of ceramic types from selected Period 2-4 sites.

Type 1. Typical Mokram Group net patterned cross-incised (e.g. Figure 5.1 a,b).
Type 2. Groove-carved (e.g. Figure 5.1 c,d).
Type 3. Mokram Group fine red slipped (e.g. Figure 5.1 e,f).
Type 4. Mineral tempered plain.
Type 5. Wiped plain.
Type 6. Complex impressed and incised (e.g. Figure 5.1 h).
Type 7. Punctate (e.g. Figure 5.1 g).
Type 8. Mineral tempered scraped.
Type 9. Late Mokram fiber tempered with cross-incised rim band (e.g. Figure 6.1 b,f).
Type 10. Mat-impressed (e.g. Figure 6.1 a).
Type 11. Hagiz Group pink fiber tempered .
Type 12. Varia.

There are 80 sites and site components assigned to Period 4 (Table 6.1 and Figure 6.3).

TABLE 6.1

THE SITES OF PERIOD 4

Site	Size(Ha)	Density
Late Mokram Group		
GS 4	<1.0	Low
SEG 9	0.6	Medium
SEG 10	0.2	Medium
SEG 12	0.9	Medium
SEG 13	0.9	Medium
SEG 14	<1.0	Medium (?)
SEG 19	<1.0	Low
KG 102	<1.0	Low
KG 124	<1.0	Low
Late Mokram and Hagiz		
EG 4	<1.0	Low
SEG 17	<1.0	Low
SEG 21	<1.0	Low
Hagiz Group		
JE 1	1.8	Low
JE 2	<1.0	Low
AG 1	<1.0	Low
EG 3	<1.0	Low
SEG 1	<1.0	Low
SEG 2	<1.0	Low
SEG 5	<1.0	Low
SEG 6	<1.0	Low
SEG 8	<1.0	Low
SEG 20	<1.0	Low
SEG 25	3.0	Low
SEG 27	<1.0	Low
SEG 28	<1.0	Low
SEG 34	<1.0	Low
SEG 36	2.2	Low
SEG 42	<1.0	Low
SEG 43	<1.0	Low
SEG 45	<1.0	Low
SEG 46	<1.0	Low
SEG 52	<1.0	Low
SEG 55	<1.0	Low
SEG 61	<1.0	Low
SEG 62	0.5	Low
SEG 63	1.1	Low
SEG 64	<1.0	Low
K1	ca 2.0	Low
K2	1.5	Low
K 4	ca 4.0	Low
K 6	5.2	Low
K 7	<1.0	Low
K 9	3.7	Low
K 10	<1.0	Low
K 14	1.0	Low
K 15	0.1	Low
K 16	12.6	Low
K 17	3.3	Low
KG 2	<1.0	Low
KG 3	ca 2.0	Low
KG 4	<1.0	Low
KG 6	<1.0	Low
KG 30	1.6	Low
KG 34	0.2	Low
KG 35	0.08	Low
KG 36	0.1	Low
KG 37	<1.0	Low
KG 39	0.2	Low
KG 41	0.7	Low
KG 45	0.08	Low
KG 48	0.005	Low
KG 53	<1.0	Low
KG 81	2.2	Medium
KG 83	0.09	Low
KG 88	<1.0	Low
KG 89	<1.0	Low
KG 92	<1.0	Low
KG 97	<1.0	Low
KG 98	1.3	Low
KG 100	4.0	Low
KG 101	<1.0	Low
KG 107	<1.0	Low
KG 109	<1.0	Low
KG 110	1.3	Low
KG 111	7.5	Low
KG 116	0.8	Medium
KG 118	<1.0	Low
KG 123N	1.0	Medium
KG 127	<1.0	Low
KG 128	<1.0	Low

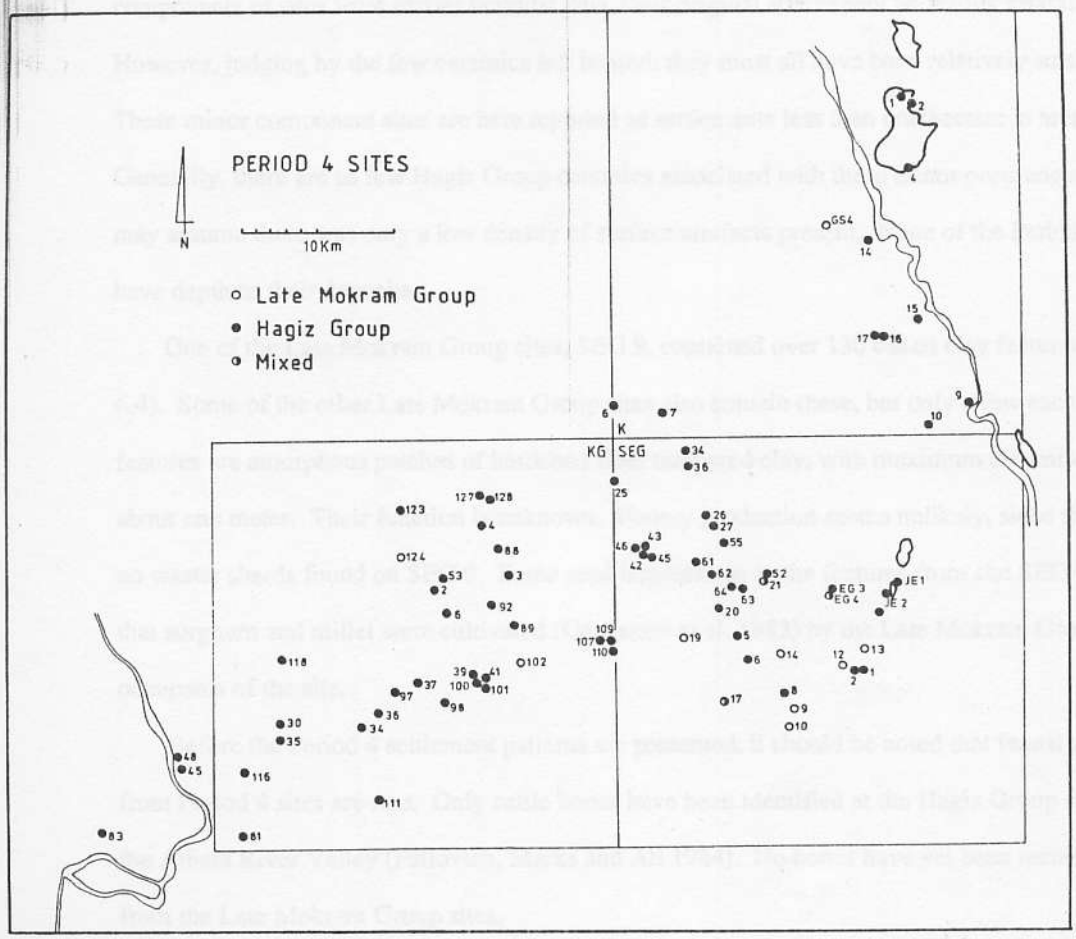

Figure 6.3. Sites of Period 4.

Of these 9 sites and components have a predominantly Late Mokram Group ceramic assemblage. Three sites have an even mix of Late Mokram and Hagiz Group pottery, while the rest (68 sites) have a Hagiz Group assemblage. Of these Hagiz Group sites, most are minor components of sites from earlier Periods; thus, their original size cannot be readily established. However, judging by the few ceramics left behind, they must all have been relatively small. These minor component sites are here reported as settlements less than one hectare in area. Generally, there are so few Hagiz Group ceramics associated with these minor occurences that one may assume there was only a low density of surface artefacts present. None of the Period 4 sites have depth to their deposits.

One of the Late Mokram Group sites, SEG 9, contained over 130 baked clay features (Figure 6.4). Some of the other Late Mokram Group sites also contain these, but only a few each. The features are amorphous patches of hardened fiber tempered clay, with maximum dimensions of about one meter. Their function is unknown. Pottery production seems unlikely, since there are no waster sherds found on SEG 9. Some seed impressions in the features from site SEG 9 indicate that sorghum and millet were cultivated (Costantini et al. 1983) by the Late Mokram Group occupants of the site.

Before the Period 4 settlement patterns are presented, it should be noted that faunal remains from Period 4 sites are rare. Only cattle bones have been identified at the Hagiz Group sites in the Atbara River Valley (Fattovich, Marks and Ali 1984). No bones have yet been recovered from the Late Mokram Group sites.

The paleo-environmental reconstruction of North Africa indicates that the climate of Period 4 would have been much the same as at present. Possibly, the study area was more wooded, as indeed it was until the last century (Baker 1967). Rainfall would have been more or less as today (Warren 1970).

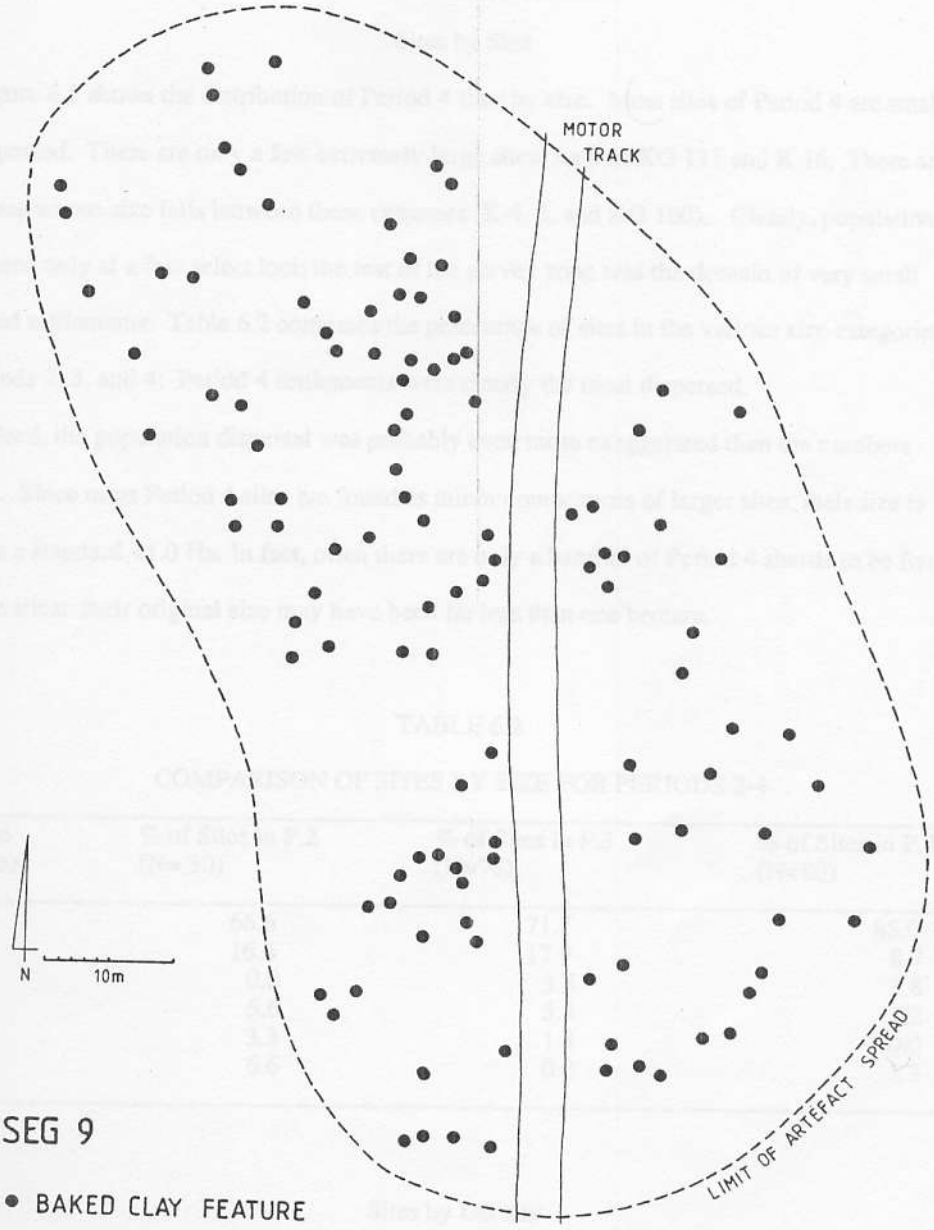

Figure 6.4. Site SEG 9.

Period 4 Settlement Patterns

Sites by Size

Figure 6.5 shows the distribution of Period 4 sites by size. Most sites of Period 4 are small and dispersed. There are only a few extremely large sites, such as KG 111 and K 16. There are three sites whose size falls between these extremes (K 4, 6, and KG 100). Clearly, populations aggregated only at a few select loci; the rest of the survey zone was the domain of very small dispersed settlements. Table 6.2 compares the percentage of sites in the various size categories for Periods 2, 3, and 4: Period 4 settlements were clearly the most dispersed.

Indeed, the population dispersal was probably even more exaggerated than the numbers suggest. Since most Period 4 sites are found as minor components of larger sites, their size is given as a standard <1.0 Ha. In fact, often there are only a handful of Period 4 sherds to be found on these sites: their original size may have been far less than one hectare.

TABLE 6.2

COMPARISON OF SITES BY SIZE FOR PERIODS 2-4

Site Size (Hectare)	% of Sites in P.2 (N= 30)	% of Sites in P.3 (N=78)	% of Sites in P.4 (N=80)
0-1.9	66.6	71.7	85.0
2-3.9	16.6	17.9	8.7
4-5.9	0.0	3.8	3.8
6-7.9	6.6	5.1	1.2
8-9.9	3.3	1.3	0.0
10+	6.6	0.0	1.3

Sites by Density

Figure 6.6 shows there are many low density sites in Period 4. Apparently, with the exception of only three sites, all Hagiz Group occupations in the survey area were short term occupations. Even the largest have extremely low surface artefact densities. In contrast, many of the Late Mokram Group sites are of medium density, indicating semi-permanent occupations.

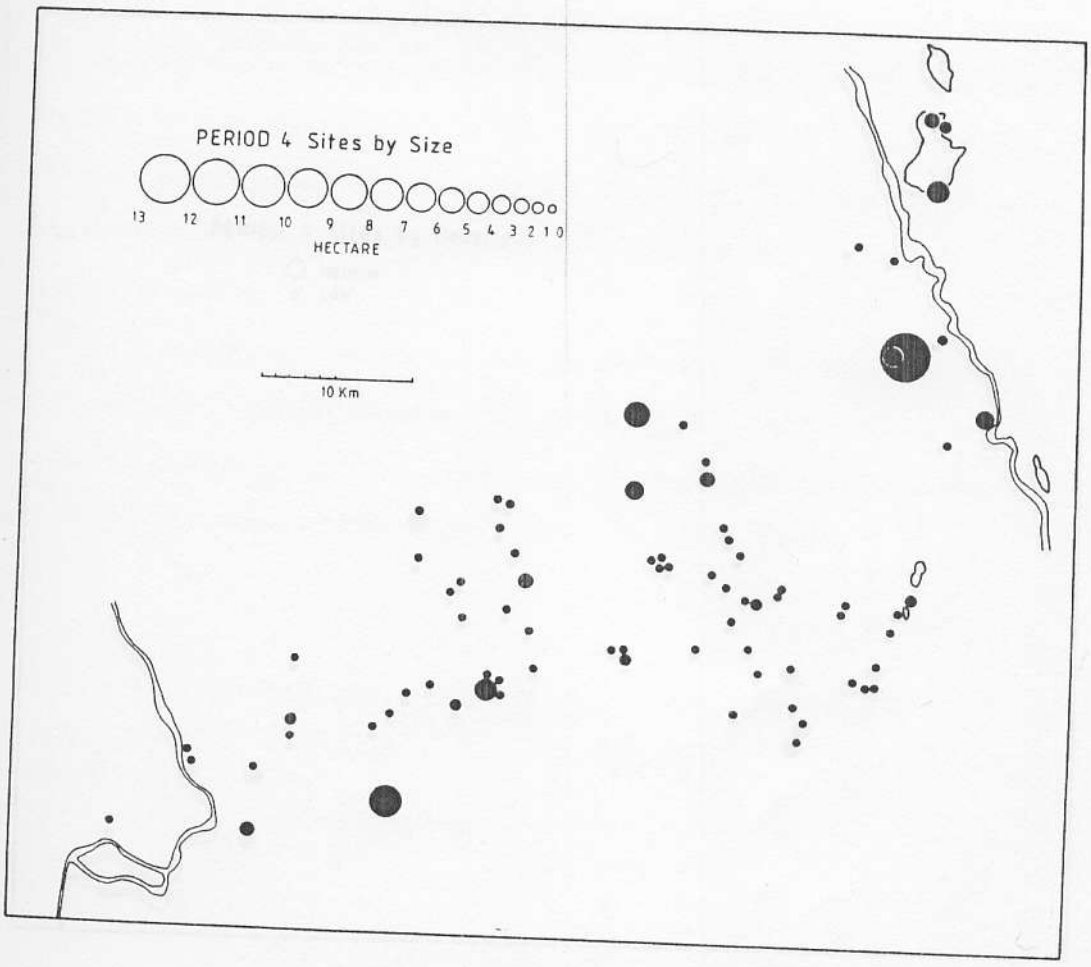

Figure 6.5. Distribution of Period 4 sites by size.

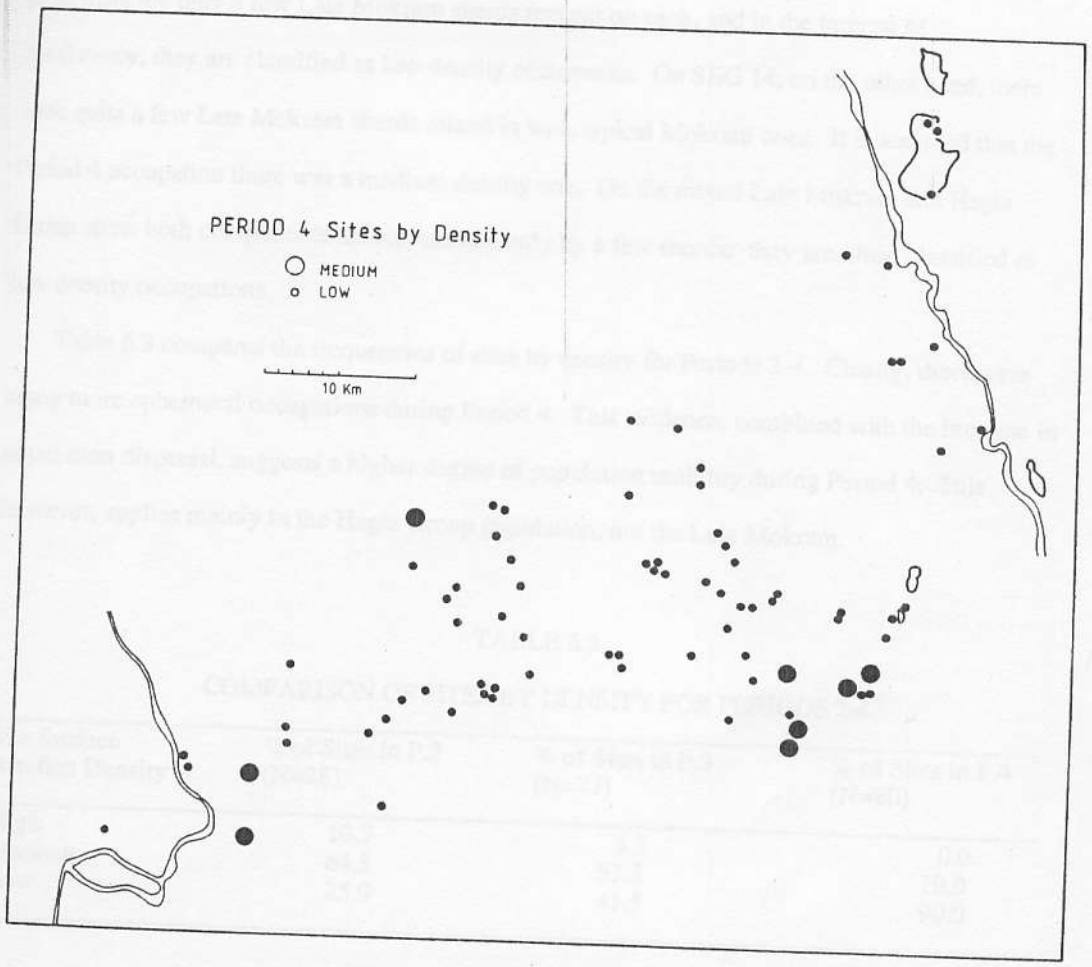

Figure 6.6. Distribution of Period 4 sites by density.

Three Late Mokram Group sites, KG 102, 124, and GS 4, are actually occurences of Period 4 ceramics on Period 3 Mokram sites. They could be seen as transitional occupations between Periods 3 and 4. Their Period 4 components may have formed medium density sites. However, since there are only a few Late Mokram sherds present on each, and in the interest of consistency, they are classified as low density occurences. On SEG 14, on the other hand, there were quite a few Late Mokram sherds mixed in with typical Mokram ones. It is assumed that the Period 4 occupation there was a medium density one. On the mixed Late Mokram and Hagiz Group sites, both components are represented only by a few sherds: they are, thus, classified as low density occupations.

Table 6.3 compares the frequencies of sites by density for Periods 2-4. Clearly, there were many more ephemeral occupations during Period 4. This evidence, combined with the increase in population dispersal, suggests a higher degree of population mobility during Period 4. This, however, applies mainly to the Hagiz Group population, not the Late Mokram.

TABLE 6.3

COMPARISON OF SITES BY DENSITY FOR PERIODS 2-4

Site Surface Artefact Density	% of Sites in P.2 (N=28)	% of Sites in P.3 (N=77)	% of Sites in P.4 (N=80)
High	10.7	5.3	0.0
Medium	64.3	53.2	10.0
Low	25.0	41.5	90.0

Sites by Ecological Zones

Since by Period 4 the local environment of the Southern Atbai would have resembled that of today, it is assumed that the land use areas of that time would also have approximated the modern ones. Figure 6.7 shows the distribution of Period 4 sites, by density, against the modern land use zones.

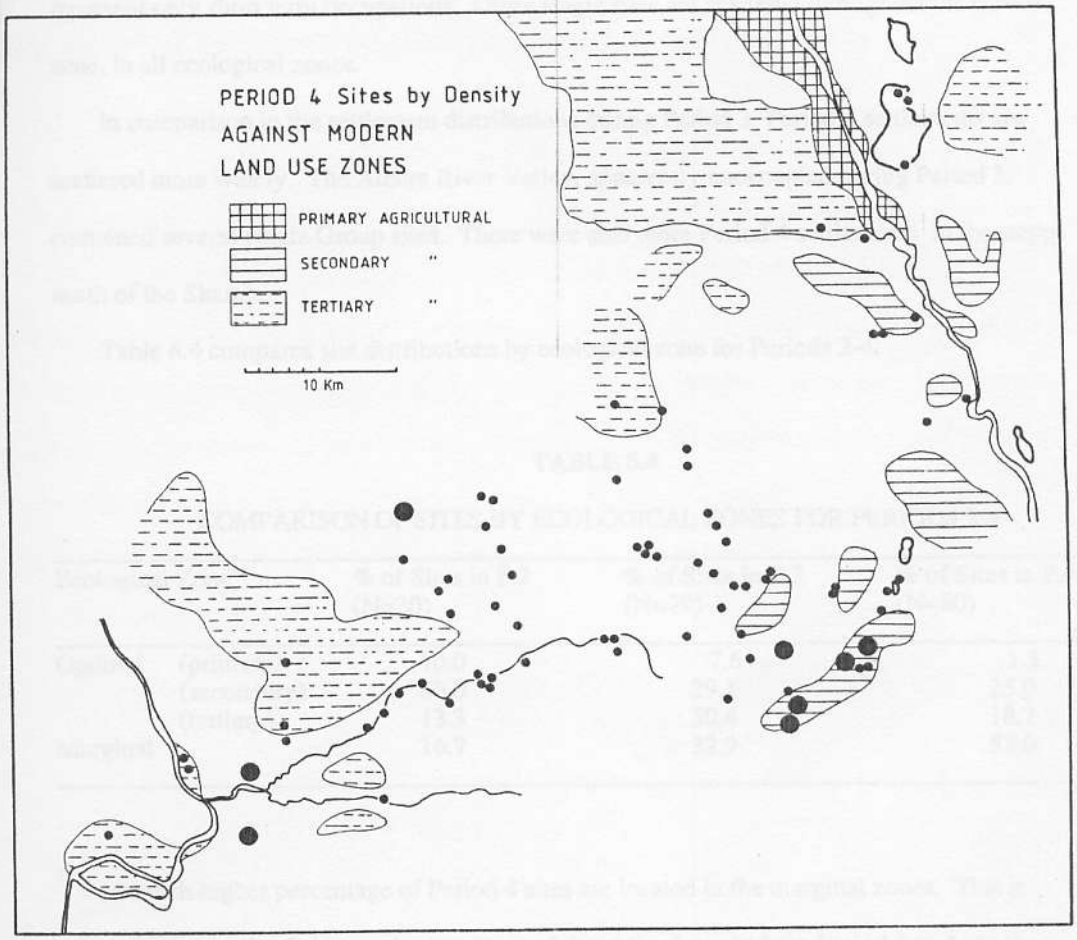

Figure 6.7. Period 4 site distribution against modern land use zones.

Of interest is the fact that all the semi-permanent Late Mokram occupations are located in the Sharab, which is classified as a secondary agricultural area. The vicinity of the primary agricultural lands, along the Gash River, were occupied by the Hagiz Group. Sites there, however, represent only short term occupations. Other Hagiz sites are scattered throughout the survey zone, in all ecological zones.

In comparison to the settlement distributions during Period 3, Period 4 settlements are scattered more widely. The Atbara River Valley, apparently unoccupied during Period 3, contained several Hagiz Group sites. There were also more Period 4 settlements in the steppe north of the Sharab.

Table 6.4 compares site distributions by ecological zone for Periods 2-4.

TABLE 6.4

COMPARISON OF SITES BY ECOLOGICAL ZONES FOR PERIODS 2-4

Ecological Zone		% of Sites in P.2 (N=30)	% of Sites in P.3 (N=79)	% of Sites in P.4 (N=80)
Optimal	(primary)	10.0	7.6	1.3
	(secondary)	60.0	29.1	25.0
	(tertiary)	13.3	30.4	18.7
Marginal		16.7	32.9	55.0

A much higher percentage of Period 4 sites are located in the marginal zones. This is primarily the result of changes in the extent of the optimal zones from Period 3 to 4. In the Period 3 analysis, following paleo-environmental reconstructions which suggested a slightly wetter local environment, the borders of the modern optimal zones were arbitrarily extended by three kilometers. In the Period 4 analysis, the boundaries of the ecological zones were set as those which apply today. Given that for the purpose of analyses, the Period 3 agricultural zones were assumed to be more extensive, it stands to reason that there should have been fewer Period 3 sites set in marginal lands. Indeed, if one calculates the Period 3 site distributions against the

modern, rather than the reconstructed ecological zones, there is hardly any difference in the percentage of sites by zones for Periods 3 and 4. Thus, the actual site locations during Periods 3 and 4 did not greatly differ; rather it was the environmental change which created the differences in the natural setting of the sites. The spread of Period 4 sites into the Atbara Valley and to the north of the Sharab, is the only major locational change.

Distribution of Grinding Stones

Since most Period 4 sites are actually minor components on mixed sites, it is impossible to determine whether they originally contained any grinding implements: grinding stones are too undiagnostic in form to be assigned to one or another component in a mixed site. However, there are several single component Period 4 sites, and some where the Period 4 occupation is the major component. From these it is possible to gain an impression of the original distribution of grinding stones (Table 6.5). The pattern is quite clear. The Late Mokram sites have a large number of grinding implements each. Conversely, most of the Hagiz Group sites have no grinding implements associated.

TABLE 6.5

DISTRIBUTION OF GRINDING IMPLEMENTS

Group / Site	Grinding Stones	Site	Grinding Stones	Site	Grinding Stones	Site	Grinding Stones
Late Mokram		SEG 36	-	K 17	-	KG 48	-
SEG 9	++	SEG 62	-	KG 30	+	KG 81	-
SEG 12	++	SEG 63	-	KG 34	-	KG 83	-
SEG 13	++	K 6	+	KG 35	+	KG 100	-
Hagiz		K 9	-	KG 36	+	KG 110	-
JE 1	-	K 14	-	KG 39	+	KG 111	-
SEG 25	-	K 15	-	KG 41	-	KG 116	-
		K 16	-	KG 45	-		

++ several + few - absent

Figure 6.8 shows the spatial distribution of sites with grinders. The overall pattern, assuming that the sites used in the analyses form a representative sample, suggests that cultivation was principally restricted to the Sharab zone as an aspect of the Late Mokram Group's subsistence strategy. Some cultivation may have been engaged in by a few of the Hagiz Group populations. All the Hagiz Group sites with grinding stones are located in or near the tertiary agricultural zones: lands which are today occasionally cultivated by nomads.

Period 4 Proxemics

The proxemics of the Late Mokram and Hagiz Groups differ significantly. Figure 6.9 a shows the regularity of spacing among the Late Mokram Group sites. These, on average, are spaced five kilometers apart. This spacing applies even to the low density Late Mokram sites, as well as to the mixed Late Mokram/Hagiz sites. The two Late Mokram components in the western steppe (KG 102 and 124) and the one in the Kassala area (GS 4) are isolated from the Sharab proxemic pattern. The regular spacing of the Late Mokram sites in the Sharab produces catchments of roughly 2.5 km radius for each site: a figure close to the catchment size of the Period 2 Mokram sites in the western steppe.

The overall impression gained of the Late Mokram community, considering the semi-permanently occupied settlements, the high incidence of grinding stones, the baked clay features, sites located in an optimal agricultural zone, and now the proxemics and regular catchment sizes, all reinforce the notion that the Late Mokram Group population was primarily engaged in cultivation.

In stark contrast, the proxemics of the Hagiz Group sites suggest a mobile population heavily reliant on pastoralism. As Figure 6.9 b shows, in the spacing of the Hagiz Group sites and components there is very little regularity of the sort encountered among the Late Mokram Group sites. Instead there is regularity of a different kind. There are two main clusters of small, low density Hagiz Group sites: one in the eastern steppe and the other in the west. The empty space in between the two clusters may or may not be a result of insufficient survey coverage. There

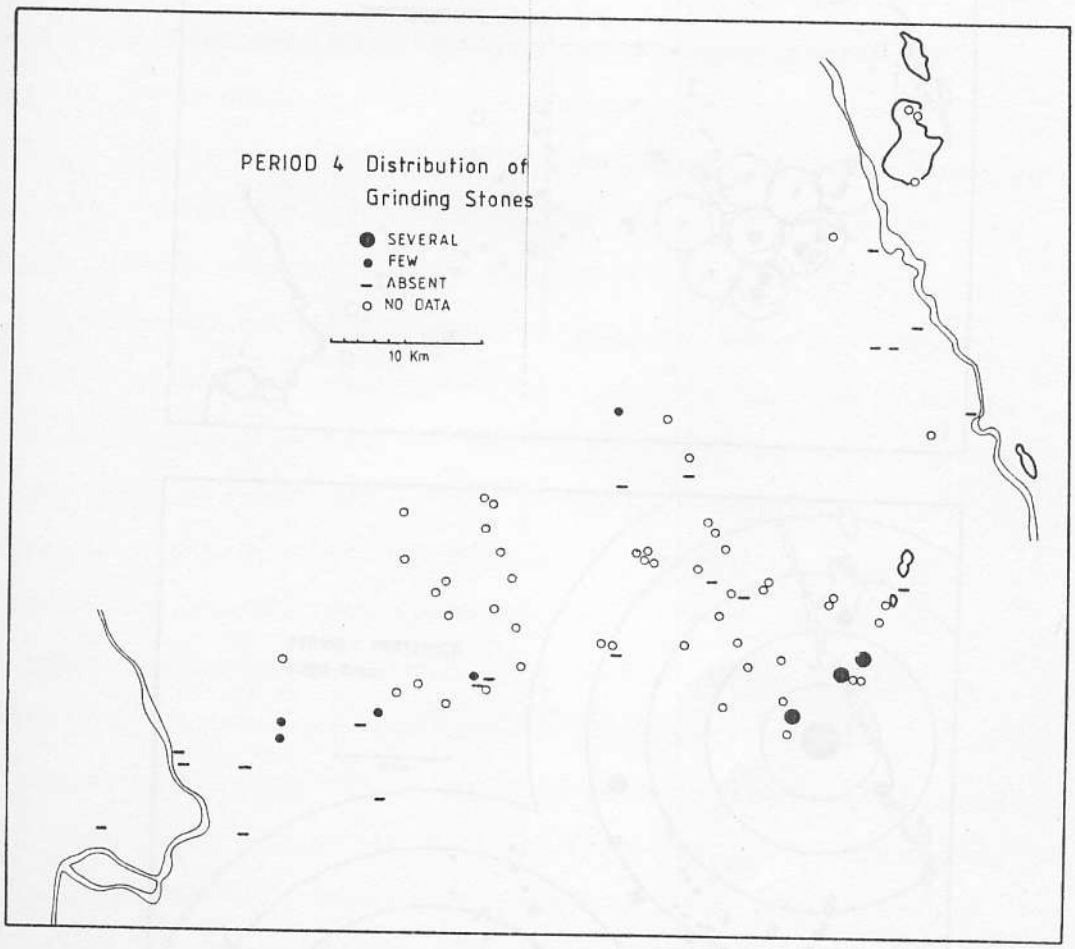

Figure 6.8. Distribution of grinding stones on Period 4 sites.

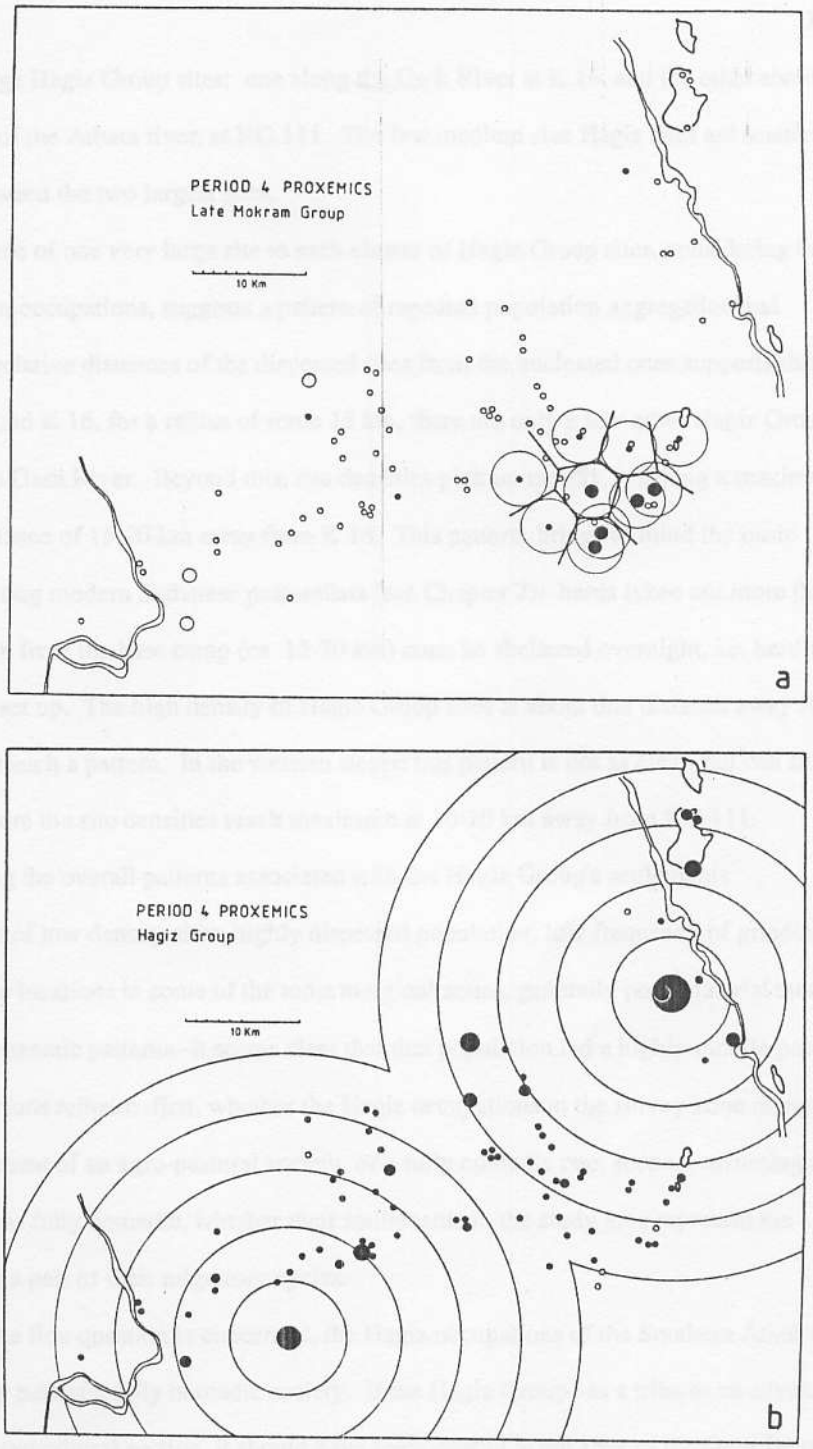

Figure 6.9. Period 4 site proxemics: a) Late Mokram Group proxemics against sites by density; b) Hagiz Group proxemics against sites by size.

are two very large Hagiz Group sites: one along the Gash River at K 16, and the other some ten kilometers east of the Atbara river, at KG 111. The few medium size Hagiz sites are scattered along a line between the two largest sites.

The existence of one very large site to each cluster of Hagiz Group sites, considering that they are all short term occupations, suggests a pattern of repeated population aggregation and dispersal. The relative distances of the dispersed sites from the nucleated ones supports this argument. Around K 16, for a radius of some 15 km, there are only a few other Hagiz Group sites strung along the Gash River. Beyond this, site densities pick up rapidly, reaching a maximum of 21 sites at a distance of 15-20 km away from K 16. This pattern brings to mind the basic herding rule among modern Sudanese pastoralists (see Chapter 2): herds taken out more than half a day's walk from the base camp (ca. 15-20 km) must be sheltered overnight, i.e. herding camps must be set up. The high density of Hagiz Group sites at about that distance away from K 16 suggests just such a pattern. In the western steppe this pattern is not as clear, but can still be recognised. There the site densities reach maximum at 10-20 km away from KG 111.

Considering the overall patterns associated with the Hagiz Group's settlements --predominance of low density sites, highly dispersed population, low frequency of grinding implements, site locations in some of the most marginal zones, generally poor material culture, and now, the proxemic patterns--it seems clear that that population led a highly mobile pastoral life. Two questions remain: first, whether the Hagiz occupations in the survey zone represent the herding element of an agro-pastoral society, or a fully nomadic one; second, assuming the Hagiz Group was fully nomadic, whether their settlements in the study area represent the totality, or only a part of their migratory cycles.

As far as the first question is concerned, the Hagiz occupations of the Southern Atbai were almost certainly part of a fully nomadic society. If the Hagiz Group--as a tribe or an ethnic group--had an agricultural section, it should have been located at the apex of the Gash Delta, near Jebel Kassala, or in the Sharab, since those are the only agricultural zones in the Southern Atbai fertile enough to support a specialised agricultural section. With the most fertile zone of the

Southern Atbai in the hands of the nomadic Hagiz, there was no room left for a specialised agricultural section anywhere else in the Southern Atbai. Hence, in all probability the Hagiz Group was a fully nomadic society.

As far as the second question is concerned, there is no reason to assume that the Hagiz's seasonal rounds covered only the study area. Albeit, in the absence of any agricultural communities along the Atbara or the Gash Rivers, there would have been enough pastoral resources, and unimpeded access to water, to make it possible for the nomads to survive solely within the confines of the study area. If that were the case, the large Hagiz sites at either end of the steppe could be seen as dry season occupations, while the dispersed sites of the steppe could represent wet season herding camps. Alternatively, if the seasonal rounds took the population outside the study area, the known Hagiz Group sites may have either been wet or dry season occupations, depending on what other regions were open to the nomads.

Period 4 Interactions

The distribution of Period 4 ceramic markers raises some interesting points. The markers include the Late Mokram's net pattern rim band cross-incised decoration, the Hagiz Group's fiber tempered scraped, and the notched rim band design. As Figure 6.10 shows, the distribution of the Late Mokram Group marker is principally restricted to the Sharab zone. The Hagiz markers occur clear across the steppe, but not in the south end of the Sharab, where only Late Mokram Group sites are found. There is, thus, a fairly clear boundary between the material culture distribution of the two Groups: only in the northern Sharab is there some overlap of material culture. This is where the three mixed Late Mokram/Hagiz sites occur.

The occurence of both Late Mokram and Hagiz markers on these sites could indicate trade between the two Groups. In light of the hypothesis that the Hagiz population was nomadic, however, this interpretation seems unlikely. If there was trade (specifically, pots from the Late Mokram to the Hagiz population, since the opposite would be highly unusual, given the poor quality of the Hagiz pottery and that nomads do not generally supply sedentary folks with

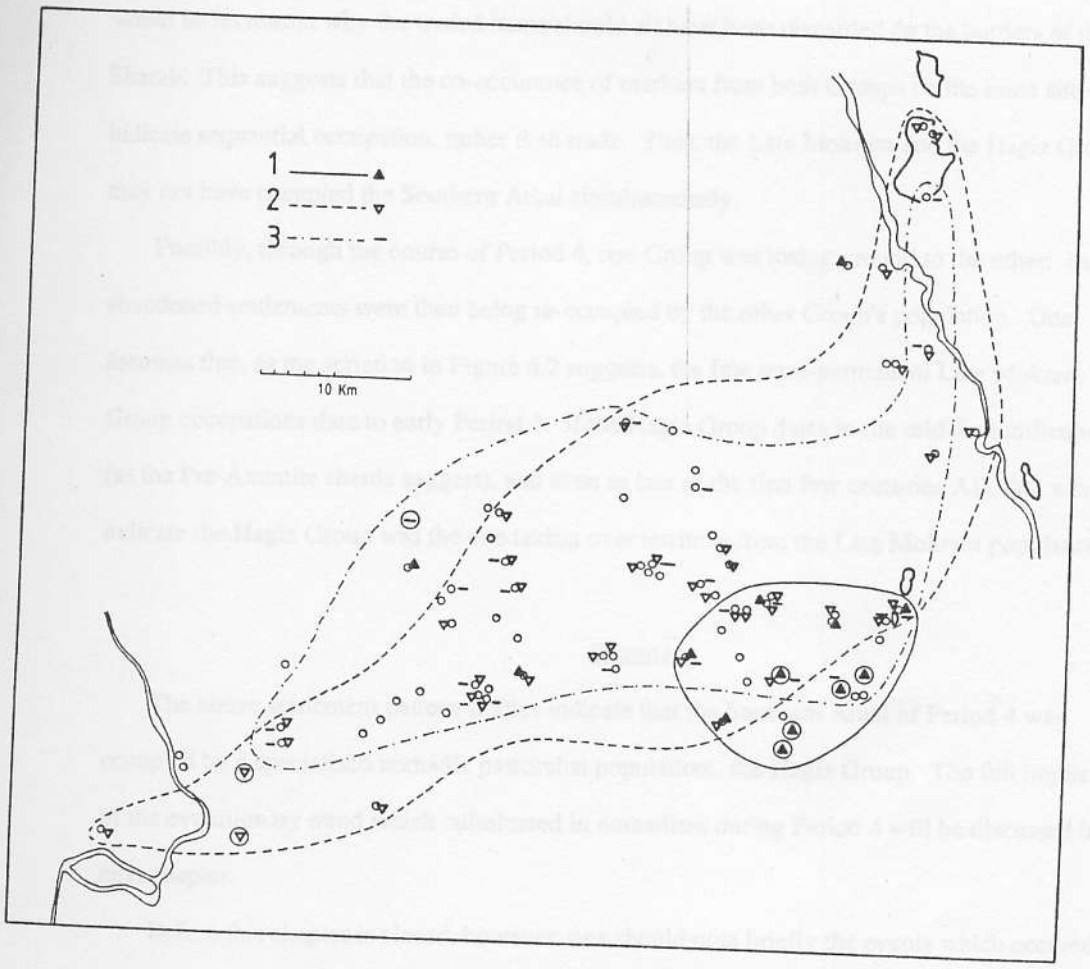

Figure 6.10. Distribution of Period 4 ceramic markers: Marker 1) Net pattern cross-incised rim band; Marker 2) Fiber tempered scraped; Marker 3) Notched rim band.

pottery) it is strange that the Late Mokram markers are found only on Hagiz sites in the Sharab. Assuming that the Hagiz Group population was as mobile as the data suggest, then some of the Late Mokram markers should also occur on Hagiz Group sites in other parts of the steppe: there would be no reason why the traded items should all have been discarded on the borders of the Sharab. This suggests that the co-occurence of markers from both Groups on the same site may indicate sequential occupation, rather than trade. Thus, the Late Mokram and the Hagiz Groups may not have occupied the Southern Atbai simultaneously.

Possibly, through the course of Period 4, one Group was losing ground to the other: its abandoned settlements were then being re-occupied by the other Group's population. One assumes that, as the seriation in Figure 6.2 suggests, the few semi-permanent Late Mokram Group occupations date to early Period 4. If the Hagiz Group dates to the mid-first millenium BC (as the Pre-Axumite sherds suggest), and even as late as the first few centuries AD, that would indicate the Hagiz Group was the one taking over territory from the Late Mokram population.

Summary

The above settlement pattern studies indicate that the Southern Atbai of Period 4 was occupied by a specialised nomadic pastoralist population: the Hagiz Group. The full implications of the evolutionary trend which culminated in nomadism during Period 4 will be discussed in the next chapter.

Before this chapter is closed, however, one should note briefly the events which occured after Period 4. Archaeological surveys have shown that after the Hagiz Group, there was a hiatus in the occupation of the Southern Atbai steppe.

The Southern Atbai, however, was not entirely depopulated. There are three cemeteries and a number of isolated burials around the base of Jebel Kassala, which seem to postdate the Taka Phase (Fattovich 1984 a). The ceramics found in association with the cemeteries include examples similar to post-Meroitic and Axumite ones. Some fragments of Mediterranean amphorae dating to about 750 AD have also been found (Fattovich, personnal communication).

Since there are no known settlements, nothing can be said about the nature of occupations after Period 4. The cemeteries themselves, however, suggest that there was a small sedentary population residing near Jebel Kassala, probably under what is now the modern town of Khatmiya. The steppe, however, remained unoccupied until the 15th or 16th centuries AD.

CHAPTER VII

THE DEVELOPMENT OF NOMADISM IN THE SOUTHERN ATBAI

Through settlement pattern studies the developments in the Southern Atbai between 3750 BC-AD 350 were described in the last three chapters. Many of the patterns remain difficult to interpret in detail. However, the overall trends as they pertain to the development of nomadism are quite clear. The relevant points are briefly reviewed below.

During early Period 1 (the first half of the early Kassala Phase, ca. 3750-3250 BC) several large villages in the Southern Atbai were inhabited by hunters, gatherers, and probably cultivators. There is no evidence to indicate any form of subsistence specialisation: both large village sites of early Period 1, KG 23 and 7, contained much the same range of artefacts (Winchell and M'Butu, personnal communication) and fauna (Peters 1986), and were also quite similar in size and duration of occupation. The M/V balance (see Chapter 1 for definition) was probably achieved through exchange among members of the same co-residenial groups.

During late Period 1 (the second half of the early Kassala Phase, ca. 3250-2750 BC), this picture remained largely unchanged, except that domesticated cattle were now present in the sites. All the main sites of late Period 1 (KG 29, 5, 96) contain a similar range of faunal and artefactual remains. There was no appreciable specialisation in subsistence activities at a scale above the intra-settlement one. N 125, the ceramic production center, provides the only indication of specialisation, but in a sphere unrelated to subsistence strategies.

There is little information on the early Period 2 occupations (the first half of the mid-Kassala Phase, ca. 2750-2100 BC), since those site levels lie beneath several meters of later deposits. What little is known, suggests that there was a continuation of the village based hunter/gatherer/cultivator adaptation. Nothing is known about the status of subsistence

specialisation in early Period 2. It would seem logical to assume a continuation of the late Period 1 pattern involving, at most, intra-settlement specialisation and exchange.

During late Period 2 (the second half of the mid-Kassala Phase, ca. 2100-1500 BC) there was a partial change in settlement patterns: although large village occupations continued, some populations dispersed into semi-sedentary settlements. Of these, many were located in the fertile lands of the Sharab; their occupants presumably continued to rely on a mixed economy including cultivation. Some of the semi-permanent settlements to the north and west of the Sharab, however, were, with the shift in Gash River, located in less optimal lands: they may not have relied solely on cultivation. A partial reliance on pastoralism seems to be indicated. Two separate economic sectors, each occupying its own particular ecological zone, may have been operating side by side. It is not clear whether the specialised sectors existed at the scale of tribal sections; i.e. whether agro-pastoralism had emerged in the Southern Atbai of late Period 2.

The case for agro-pastoralism is much stronger in the next Period. During Period 3 (the late Kassala Phase, ca. 1500-750 BC) settlement patterns were analogous to those of late Period 2, but on a more extensive scale. The distinction between economic sectors was clearer, the existence of a predominantly pastoral population residing in the least optimal and marginal zones is better documented, and the case for specialisation at the level of tribal sections is more credible. The levels of social complexity, as reflected in settlement hierarchies and distribution networks, were equal to, or higher than in late Period 2. Also, the generally more varied material goods during this Period suggest a richer community than before.

During Period 4 (the Taka Phase, ca. 750 BC- AD 350) a remnant Mokram population--the Late Mokram Group--was cornered into the Sharab sector. The rest of the survey zone was occupied by nomadic pastoralist population--the Hagiz Group--with a material culture distantly related to that of the Period 2 Gash Group. The material culture boundary between the nomadic Hagiz and the predominantly agricultural Late Mokram communities was very distinct: a pattern suggesting either competition between the two, or, more likely, that the two Groups did not

occupy the area simultaneously. It is likely that by the middle of Period 4 the Late Mokram Group had abandoned the Southern Atbai completely.

Nomads remained in the Southern Atbai until the early or mid-first millenium AD after which the region was largely depopulated for several centuries. To assess the possible causes for the rise of nomadism in the Southern Atbai, the developments will be compared to the sequences postulated by the three models for the development of nomadism as described in Chapter 1.

The Ecological Model

Do population pressure and environmental degradation spur the evolution of more and more specialised pastoralist populations, resulting eventually in the emergence of nomadism?

It is impossible to say whether in the Southern Atbai study area population pressure existed at any time. Given the nature of its archaeological remains, actual population counts for the various Periods cannot be obtained. The calculation of the area's carrying capacity, likewise, is not yet possible. However, there are various indeces which suffice to put the ecological model to test. A Period by Period comparison of total site sizes, and their respective durations of occupation can act as an index of relative population growth and decline.

A realistic index for relative population growth involves the weighing of total area under occupation in any given Period by a measure of the length of occupation at its sites. Also, the totals thus achieved must be weighed for the time-span of the particular Period in question.

To weigh for the duration of occupation at the sites, the following scheme has been devised. Low density sites, which by definition are the shortest occupations in the area, are counted simply for the size of the site. The sizes of the medium density sites--semi-permanent occupations--are weighed by three. This is an arbitrary number; it does not specifically mean that all medium density sites were occupied three times as long as the low density sites. When applied consistently, however, the weight sufficiently differentiates between the relative lengths of occupation at the two types of sites. High density sites, those with substantial in situ deposits, have their total area weighed by 3, just as at the medium density sites. Here, however, each ten

centimeter level of the site is counted as a discrete medium density occupation. Thus, a high density site 10 ha in area, with 50 cm of deposits is counted as 10 x 3 x 5 = 150 hectares.

The numbers thus arrived at measures the total area under occupation throughout the span of a given Period. Since the different Periods have different time-spans, the total figures of area under occupation are factored accordingly. Period 1 spans roughly a millenium. Period 2 lasts about 1250 years. Period 4 goes on for about 1100 years, while Period 3, with only about a 750 year duration, is the shortest occupation phase in the Southern Atbai. The total occupation units for periods 2, 3, and 4 are factored to an index duration figure of 1000 years. Period 1 lasted about a millenium anyway, so it need not be factored. Table 7.1 shows the result.

TABLE 7.1

INDECES OF POPULATION SIZE, PERIODS 1-4

Period	Area under Occupation weighted by Site Density (Hectare/Time)	Area under Occupation weighted by Site Density, factored for 1000 years (Hectare/Time per Millenium)
1	963.25	963.25
2	1278.10	1022.48
3	479.50	639.33
4	125.35	113.95

The totals in Table 7.1 do not support the idea that population pressure led to nomadism. By the time nomadic pastoralism appeared in Period 4, population levels had already been on a decreasing trajectory. Population pressure, however, is only one side of the ecological model's coin: occupation of marginal lands is the other. If population rise in the optimal zones did not cause the emergence of nomadism, the same effect could have been achieved through environmental degradation transforming the optimal lands into marginal zones.

There was environmental degradation throughout the sequence under analysis. The modern day climate, in effect since about the first millenium BC, is the driest it has ever been in the Southern Atbai since the late Pleistocene. The question, then, is whether the development of

nomadism in the Southern Atbai correlates to the gradual deterioration of the environment there. The sequence of events in the Southern Atbai suggest not.

As the settlement pattern studies suggested, up to a point the rise in pastoral production went hand in hand with the colonisation of the least optimal and the marginal lands of the study area. During late Period 2, and certainly in Period 3, the predominantly pastoral populations occupied the tertiary optimal zones and the bordering marginal lands. By Period 4, however, this correlation had fallen apart. By then, practically the entire survey zone was occupied by fully nomadic pastoralist populations. This does not accord with the ecological model.

Even today, with the Southern Atbai at its driest, the lower reaches of the Gash River provide the most fertile lands to be found anywhere within a radius of several hundred kilometers. The Gash Delta, and the Sharab are veritable oases in an otherwise dry savanna landscape. During Period 4, the nomadic Hagiz Group was the sole occupant of these primary agricultural zones, and by the end of the Period probably had control of the secondary optimal zone, the Sharab, as well. That they did not settle down to practice agriculture in these fertile zones strongly suggests that nomadism never came about as a response to lack of suitable agricultural terrain. The Southern Atbai during Period 4 was not ecologically marginal at all. The fact that it was utilised as a marginal environment must have been due to other factors.

In this context it is interesting to step back a little, and view the area from a broader geographical perspective: one which shows the Southern Atbai situated in the middle between the central Sudan Nile Valley and the Ethiopian highlands. During Periods 2 and 3 the Southern Atbai was, culturally, a heartland. Fattovich (1985) considers it part of the Land of Punt. The studies in Chapters 4 and 5 suggested that the society was rich and organised in a fairly complex fashion. At the same time the Nile Valley in the central Sudan was practically unoccupied despite the fact that it must have been ecologically quite suitable (Marks et al. 1985). Though there has been little archaeological work in the Ethiopian highlands, that area during the second millenium BC also seems to have been something of a cultural backwater despite its ecological potential (Fattovich 1984d, 1987).

During Period 4, roughly the first millenium BC, the above picture completely reversed itself. First in the middle Nile Valley, only some 300-400 km west of the Southern Atbai survey zone, there was a great cultural florescence around 750 BC, culminating in the establishment of the Meroitic Kingdom by 500 BC. At about the same time another cultural florescence took place in the Ethiopian highlands, only some 300 km to the east of the study area, culminating in the rise of the Pre-Axumite and, later, the Axumite state. In contrast, while the previously peripheral lands of the central Sudan and the Ethiopian Highlands gradually became massive cultural, economic, and political centers, the Southern Atbai degenerated to become a hinterland sparsly occupied by nomads. The transition of the Southern Atbai from an inter-regionally important cultural and economic center to an economic hinterland cannot be attributed to the slight environmental degradation which was taking place; the entire Southern Atbai never became an ecologically marginal area. Its marginality was apparently an effect of the general political and economic developments in Northeast Africa.

Thus, as far as the Southern Atbai data are concerned, the ecological model may well explain the rise of agro-pastoralism in the Southern Atbai, since until Period 4 there was good correlation between increasing aridity, an increase in pastoral production and utilisation of marginal lands. But when it comes to the emergence of nomadism in Period 4, ecological factors seem to have become irrelevant. The key seems to be that the ecological model can explain rise and decline in pastoral production as long as it is practiced on a low level of specialisation, and on a small geographic scale. When developments reach full specialisation on the scale of nomadic ethnic groups, different causal factors seem to come into play.

The Military Mobility Model

By and large, the Southern Atbai is too small an area to properly test the hypothesis that conflict between the state and the population of marginal lands led to the nomadisation of the latter. This will be attempted more fully in the next chapter where developments in all of Northeast Africa are examined.

The Trade (M/V) Model

The central issue of this model, the exchange of plant and animal foods and products, is not directly observable in the archaeological remains. Two of its accompanying conditions, however, are. The first is that the scale of subsistence specialisation advances along a fixed track. According to the model, in the beginning specialisation occurs within or between families of the same co-residential group. Different members specialise in acquiring either animal or plant foods and products, and consequently exchange the goods among themselves. At the next stage, specialisation occurs among members of different co-residential groups, with different setlements specialising in one or another aspect of the M/V production. In the third stage specialisation occurs at a larger scale. Many co-residential groups, several settlements describing a tribal section for example, jointly specialise either as cultivators or herders. Finally, specialisation occurs at the largest possible scale, with entire tribes, or ethnic units (here, archaeological Groups) involved exclusively in either agriculture or pastoralism.

This trajectory of stages is visible in the Southern Atbai sequence. During Period 1 and early Period 2, each settlement had hunter, gatherer, and probably cultivator elements. Specialisation occurred within the co-residential groups. Perhaps by late Period 2, and certainly by Period 3, populations of entire ecological zones tended towards specialisation in agriculture or pastoralism. Probably, as the geographical scale of specialised sectors suggests, M/V exchange during Period 3 occured between the equivalents of tribal sections. By Period 4 specialisation had advanced to the scale of entire archaeological Groups, as the evidence of the Hagiz nomads suggests. Thus, as far as the first accompanying condition is concerned, the Southern Atbai sequence fits the one postulated by the M/V model.

The second accompanying condition implied in the M/V model, is that the scale of subsistence specialisation rises with an advance in the scale of socio-political complexity. The logic being that as the scales of communication and interaction rise with the increasingly complex society, so do the opportunities for M/V production specialisation and exchange among ever larger demographic groups. This pattern of parallel developments is also evident in the Southern Atbai.

During Period 1, the Butana Group enjoyed only a minor level of specialisation: at most among different co-residential groups (here, individual settlements). At the same time, their combined settlement patterns (Chapter 4) indicate a lack of significant settlement hierarchies, a fairly equal distribution of wealth, and an overall low population density, suggesting, at best, a tribal level (Service 1975) of social organisation. There is no evidence for higher levels of social complexity in the Southern Atbai of Period 1.

By late Period 2, and Period 3, the scale of subsistence specialisation had advanced. It was now between populations in different ecological zones: possibly, there was already specialisation in M/V production and exchange between different tribal sections. At the same time, the textual information about the land of Punt, and the combined settlement patterns for Periods 2 and 3 (Chapters 4 and 5) suggest that at least a ranked society, probably a chiefdom (Service 1975), was present in the Southern Atbai.

During Period 4 the level of subsistence specialisation was at its highest, with an entire archaeological Group operating as spcialised pastoral nomads. This took place at a time when the state level of socio-political complexity had been achieved in the regions neighbouring the Southern Atbai: at Meroe to the west, and Axum to the east.

Clearly then, in the Southern Atbai there was a general correlation between a rise in the level of social complexity, and in the scale of subsistence specialisation. In that, the sequence agrees with the one postulated by the M/V model.

Despite the general agreement, some of the specific conditions postulated by the M/V model do not manifest themselves in the actual archaeological sequence. First, the model presumes that specialisation, at whatever scale, will be total: i.e., for example at an agro-pastoral stage, of two sections of the same tribe, one is supposed to be purely agricultural and the other purely pastoral. This situation did not obtain in the Southern Atbai sequence. The data from, say, Period 3 suggest that while the main villages in the optimal zones may have been specialised purely as cultivators, those in the marginal and at the edge of the tertiary agricultural zones were apparently practicing a mixed economy, with an emphasis on pastoralism.

Another discrepancy concerns the correlation between the specialised populations and their ecological setting. The model postulated that pastoralists always gravitate towards the marginal zones while agriculturalists inhabit the more optimal ones. Until Period 4, the correlation actually holds well: the boundary between agricultural and pastoral populations runs, more or less, along the boundary between primary and secondary optimal zones,on the one hand, and the tertiary optimal and marginal ones on the other. The pattern, however, breaks down with the appearance of the Hagiz nomads in Period 4. They occupied not only the marginal lands, but the most optimal, as well. Zones were apparently no longer defined as optimal or marginal on the basis of ecological potential. Apparently, the entire Southern Atbai was transformed into a politically marginal zone, while the previous hinterlands in the central Sudan and the northern Ethiopian highlands were promoted to political heartlands. All this took place despite the fact that the actual environment remained much the same. In this light, Bates' comment on Near Eastern conditions applies equally well to the Southern Atbai. As he points out (1971: 109),"...the state, by interfering in [peasant-nomad] power relations...is often a more critical factor in determining land use relations than the local ecology."

In sum, as far as nomadism in the Southern Atbai is concerned, the M/V model fits the data better than the Ecological model. To test these models further, and to begin testing the Military Mobility one, however, it is necessary to step back and look at developments on a larger geographical scale. By Period 4 the scale of developments had become so large that the present perspective, including only the Southern Atbai region, becomes insufficient for further analyses. Thus, in the following chapter, the development of nomadism will be examined at the scale of Northeast Africa as a whole.

CHAPTER VIII

NOMADS IN ANCIENT NORTHEAST AFRICA

Introduction

Two major hurdles face the task of finding nomads in the archaeological record of Northeast Africa. First, sites of nomads, by their very insubstantial nature, are easily missed or ignored. Further, most archaeological work in Northeast Africa has been carried out in the major river valleys where most of the sites worth excavating are located: the hinterlands, where the nomads are most likely to be found, are virtually unexplored. Hence, nomads are without a doubt underrepresented in the archaeological sequence of Northeast Africa. The second hurdle is the varying definitions of nomadism: often the term is used simply to designate pastoralists. Hence, within the sequence there are apt to be sites and cultures referred to as nomadic which under the stricter definitions presented in Chapter 1 could not be identified as such.

The hurdles are not insurmountable. Although nomadic sites are easily missed, their burials often are not. Since a great deal of archaeology in Northeast Africa is focused on excavation of graves, the problem of site invisibility is partially compensated. Also, ancient texts often report nomads and their location. Thus, some nomads can be identified in the ancient setting even without their sites having been archaeologically discovered. The texts also serve to inform about hinterland areas which may be otherwise unexplored. As far as the precise definitions of nomadism are concerned, many different lines of evidence can be used to determine at least whether a group of sites represents a predominantly pastoral or predominantly agricultural population. Since intensive pastoralism requires mobility (see for example Cribb 1984) the duration of occupation at the various known sites can be used as an indicator of subsistence strategy. Also, since nomadism, by definition, requires a predominantly livestock oriented

economy, faunal, floral and various artefactual remains can serve to separate true nomads from mixed economy and agricultural populations. In addition various of the approaches presented in Chapter 2 can be used to identify nomads.

Some of the ancient nomads of Northeast Africa can be thus identified in the known archaeological sequence. Sites and cultures can be assigned with some certainty to predominantly pastoral or agricultural categories. Under favourable circumstances, even agro-pastoral populations can be singled out. The problem which remains is the gaps in archaeological coverage and the textual records: for some periods and certain regions there is simply no information available.

Be that as it may, large parts of the sequence remain known. And within those a fair number of nomadic societies can be identified. Thus, even though the sequence is incomplete, it is still possible to investigate the development of the known cases of nomadism: even an incomplete sequence can serve to negate some of the explanatory models and to support others.

To this end the known archaeological sequence of Northeast Africa is presented--very briefly--in the rest of this Chapter. Particular attention is paid to identifying and distinguishing nomadism from other forms of adaptation. Also, something of the cultural, environmental, and political background , in other words those aspects which are relevant to a testing of the three models, is described for each stage of the sequence. The sequence covers the period from ca. 4500 BC to AD 600: that is the time between the appearance of domesticated animals in the archaeological sequence of central Sudan, and the introduction of Christianity in many regions of Northeast Africa. The latter is simply a convenient arbitrary point to end the sequence.

The more than five millenia between 4500 BC-AD 600 are divided, for the purpose of description, into thirteen Phases (Figure 8.1). Each Phase lasts between 250 and 500 years. The boundaries between the Phases correlate with major cultural changes in one or several regions of Northeast Africa. As shall be seen in the Phase by Phase descriptions, more often than not there was concomitant culture change in several regions at more or less the same time: a pattern which highlights the interdependence of the ancient Northeast African cultures.

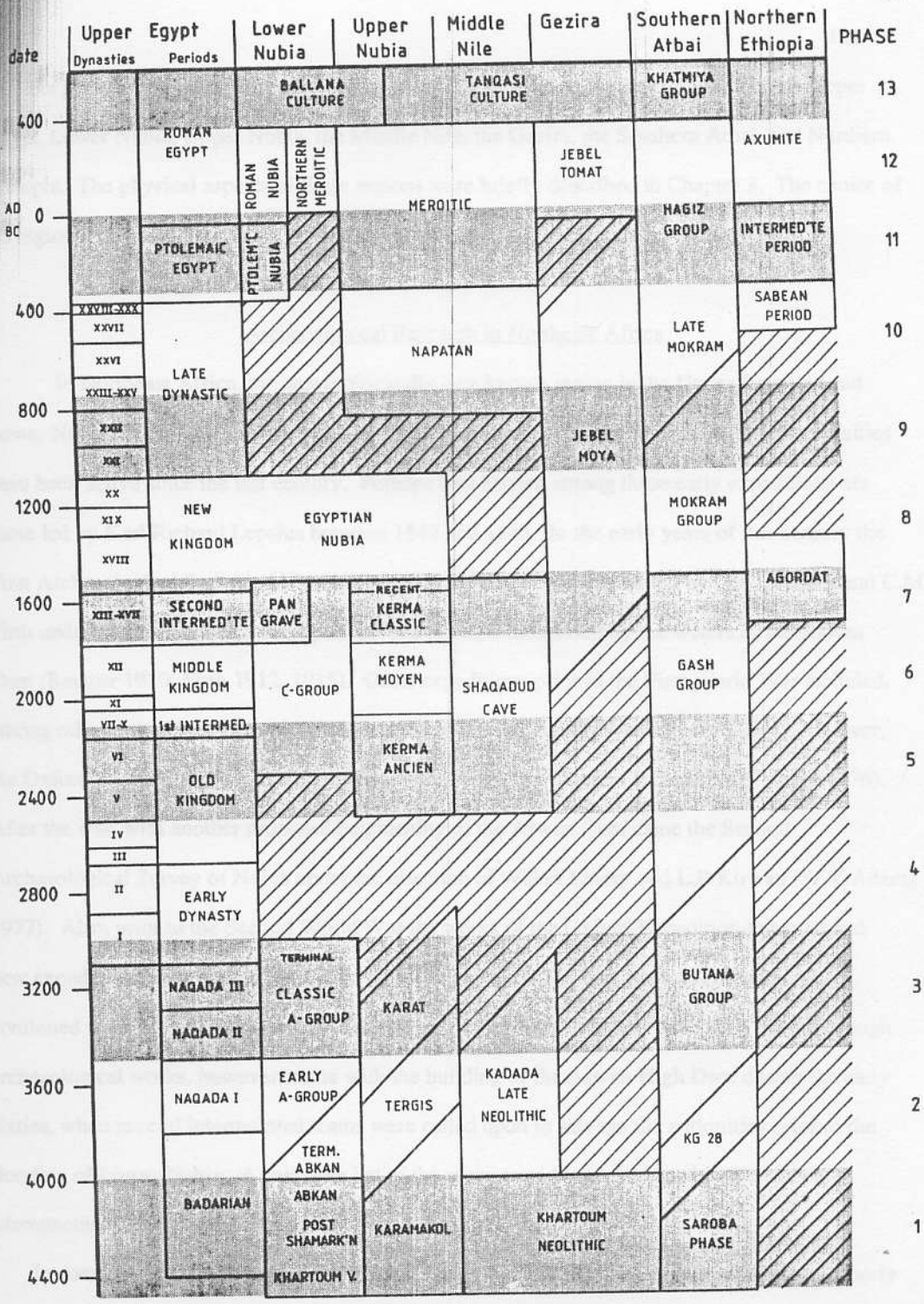

Figure 8.1. The Northeast African Archaeological Sequences; alternate shading highlights the thirteen Phases; hachures mark gaps in sequence.

For present purposes, Northeast Africa is divided into seven regions. These include Upper Egypt, Lower Nubia, Upper Nubia, the Middle Nile, the Gezira, the Southern Atbai, and Northern Ethiopia. The physical aspects of these regions were briefly described in Chapter 3. The choice of the regions has been dictated by the history of archaeological research in Northeast Africa.

Archaeological Research in Northeast Africa

In Northeast Africa, the archaeologically best known region is the Upper Egyptian and Lower Nubian Nile Valley (Figure 8.2). In both areas archaeologists and collectors of antiquities have been active since the last century. Perhaps best known among these early expeditions are those led by Karl Richard Lepsius between 1842 and 1845. In the early years of this century the First Archaeological Survey of Nubia, comprising several expeditions led by G.A. Reisner and C.M. Firth undertook an extensive survey to salvage remains threatened by the waters of the Aswan Dam (Reisner 1910; Firth 1912, 1915). Other expeditions prior to the First World War included, among others, the University of Pennsylvania Expedition led by Woolley and Randall-MacIver, the Oxford Expedition led by F.L. Griffith, and the Ernst von Sieglin Expedition (Trigger 1976). After the war, with another proposed heightening of the Aswan Dam came the Second Archaeological Survey of Nubia under the direction of Walter Emery and L.P.Kirwan (W.Y.Adams 1977). Also, prior to the Second World War the works of the Oxford Expedition resumed and new expeditions were carried out by the Egypt Exploration Society. Several researchers continued work in the area after 1945 (see Trigger 1976; W.Y.Adams 1977). The most thorough archaeological works, however, came with the building of the Aswan High Dam during the early sixties, when several international teams were called upon to salvage the antiquities prior to the flooding of Lower Nubia. A complete list of the many expeditions involved in the Nubian Monuments Campaign is provided by W.Y. Adams (1977).

In comparison to the Upper Egyptian and Lower Nubian Nile Valley, Upper Nubia is poorly explored. Intensive archaeological work there has been more or less confined to three small areas; around Kerma, Napata and in the Dongola reach (Reisner 1918, 1923; Bonnet et al.

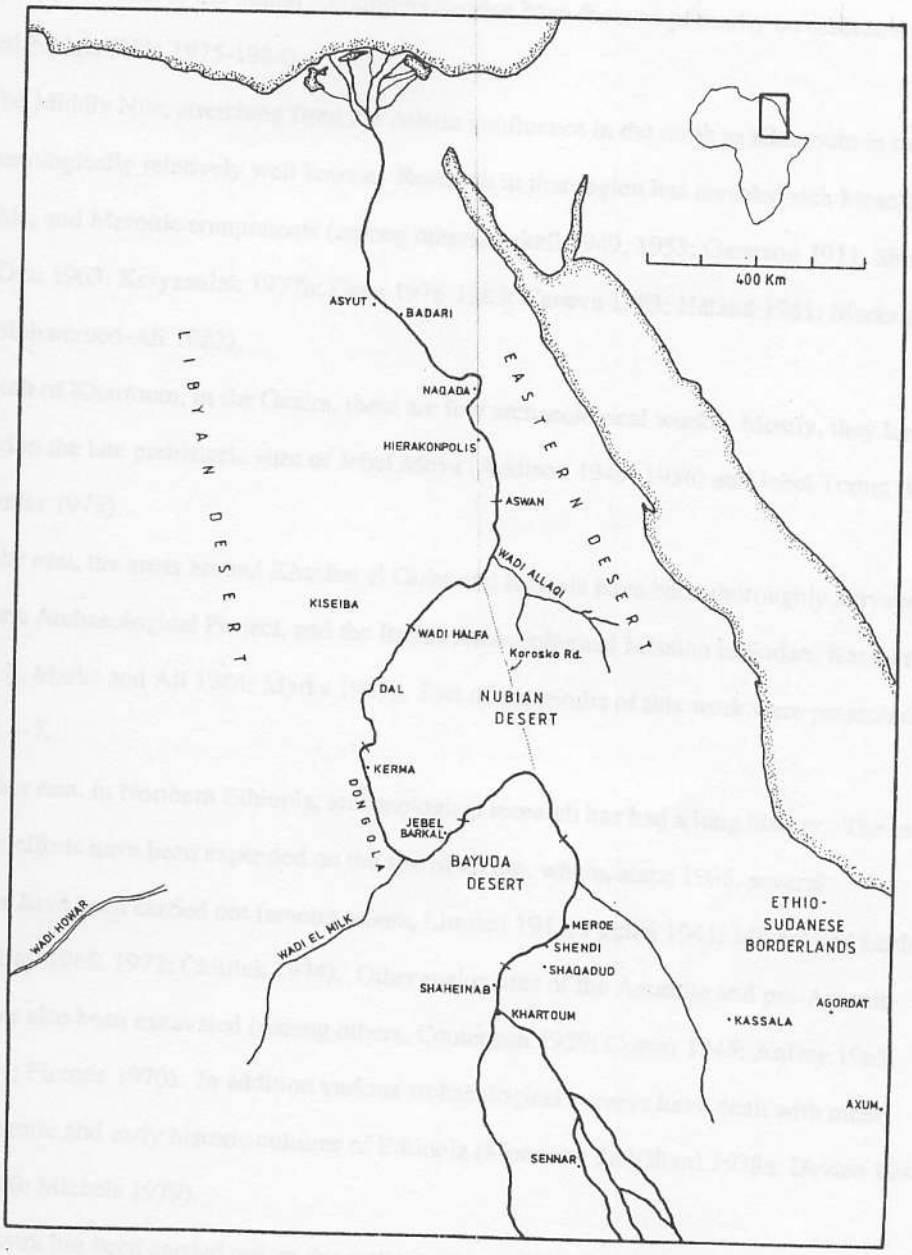

Figure 8.2. Map of Northeast Africa showing important place names mentioned in text; see also figure 3.1.

1982-1986; Shiner 1971a). Surveys to the south of Dal Cataract, carried out by the French Archaeological Unit of the Sudan Antiquities Service have focused primarily on cemeteries and isolated burials (Vila 1975-1984).

The Middle Nile, stretching from the Atbara confluence in the north to Khartoum in the south, is archaeologically relatively well known. Research in that region has revealed rich Mesolithic, Neolithic, and Meroitic components (among others, Arkell 1949, 1953; Garstang 1911; Shinnie 1967; Otto 1963; Krzyzaniak 1977b; Geus 1976-1982; Caneva 1983; Håland 1981; Marks et al. 1985; Mohammed-Ali 1982).

South of Khartoum, in the Gezira, there are few archaeological works. Mostly, they have been confined to the late prehistoric sites of Jebel Moya (Addison 1949, 1956) and Jebel Tomat (Clark and Stemler 1975).

In the east, the areas around Khashm el Girba and Kassala have been thoroughly surveyed by the Butana Archaeological Project, and the Italian Archaeological Mission in Sudan, Kassala (Fattovich, Marks and Ali 1984; Marks 1987). Part of the results of this work were presented in Chapters 4-7.

Farther east, in Northern Ethiopia, archaeological research has had a long history. The most ambitious efforts have been expended on the site of Axum, where, since 1906, several campaigns have been carried out (among others, Littman 1913; Puglisi 1941; Mikael and Leclant 1955; Anfray 1965, 1972; Chittick 1974). Other major sites of the Axumite and pre-Axumite Period have also been excavated (among others, Contenson 1959; Cossar 1945; Anfray 1963, 1967, 1974; Pirenne 1970). In addition various archaeological surveys have dealt with other later prehistoric and early historic cultures of Ethiopia (Monneret de Villard 1938a; Davico 1946; Anfray 1970; Michels 1979).

Less work has been carried out on the earlier periods of Ethiopian late prehistory. Early Holocene microlithic and macrolithic industries have been recorded in several localities (Clark 1970; Phillipson 1977; Dombrowski 1972), but few ceramic bearing occupations earlier than the pre-Axumite are known (Arkell 1954; Tringali 1965; Phillipson 1977).

In other regions of Northeast Africa, some work has been carried out on late prehistoric remains in the Western Desert of Egypt and the Lybian Desert of the Sudan (Mohammed-Ali 1982; Richter 1984; Banks 1984; Kuper 1981; Arkell 1972; Connor 1984; Wendorf, Schild and Close 1984). Other important regions, notably the Northern and Central Atbai, the Nubian Desert,the eastern half of the Butana grasslands, and the areas west of the Sudanese Middle Nile remain virtually unexplored.

In the rest of this chapter the various regional culture sequences of Northeast Africa are presented. The description proceeds Phase by Phase, highlighting those archaeological aspects relevant to the development of nomadism.

Phase 1: ca. 4500-4000 BC

There are few archaeological remains from Northeast Africa dating to this Phase. Mesolithic and Neolithic adaptations are represented: domesticated plants and animals from sites of this Phase are found only in Upper Egypt and the Middle Nile region.

Presently, there are a few Badarian sites known from the area of Asyut which date between 4400-4000 BC (Hassan 1985). In other areas of Upper Egypt there is an apparent discontinuity in occupation between the 7th and early 5th millenia BC (Hoffman 1982). The Badarian remains include evidence for cereal cultivation, cattle and small livestock husbandry, hunting, gathering, fishing and fowling (Brunton and Caton-Thompson 1928; Brunton 1932, 1937, 1947; Mond and Myers 1937; Kaiser 1961; Hays 1976; Fairservice 1972). Settlements occur both on the edge of the alluvium and on bordering terraces: different seasonal activities may have been carried out in different zones (Fattovich 1984). Overall, a mixed economy adaptive strategy, including the exploitation of domesticated plants and animals, is indicated for the Badaraian.

In the Middle Nile, the Khartoum Neolithic is represented by over thirty sites (cf. e.g. Håland 1981, Figure 2), many of which are dated to between 4500-3500 BC (Marks et al. 1985; Håland 1981). Base camps and short term settlements seem to be represented. Among the former, such sites as Geili (Caneva 1985 a,b), Esh Shaheinab (Arkell 1953), and Kadero I (Håland 1981;

Krzyzaniak 1977b) are located on higher ground and have in situ deposits to over 50 cm of depth. They are between 1 and 4 hectares in area (Mohammed-Ali 1982; Arkell 1953; Håland 1981; Marks et al. 1985), and often contain many burials; an indication that they may have been occupied over a long term. Other, smaller sites, such as Zakiab and Umm Direiwa II are only surficial and, located closer to the river, may have been short term camps (Håland 1981). Some large Khartoum Neolithic sites with in situ materials, such as Shaqadud (Marks et al. 1985), are found far away from the Nile.

Many of the sites closer to the Nile have fish remains and artefacts such as shell hooks and bone harpoons (Håland 1981; Arkell 1953), which sugest exploitation of riverine resources. Remains of hunted game, such as giraffe, hippo and buffalo are associated with several sites (e.g. Arkell 1953; Håland 1981). Domesticated cattle and small livestock are associated with a few sites, but in varying frequencies: Esh Shaheinab, for example, has only a few percent domesticated animals in its faunal inventory (Arkell 1953; Peters 1986), while Kadero I contains few bones other than cattle (Håland 1981; Krzyzaniak 1977b). Other sites, such as Shaqadud (Marks et al. 1985) contain no remains of domesticated animals. At most sites grinding stones are found. Sorghum seed imprints have been recovered at Kadero (Håland 1981). The data suggest that the Khartoum Neolithic population practiced a broad based mixed economy subsistence strategy.

In Lower Nubia of Phase 1, three archaeological industries are reported, all of which appear to have been at a mesolithic stage of development. The Post-Shamarkian is known from only two sites, both radiocarbon dated to this Phase (Nordström 1972). Neither has associated faunal remains. The sites are located on the west bank of the Nile in the vicinity of Wadi Halfa. They are small (ca. 1 hectare) and contain lithics, pottery and grinding stones (Schild et al. 1968; Nordström 1972). The sites are deflated, but discrete concentrations of artefacts are visible (Nordström 1972).

The second of the Lower Nubian Phase 1 groups is the Khartoum Variant (Shiner 1968a) represented by eight sites located in the vicinity of Wadi Halfa. They are not securely dated but

seem to belong in the fifth millenium BC (Nordström 1972). They contain lithics, grinding stones and pottery. One of the sites (CPE 2016), with in situ deposits, contained a mud plaster floor and quantities of burnt rock (Shiner 1968 a). This floor, as well as the presence of deep deposits, suggests a fairly long term occupation. Most sites are as small as ca. 0.1 hectare in area (Shiner 1968a; Nordström 1972). The largest site, DIW-5, is only 0.4 hectares in area. The reports suggest that the sites have fairly dense surface artefact distributions (Shiner 1968 a). Two of the Khartoum Variant sites, CPE 626 and 628, are located along a wadi about 15 km west of the Nile. Both are in all respects similar to the small Khartoum Variant sites along the Nile (ibid.). Bones of fish and some molluscs are the only faunal remains associated with the riverside sites.

The third Group, the Abkan, is represented by nearly twenty sites, also in the vicinity of Wadi Halfa. One sample suggests a date of late fifth millenim BC (Nordström 1972). The sites are located along the Nile in areas suitable for positioning fish traps (Shiner 1968 b). A possible rock drawing of a fish-trap (Myers 1958), and large numbers of fish remains are associated with these sites (e.g. as at site 5-3-25, Adams and Nordström 1963). A variety of hunted animals, including gazelle, equids, large bovids and geese, as well as the presence of grinding stones on most sites indicates a broad spectrum adaptation (Nordström 1972; Shiner 1968 b).

Some of the Abkan sites, such as Myers' (1960) Abka IX, have in situ deposits (also Carlson 1966). Another site, 6-G-25, contained numerous fragments of burnt, well oxidised clay, which may originally have been parts of huts or ovens (Nordström 1972). A few sites, set close to the edge of the river and thus subject to periodic flooding, have been interpreted as dry season fishing camps (Nordström 1972). All Abkan sites are relatively small, the largest stretching 200-400 m along the Nile (CPE 629 and 604, Shiner 1968 b). The smallest, such as CPE 1029, are only 10-15 m in diameter (ibid.). The evidence indicates the posibility that base camps as well as ephemeral short term occupations were present. Overall, the scanty data suggest a broad based mixed economy subsisstence strategy, without the use of domesticated plants and animals were apparently absent in the Phase 1 occupation of Lower Nubia.

The seven sites of the Karamakol Group, found in the Dongola Reach of Upper Nubia, have no associated faunal remains nor are they securely dated (Hays 1971a). A fifth millenium age seems reasonable on the basis of ceramic affinities with Middle Nile and Lower Nubian assemblages (Hays 1971a; Shiner 1971a). All sites are small, with dense concentrations of artefacts. Three of the sites had only pottery on them. The rest contained a full complement of artefacts including pottery, lithics and grinding stones (Hays 1971a).

Another of the Phase 1 mesolithic archaeological groups is the Malawiya Group of the Southern Atbai, with two radiocarbon dates which are calibrated to between 4500-4400 BC (Marks and Sadr in press). Of the ten sites known, most are very small and surficial, but some (such as SEG 11 and 42) are about one hectare in area, and have at least 30 cm of in situ deposits. This, and a fairly dense surface artefact distribution suggests a long term occupation. These latter sites, generally located on higher ground, may have been base camps while the smaller sites, many of which are located on lower ground along drainages, may only have been seasonally occupied (Sadr 1986). Grinding stones, pottery and lithics are present on all sites. The faunal remains suggest a broad spectrum adaptation with the hunting of small antelope, dik dik, oribi, and duiker, as well as larger animals such as warthog, hartebeeste and topi (Peters 1986). Riverine resources were apparently not exploited (Fattovich, Marks and Ali 1984).

In Northern Ethiopia there are few remains which might date to this Phase. Both microlithic and macrolithic industries are known, but they are not securely dated. There is little information about subsistence strategies and settlement patterns (Phillipson 1977; Clark 1970; Fattovich 1984d).

Overall, the scanty evidence indicates that in most regions of Northeast Africa during Phase 1, populations practiced a broad spectrum adaptation, which in some cases included cultivation of domesticated plants, and herding of domesticated animals. Settlement patterns generally included small, semi-permanent or permanent base camp occupations, with related short term satellite camps at which seasonally specific tasks may have been carried out. The impression gained is of a fairly mobile population practicing a household level mixed economy, with, at best,

specialisation in food procurement and production at the intra-site scale. Only in the Khartoum Neolithic sites, with the predominance of cattle at Kadero, is there the barest hint of inter-site specialisation in subsistence activity.

Phase 2: ca. 4000-3500 BC

The Naqada I (Amratian) sites of Upper Egypt (dated to ca. 3800-3500 BC: Hoffman 1982; Hassan 1985) represent a further development of the base/satellite camp settlement patterns (Hoffman 1982). Large sites located at the edge of the floodplain, such as Armant (Mond and Myers 1937), and the two large settlements at Hierakonpolis (Hoffman 1982) must have been the main population centers. Architectural remains at these sites include semi-subterranean and rectilinear houses (Hoffman 1982). The Hierakonpolis sites are internally diversified, and were surrounded by smaller, more specialised satellite camps. These may have acted as seasonally specific centers for food procurement (notably herding and dry farming: Hoffman 1982). Some of the satellite sites were also specialised production centers of pottery, stone vessels and beads (Butzer 1959; Hoffman 1982; Fattovich 1984). One small site, L.3, contained several round hut structures: these may have been occupied by a more pastorally oriented section (Hoffman 1982). Large, rich Amratian tombs are found at Hierakonpolis; they indicate the emergence of social stratification (Hoffman 1982).

In Lower Nubia the Post-Shamarkian and Khartoum Variant industries do not seem to have survived into this Phase (Nordström 1972; Shiner 1968 a; Schild et al 1968). Instead, sites of the Early A-Group are found in the northern parts of Lower Nubia, between Kubania and Sayala (Nordström 1972). Ceramic affinities to Naqada I and II, as well as to the Terminal Abkan, date the early A-Group to Phase 2 and early Phase 3. The Early A-Group is known from eight cemeteries and one habitation site (Trigger 1965; Nordström 1972). Trigger (1965) interprets the single known habitation site as a semi-permanent settlement. The presence of burials also indicates low population mobility. Faunal remains are rare, but at Khor Bahan there were bones of domesticated animals (Reisner 1910).

Farther south, along the Second Cataract, the Terminal Abkan is known from only four sites (Nordström 1972). Two radiocarbon dates (ibid.) place the occupations within Phase 2 and early Phase 3. As far as can be judged, adaptations remained comparable to those of the Developed Abkan industry of Phase 1.

In the Dongola reach of Upper Nubia, the Tergis Industry, although undated, seems, on artefactual grounds, to follow upon the Karamakol Industry of the previous Phase (Hays 1971 b). Lack of identifiable faunal remains in the five known Tergis sites makes it impossible to document a subsistence strategy. The sites are somewhat larger than those of the Karamakol, and have quite dense concentrations of surface artefacts: two sites (N 3 and N 55) contained some in situ materials (ibid.). Pottery, lithics and grinding stones were common. Given the apparent similarities to the Karamakol, one might assume that there was a basic continuity in the Mesolithic adaptive strategies. The large number of grinding stones on the Tergis Group sites (Hays 1971 b) may indicate an increased reliance on plant foods. Stone rings may indicate some cultivation.

The situation in the Middle Nile continued as before, with occupation at the Khartoum Neolithic sites as discussed in the last section.

Elsewhere, in the Southern Atbai, as discussed in Chapter 4, the settlements of the Butana Group were massively nucleated and long-lived; satellite sites may have been occupied as well. At this time, the subsistence strategy of the population was based on the broad spectrum mesolithic pattern of hunting/gathering/fishing. In view of the permanence of occupation and degree of nucleation, some form of cultivation may have been practiced.

Little is known of the Phase 2 situation in Northern Ethiopia.

More is known from the western Sudan, where possible Phase 2 sites have been found along the Wadi Howar (Mohammed-Ali 1982; Richter 1984; Kuper 1986). The sites there are not securely dated, but on artefactual grounds seem to have been occupied in the fourth and third millenia BC (ibid.). They may date to the Neolithic Humid Phase (see Chapter 3). Some of the sites, although small, have up to 30 cm depth of deposits (UMB-4, Mohammed Ali 1982). Others

are widely scattered. In one case a dune site is composed of more than a thousand small artefact concentrations covering a square kilometer (Richter 1984). Many of the concentrations are remnants of former pits, which in one case (84/13-5) contained artefacts to a depth of 120 cm (Richter 1984). Pottery, lithics and grinding implements were common (ibid.). The fauna of the Wadi Howar sites include bovids, hippo and species in the size range of caprovids and equids (Richter 1984; Mohammed-Ali 1982). Catfish and river shells are also present. Stones of Ziziphus indicate some reliance on plant foods (Richter 1984).

A mixed economy subsistence with reliance on domsticated animals is also documented from areas farther west, in sites of the Tenerian Cultre (A.B.Smith 1980). There, the populations of earlier times had lived in lakeside settlements, subsisting on a broad range of hunting, gathering, and fishing. With the acquisition of domesticated cattle and perhaps domesticated plants, a semi-sedentary life continued around the same Sharan Lakes. At Agorass-in-Tast numerous large and small rock circles--which have been interpreted as hut bases and the bases for grain bins (Clark et al. 1973)--as well as the high density of artefacts (including grinding stones), and the presence of some in situ deposits below the site surface suggest a semi-permanent base camp occupation.

Overall, the data suggest that in most areas of Northeast Africa there was little change in subsistence strategies during Phase 2. In spite of some cultural changes, most populations continued practicing a mixed subsitence economy. As far as can be judged, the semi-permanent base camp occupations and temporary satellite camps seem to have remained the basis of the settlement patterns. Only in Upper Egypt was there a significant change. The Naqada I burials indicate some social stratification. Craft specialisation was well under way. There was greater intra- and inter-site functional differentiation. Different economic sectors may have tended towards specialisation as either agriculturalists or pastoralists. Possibly, an agro-pastoral adaptation was beginning to emerge in Naqada II society.

Phase 3: ca. 3500-3000 BC

In Egypt, developments sped up considerably during Phase 3. Included in this Phase are the Late Predynastic (Naqada II, or Gerzean) and the Terminal Predynastic (Naqada III, or Semainean) Periods, as well as the first century of Dynastic Egypt (Hoffman 1982; Hassan 1985). Fattovich (1984) classifies the Naqada II society as a chiefdom, while Trigger (1965) speaks already of state society. Settlements during Naqada II became focused on the edge of the river alluvium (Hoffman 1982). Agricultural villages, as at Armant, Abydos, and Mahasna (Mond and Myers 1937; Peet 1914; Garstang 1903), and towns such as Hierakonpolis, and the South Town at Zawaydah (Fairservice 1972; Hoffman 1982; Butzer 1959; Petrie 1896) were occupied in this Phase. There appear to have been some semi-permanent occupations at sites located some distance from the river (e.g. Hammamiya , Brunton and Caton-Thompson 1928; Trigger 1965), but in the vicinity of Hierakonpolis there was a noticable shift away from desert edge settlements, into more nucleated sites in the agricultural zone of the Nile Valley (Hoffman 1982).

Large and rich tumulus burials at the towns attest to the increasing stratification of society (ibid.). Grain Kilns found at Abydos and Mahasna indicate the importance of agriculture (Peet 1914; Garstang 1903), while the specialised production centers at such sites as Nag'Hammadi (Vignard 1920),Wadi el Sheikh (Morgan 1897), and others (Butzer 1974), and probable markets as at the South Town (Petrie 1896; Baumgartel 1970; Fattovich 1984) give a good indication of the levels of commercial complexity achieved in Naqada II times. The Naqada II culture's trade contact went as far as the Eastern and Western Deserts of Egypt, Nubia and even the Near East (Hoffman 1982; Krzyzaniak 1977a ; Fattovich 1984).

The population shift towards agricultural villages in the alluvium continued, indeed increased, in Naqada III times (Hoffman 1982). Irrigation agriculture appeared (Butzer 1976). Wealth increased throughout all strata of society (Hoffman 1982). At Nekhen and site L.25c(1) palace and temple structures have been provisionally identified (ibid.). Thus, Naqada III, with its capital at Hierakonpolis can be described as a state level society (Kantor 1944; Arkell and Ucko

1965; Fattovich 1984). By 3100 BC the state encompassed all of Egypt, and so began her long dynastic history (Hassan 1985; Hoffman 1982; Wilson 1951).

The effects of Egypt's meteoric rise was also felt in Nubia. In Lower Nubia the Classic A-Group culture replaced the Abkan. Remains of the A-Group are found along the Nile from Kubania to Melik en Nasir, ca. 100 kilometers south of Wadi Halfa (Nordström 1972). Radiocarbon dates and diagnostic Egyptian artefacts (Nordstrom 1972) date the classic and terminal A-Group occupations to Phase 3 and early Phase 4. A-Group populations lived in small semi-permanent settlements in the most fertile stretches of the Nile Valley (Trigger 1965; Nordström 1972). Most of the sites are deflated, but some, such as the sites near Saras, have in situ materials (Mills and Nordström 1966). The Terminal A-Group site AFH-1 (Afiah) had stone house foundations (H.S.Smith 1962). The existence of large A-Group cemeteries--several containing double burials--bespeak a relatively sedentary population. There are, as well, several small ephemeral A-Group satellite camps (Trigger 1965). Only in the terminal A-Group is there any evidence for social stratification (W.Y. Adams 1977; Trigger 1976).

The location of the A-Group settlements, the finds of sickle blades, numerous grinders, as well as macrobotanical remains of wheat, barley and leguminous plants (Lal 1967; Nordström 1972) suggest a population heavily involved in agriculture. Hunting, gathering and fishing continued to be common activities as well. Piotrovsky (1967), has argued that the A-Group population was nomadic and fully pastoral. This hypothesis, based on poorly documented arguments concerning the site of Khor Daud, is not generally accepted (Nordström 1972; W.Y. Adams 1977). Indeed, remains of domesticated animals are rare on A-Group sites: aside from the very few bones of domesticated animals found in A-Group contexts, the only good evidence for the presence of cattle comes in the form of ox-hides and dung tempered pottery (Nordström 1972). Whether the A-Group contained a pastoral economic sector remains an open question (ibid.). It has been suggested, however, that the A-Group obtained its cattle and their products from other pastoralists (Nordstrom 1972). The presence of Red Sea shells in A-Group sites has been interpreted to represent trade with specialised pastoralists east of the Nile (Hofmann 1967). The

Khor Daud site has been interpreted as a bartering market for the exchange of the products of Nubia and Egypt (Nordström 1972). Its location near the mouth of Wadi Allaqi--the gateway to the Eastern Desert--in one of the richest A-Group locales, led Nordström to the conclusion that the key to the A-Group culture's prosperity lay in its role as middleman in the cattle trade between the Eastern Desert nomads and the population of Egypt (1972). Unfortunately, the existence of a nomadic pastoralist population in the Eastern Desert of Phase 3 cannot be substantiated either archaeologically or textually.

Nevertheless, it is known that the A-Group population was heavily involved in trade with Egypt (Nordström 1972). Records indicate that Egypt, during the First Dynasty, imported ebony and ivory from Nubia (Säve-Söderbergh 1941), in return for which the Nubians received principally beer and wine (transported in Egyptian necked jars found in A-Group sites), a well as copper, other metals, and stone vessels (W.Y. Adams 1977). Since settlement patterns and faunal remains indicate that neither the Naqada III population nor the A-Group were strongly oriented towards pastoralism, it might be reasonable to suppose that they received some livestock through trade with populations outside the Upper Egyptian and Lower Nubian Nile Valley.

During Phase 3, two distinct populations, one in the Dongola Reach (Marks and Ferring 1971) and the other in the Kiseiba Plateau of the Western Desert (Connor 1984), may have been predominantly pastoralist. On the Kiseiba Plateau, Connor (1984) found a number of Late Neolithic localities, dating predominantly to the late fourth millenium BC, which were probably the seasonal camps of mobile pastoralists. The Late Neolithic occupations of these marginal lands far exceeded those of the Middle Neolithic period (Connor 1984), and were considerably more dispersed and ephemeral (Banks 1984). It is difficult to say whether these ephemeral occupations represent those of true nomads or only the herding sector of a village based mixed economy population. No semi-permanent or permanent settlements related to the ephemeral sites have been found, as yet (Connor 1984). The ceramics of the Kiseiba herders are unrelated to Phase 3 populations of the Nile Valley (Connor 1984), but Banks (1984) notes some similarities to the ceramics of the Abkan Industry. If the absence of semi-permanent base settlements is not

merely an artefact of insufficient coverage, there is good reason to believe that the Kiseiba population formed elements of a truly nomadic society.

Another predominantly pastoral group is found in the Dongola reach of Upper Nubia. The ceramics of the Karat Group suggest a population contemporaneous with the A-Group (Marks and Ferring 1971). There are no faunal remains associated with the 25 Karat Group sites. However, on the basis of the small, low density sites, the small lightweight pottery of the Karat, rarity of grinding stones, the associated features (large hearths situated so as to provide a smoke screen against insects), and site locations in only those areas where grazing was available, it has been suggested that the sites were occupied in the dry season by goat herders (Marks and Ferring 1971). Presumably, their seasonal migratory rounds took them south and west of the river during the wet season (ibid.).

As with the Kiseiba herders, it is not certain whether the Karat sites represent the herding sector of a mixed economy society, or the remains of actual nomads. There have been no surveys away from the Nile which could document the rest of the Karat Group's settlement pattern. It is instructive, however, that there is no indication of Karat Group semi-permanent base settlements in the Nile Valley. This situation, in contrast to all other earlier industries of the area, suggests that the focus of the Karat Group occupation and subsistence strategy lay in the marginal lands beyond the Nile. Thus, a strong reliance on pastoralism seems to be a reasonable assumption.

Elsewhere, in the Middle Nile drastic changes were occuring during Phase 3. The terminal dates for the Khartoum Neolithic occupations fall around 4000 BC (Håland 1981, 1986; Marks et al. 1985). Thereafter, the only known occupations in the Middle Nile Valley are found at Kadada, in the vicinity of Shendi. Here, several dates fall within the 4th millenium BC (Geus 1986). There was , thus, a sharp drop in the number of sites between Phases 2 and 3. The late Neolithic occurences at Kadada are mostly in the form of burials, althoug some occupation areas seem also to be present (Geus 1976-1982; 1986). Faunal remains include molluscs, fish, reptiles, as well as wild and domesticated mammals (Gautier 1986). Thus, the broad range mixed economy subsistence strategy of the Khartoum Neolithic seems to have continued into the late Neolithic

period, but in view of the paucity of remains, little else can be said about the Kadada occupations.

In the Southern Atbai the mixed economy strategy of the Butana Group continued into this Phase, with village based populations engaged in hunting, gathering, fishing, and probably cultivation. To this was added exploitation of domestic animals, as the few remains of cattle and small livestock from the upper layers of the Butana Group sites suggest (Peters 1986).

Overall, during Phase 3 most regions of Northeast Africa experienced significant changes. The most remarkable was Egypt's transition to a state level society. The Lower Nubian A-Group expansion and increased specialisation as an agricultural and trading society appears to have been partially a result of developments in Egypt. At roughly the same time that the populations of Upper Egypt and Lower Nubia were becoming more agriculturally oriented, other populations in the Western Desert and Upper Nubia seem to have become more pastorally oriented. In the Middle Nile region there was an apparent drop in population density, but the scanty evidence suggests that there was little change in the basic neolithic style broad based mixed economy adaptation. Likewise, in the Southern Atbai a mixed economy strategy seems to have continued.

Phase 4: ca. 3000-2500 BC

This Phase is marked by a hiatus in occupation of all archaeologically known stretches of the Nile Valley south of Egypt's ancient border. Shortly after power in Egypt became centralised at the beginning of the Early Dynastic Period, the A-Group occupation of Lower Nubia ended abruptly (W.Y. Adams 1977; Nordström 1972; Trigger 1976). There are no artefacts of Egyptian manufacture in a terminal A-Group context which postdate the transition between Naqada III and the First Dynasty (Nordström 1972). The available radiocarbon dates (ibid.) support this date for the termination of the A-Group. For all intents and purposes, it appears that the Lower Nubian Nile Valley was abandoned by the A-Group. The only archaeological remains left in Lower Nubia of this Phase were the Old Kingdom Egyptian forts (Nordström 1972; Trigger 1976; W.Y. Adams 1977). It can only be speculated that the A-Group population took to the deserts bordering the Nile (Nordström 1972).

Upper Nubia appears to have been abandoned as well. In the Dongola reach there are no known archaeological occurences postdating the Karat Group. Elsewhere, in the Kerma area, with the possible exception of recently discovered A-Group-like materials (Bonnet personnal communication) there are no known remains predating 2500 BC, when the Kerma Ancien occupation began (Bonnet et al. 1982; Gratien 1978).

It is most unlikely that environmental factors induced the depopulation. The climatic reconstruction of Northeast Africa (Chapter 3, Figure 3.6) shows, for the early third millenium BC, the beginnings of a drying trend which eventually culminated in the Post-Neolithic Arid Phase. Even if the climate during Phase 3 was becoming rapidly drier, one would expect populations to flock into the river valleys, and not out of them.

The depopulation of the Nubian Nile Valley is most convincingly attributed to a change in the Egyptian foreign policy affecting trade relations to the south (Nordström 1972). Whereas in the previous Phase the Nubians were in trade relations with Egypt, after the Second Dynasty Egypt seems to have taken outright control of that trade (W.Y.Adams 1977; Trigger 1976). The new attitude of Egypt towards its southern neighbours can be seen in the relief at Jebel Sheikh Suleiman which probably dates to the Early Dynastic Period (Arkell 1950), and in the victory stela of Khasekhem at Hierakonpolis (Säve-Söderbergh 1941), both of which speak of Egyptian attacks into Lower Nubia (Nordström 1972). Evidence for the conquest is also found in the manning and operation of the copper mines and diorite quarries in Lower Nubia, especially at Toshka and Buhen, by the Egyptians themselves (W.Y.Adams 1977). It would seem that that which Egypt was prepared to trade for in the previous Phase, Egypt was only too willing to take by force in its Early Dynastic Period.

The effects of such a shift in Egyptian policy must have had a cataclysmic effect on the Nubians. Repeated raids, perhaps like Senefru's of the Fourth Dynasty, which according to the Palermo stone bagged him some 200,000 head of cattle (Breasted 1906), would have decimated the Nubians (W.Y. Adams 1977, Trigger 1976). Abandoning the Nile Valley (Egypt's principal route of penetration into Nubia) may have been the only option left.

Interestingly, however, it was not only the Nubian stretch of the Nile which appears to have been abandoned. There are no known archaeological remains in the Middle Nile Valley which postdate the Late Neolithic occupation at Kadada: not until the Meroitic times (first millenium BC) did populations return to that stretch of the Nile in any numbers (Marks et al. 1985). Even in the hinterlands of the Middle Nile, Shaqadud seems to have been abandoned until ca. 2600-2700 BC, when a late Neolithic occupation resumed (ibid.).

In the Southern Atbai, sometime during this Phase, the Butana Group populations appear to have abandoned the Atbara Valley; some may have gone east into the steppe, establishing the Gash Group settlements there (see Chapter 4). The change in the flow of the Gash River had something to do with the population shift in the Southern Atbai, but it alone cannot explain why the Atbara River, in places unaffected by the shift in the Gash River, should have been so completely abandoned. This change in settlement patterns at the start of the Gash Group occupation, mirrors the general Northeast African pattern of the depopulation of the major river valleys. Whether the same causal factors were at play, however, is impossible to say. Certainly it seems unlikely that Egypt's aggressive policies would affect areas this far south of her borders.

The prevalent hostilities, coupled with the large scale population shifts, makes the events of this Phase a prime candidate for the testing of the Military Mobility model for the origins of nomadism. Unfortunately, however, little is known of the conditions in the hinterlands of the Nile Valley during Phase 3: whether the populations turned to nomadism or not remains unknown. In the Southern Atbai, at any rate, the abandonment of the Atbara Valley did not result in nomadism: populations retained their traditional mixed economy adaptive strategies, albeit practicing them along a different drainage system.

Phase 5: ca. 2500-2100 BC

Towards the end of the Old Kingdom Period, populations began to resettle the Nubian Nile Valley. First, around 2600 BC, it was Upper Nubia which became repopulated by the Kerma Ancien culture, with its main settlements at Sai and Kerma (Gratien 1978; Bonnet et al. 1982).

According to Gratien (1978) the Kerma Ancien ceramics bear some resemblance to those of the A-Group. They are also similar to some of the examples from the Kadada Late Neolithic in the Middle Nile region (Geus 1979).

At Sai Island the Kerma Ancien occupation is extremely large, but has no depth of deposits (Gratien 1978). The presence of some sixty Kerma Ancien burials (Gratien 1978; Vercoutter 1958) suggests a long period of continuous or repeated occupation. It is possible that the inhabitants of Sai were quite mobile as Gratien (1978) suggests. At the site of Kerma, however, the population was apparently quite sedentary. The Kerma Ancien levels there show an impressive overlapping of postholes (Bonnet et al. 1982) indicating a long sequence of occupation. Grain bins, and a defensive wall around the Ancien settlement at Kerma (Bonnet et al. 1984,1986) indicate a sedentary population. The presence of sacrificed domestic animals and the ox-hides in the Ancien Burials at Kerma (Bonnet et al. 1982) suggest that pastoralism was of some importance. Some Kerma Ancien graves, as at Kadruka, are notably poorer than the Ancien graves at the site of Kerma (Bonnet et al. 1986). This suggests some level of status differentiation in Kerma Ancien society. Overall, a mixed economy, or perhaps even an agro-pastoral one seems to be indicated.

The reoccupation of Lower Nubia by the early C-Group populations, resembled the pattern in Upper Nubia. Bietak's (1968) stage Ia of the C-Group is dated, on the basis of Egyptian artefacts present, to the early part of the First Intermediate Period (ca. 2100 BC), but Bonnet (et al. 1982) argues for an earlier date on the basis of ceramic similarities between Kerma Ancien and the early C-Group.

The early C-Group remains suggest an economy partially reliant on pastoralism. Faunal remains from the site of Sayala included domesticated as well as wild mammals (Bietak 1986). Containing walls at that site suggest a possible corral (ibid.). Considering the near absence of grinding implements at the Early C-Group sites, however, Bietak (1986) suggests that agriculture was not an important aspect of their subsistence strategy. Nevertheless, the settlements of the early C-Group suggest a fairly sedentary population. At Aniba and Sayala (Bietak 1968, 1986),

stage Ia C-Group habitations include several hut circles, with postholes reinforced with basal rocks: facilities which might be taken to indicate at least a semi-permanent settlement. The relatively large early C-Group cemetery at Aniba N likewise suggests a fairly sedentary population.

The accounts of the Harkhuf expedition (Trigger 1965) shed further light on the conditions in Nubia during Phase 5. During the late Old Kingdom Period, specifically the Sixth Dynasty contemporary with the Kerma Ancien and C-Group Ia, the princes of Elephantine mounted numerous expeditions to Nubia and also to Punt (Trigger 1965). The biography of Harkhuf, inscribed at Kubbet-el-Hawa opposite Aswan, speaks of overland trade expeditions to the land of Yam, which Edel (1955) has convincingly shown to have been at Kerma. Significantly, the inscriptions speak of a military escort provided by the sovereign of Yam, assigned to protect the expedition on their way through the territories of other chieftains (Trigger 1965). These records indicate something about the social and political complexity of Nubia during Phase 5, and also about the relative importance of Kerma as a trading partner to Egypt.

Reisner's (1923) discovery of Sixth Dynasty stone vessels at Kerma provides the archaeological evidence for trade. Texts suggest that both the Kerma and C-Group cultures received honey, ointments, beer and wine, linen, copper and luxury goods from Egypt, in return for which cattle, sheep, goats, as well as ebony, ivory, incense, oils and panther skins were exported by the Nubians (Bietak 1986; Trigger 1965; W.Y. Adams 1977). Fattovich (1985) has shown the likelihood that Kerma, most notably in later Phases, was the middleman in the overland trade link between Punt and Egypt. Records show that trade between Egypt and Punt, both overland and by sea, began as early as the Sixth Dynasty, ca. 2300-2200 BC (Fattovich 1985).

In this Phase, settled village life continued in the Southern Atbai. The Gash Group settlements and economy were described in Chapter 4. Fattovich (1985) considers the main Gash Group sites of the Southern Atbai to have been the provincial centers of the Land of Punt. The Gash Group center, K1 (Mahal Teglinos), is thought to have been the gateway for Punt's overland

trade routes towards Egypt. Significantly, there are Kerma-like ceramic artefacts throughout the sequence at K1 (Fattovich, personnal communication). If the Southern Atbai of this Phase has been correctly identified as part of Punt, that would suggest that the eastern Sudan participated in the large scale Northeast African commercial networks, linking it to Egypt and Nubia.

The Middle Nile Valley was apparently bypassed in the cultural, economic and political developments which gripped Northeast Africa by the end of Phase 5. Occupation in the Nile Valley had apparently ceased after the Kadada Late Neolithic, but at Shaqadud, 50 km inland, the archaeological record indicates the beginning of a small post-Neolithic occupation (Marks et al. 1985). The Shaqadud post-Neolithic occupation was a complex one. Water managment features such as diversionary dams, pools and even containment walls built in the Shaqadud locality seem to date from the time of the cave occupation (Marks personnal communication). Around the Shaqadud canyon, there are a ring of ephemeral sites. If any of these date to this Phase, they may represent the camps of herders relying on Shaqadud for its water catchment. The arrangment could have been a prototype for the Meroitic hafir/temple complexes built in the same general area some 2000 years later. In the absence of adequate information, however, it is impossible to say if there were any nomads inhabiting the Butana grasslands at this time. The stratigraphy in Shaqadud cave--the site of the post-Neolithic occupation--suggests a long term occupation, but whether it was permanent or recurrent, is not clear. In any case, the faunal remains from the cave show a wide range of hunted animals, but very few domestic ones (Peters 1986). Macrobotanical remains suggest that Zizyphus, various grasses, and millet were exploited (Marks et al. 1985). The subsistence strategy of the cave occupants would thus seem to have been based on a relatively broad ranged mixed economy.

Overall, the data from Phase 5 of the Northeast African sequence fails to indicate the presence of any specialised nomadic populations. The early C-Group and Kerma Ancien sites and cemeteries in the Nile Valley do not resemble the remains of nomadic populations. And yet, their faunal inventories and the textual records of livestock trade between Nubia and Egypt suggest that pastoralism played a significant role in the adaptation of the Nubians. The situation is

unclear, principally because the information about the early C-Group and Kerma Ancien population comes from a handfull of sites, and then mostly from burials: perhaps additional field work will reveal the exact status of pastoralism in their economies. The possibility that livestock were obtained from more pastorally oriented populations in the hinterlands and then traded to Egypt cannot be excluded.

The Gash Group of the Southern Atbai, which apparently participated in the interaction spheres of Nubia and Egypt, was certainly not a nomadic population. Indeed, they were apparently not even predominantly pastoral in their economic orientation. During this Phase, a mixed economy remained in effect there. The same seems to apply to the hinterland populations of the Middle Nile region. But, again, the situation there is known from only one site. Some (cf. e.g., Håland 1986) have suggested that the absence of third and second millenium sites in the Middle Nile region reflects a change in the population's adaptation to pure nomadism. This, however, has not been documented in any way.

Phase 6: ca. 2100-1750 BC

Egypt, having regained its political stability in the Middle Kingdom Period, after an episode of political breakdown during the First Intermediate Period (ca. 2181-2133/2040 BC), embarked on a new round of vigorous trade relations with the cultures to the south (Säve Söderbergh 1941). During the Middle Kingdom Period (2133/2040-1786 BC), Egypt protected her trade interests in Nubia with a string of mighty forts built along the Nile (Emery 1965; W.Y. Adams 1977; Säve-Söderbergh 1941). The main source of commerce in Nubia was Kerma (W.Y. Adams 1977), which, by now, during its Kerma Moyen period, had grown to a sizeable mudbrick town with a strong politico-religious leadership which manifested itself in elaborate burials and the monumantal structures of the Deffufas (W.Y. Adams 1977; Bonnet etal. 1982, 1984, 1986; Gratien 1978).

In Lower Nubia, the Phase 6 C-Group population lived to a great extent under the control of Egypt and its military forts. The Lower Nubian copper and diorite mines continued to be

exploited by Egypt (W.Y. Adams 1977; Säve-Söderbergh 1941). On the basis of artefactual remains, however, it is clear that there were also strong trade ties between the C-Group and Egypt, as well as between the C-Group and Kerma culture (W.Y. Adams 1977; Bietak 1986). In the absence of settlement hierarchies, and only weak status differentiation in the Phase 6 C-Group graves, their social organisation appears to have remained at a relatively simple level (Trigger 1976). The C-Group population of this time lived a settled life in small villages along the Nile River (Trigger 1965). At sites such as Aniba single room circular structures and multi-roomed currvilinear ones have been excavated (Steindorff 1937). C-Group sites during this Phase were located in the most fertile stretches of the valley: areas which required irrigation for agriculture were left uninhabited (Trigger 1965).

The settlement patterns of the C-Group and Kerma cultures in this Phase bespeak a sedentary agricultural population. However, because of the preponderance of cattle art, livestock sacrifices and ox-hides in the burials, they are often assumed to have been predominantly pastoralist (Emery 1965; Arkell 1961). It is more likely that as W.Y.Adams (1977) put it, they aspired to be cattle owners. As the permanent settlements and their locations suggest, the valley dwellers themselves were certainly not intensively engaged in pastoralism. With additional work, it may come to light that the C-Group and Kerma cultures had pastoral sections inhabiting the immediate hinterlands of the Nile.

More likely, however, the ultimate and biggest supplier of all the pastoral products in circulation at this time were the nomads of the Eastern Desert. Although their archaeological remains are unknown, one can infer the presence of nomads in the Eastern Desert from Egyptian texts of the Twelfth Dynasty (the Semna Despatches, Smither 1945) which make several references to the Medjay desert dwellers living east of the Nile. Quite possibly, the valley dwellers were the actual owners of some of the herds in the hands of the desert nomads. The tomb drawings from Meir (Blackman 1914, 1915 a, 1915 b) dating to the Twelfth Dynasty show Egyptian cattle in the care of foreign, probably Medjay, herders.

Elsewhere, in the Southern Atbai, the later Gash Group occupations were composed of settled villages and dispersed semi-permanent settlements. Possibly, two economic sectors, a pastoral and an agricultural one, were operating side by side. The presence of Gash Group-like artefacts on the Agordat sites (Arkell 1954; Fattovich, personnal communication) suggests that a similar situation may have been in effect in parts of Eritrea.

In the Gezira region there was a large and long lived occupation at Jebel Moya. The site excavated in the early years of this century by the Wellcome Expedition, was over 10 ha. in area, and had a total depth of over three meters to its archaeological deposits (Addison 1949). Not only its size and depth, but also its setting at the base of a Jebel resembles the Gash and Mokram Group occupation at Mahal Teglinos (K 1), but the Jebel Moya material culture (Addison 1949) is quite distinct from that of the Southern Atbai.

The exact date for the Jebel Moya occupation is not clear. Addison (1949, 1956) thought it should date to about the first millenium BC, on the basis of Napatan and Meroitic artefacts found in burials. Two C14 dates from the site, however, reported by Clark and Stemler(1975), both gave an identical reading of 2250 ± 80 BC. Since, given the stratigraphy, the site must have been occupied for a very long time, Jebel Moya may actually span this and subsequent Phases. Although there are no data on the subsistence strategies of the Jebel Moya population, the obviously permanent village occupation at the site indicates a sedentary population, presumably practicing an agricultural or mixed economy. The presence of some Jebel Moya artefacts in the strata at K1 (Fattovich, personnal communication) suggests the possibility of some contacts between the Southern Atbai and the Gezira.

While the bulk of the commercial action was taking place between Egypt, Nubia and Punt in the Eastern Sudan, and perhaps even between the latter and the Gezira region, the Central Sudan and specifically the Middle Nile Valley remained seriously underpopulated and underdeveloped. There are no sites of this Phase found in the Middle Nile Valley, although occupation continued at Shaqadud Cave. The assumption is that the Butana grasslands were sparsely occupied by mixed economy populations. Sometime before the end of this Phase the occupation at Shaqadud

ceased, as well. The site itself may have been abandoned because of very local problems affecting its water catchment (Marks, personnal communication). Possibly, there remained some other scattered occupations in the area, but none have been found, as yet.

In sum, during Phase 6, there are some hints that a specialised nomadic pastoralist population inhabited the Eastern and perhaps the Nubian Deserts. The Nubian Nile Valley dwellers had a great deal of access to pastoral products and livestock, and were quite preoccupied, as their art shows, with the pastoral image, without, it appears, themselves being engaged in intensive pastoralism. Instead, they may have acted as middlemen in, among other things, the livestock trade with Egypt. Farther south, in the Southern Atbai, there was the beginning of an agro-pastoral adaptation, with the Gash Group population divided into agricultural and pastoral sections. By the end of the Phase, the sparse population of the Middle Nile hinterlands may have abandoned the area completely.

Phase 7: ca. 1750-1500 BC

This Phase corresponds to Egypt's Second Intermediate Period; a time of turmoil and internal divisions brought about by the Hyksos invasion of Lower Egypt (Wilson 1951; W.Y.Adams 1977). The princes of Upper Egypt, in their bid to defeat the Hyksos, went so far as to recruit Medjay nomads as mercenaries (Säve-Söderbergh 1941; Trigger 1976). Previously, as the Semna despatches indicate, the Egyptians would not so much as grant the Medjay access to the Nile Valley (Smither 1945).

The Pan-Graves found in Lower Nubia and Upper Egypt during this Phase belonged to the Medjay mercenaries in the service of the Egyptian army (Bietak 1966, 1986; Säve-Söderbergh 1941). Most of the Pan-Graves are found in the C-Group's stretch of the Nile, but anthropo- analyses show that the two populations were quite distinct (Ehgartner and Jungwir' Bietak 1986). In the absence of any Pan-Grave settlements in the Nile Va' spot near Khor Wadi Nashriya, Bietak 1966), it is clear that the Medj. e continued to live as nomads in the desert. to

The weakening of Egypt's power, as cogently observed by W.Y.Adams (1977), regularly coincides with the flowering of the Nubian cultures. Phase 7 was no exception. The political and commercial vaccum left by Egypt was soon filled by the Kerma Classic culture. Massive burial tumuli of the Kerma nobles accompanied by a host of sacrificial victims, the monumantal architecture and irrigation schemes at Kerma, as well as the occupation of the erstwhile Egyptian forts in Lower Nubia by the Kerma culture, all attest to the wide power and influence of the Kerma Classic state society (W.Y.Adams 1977; Trigger 1965,1976; Bonnet et al. 1982-1986; Gratien 1978). Despite the problems in Egypt, Kerma apparently managed to grow, and perhaps even gained control of trade in Northeast Africa.

The C-Group population of Lower Nubia, probably allied with Kerma, also went through its classic period during this phase (Bietak 1968). This is shown by the occupation of large mudbrick towns, some of which like Areika, Karanog and Wadi es Sebua had fortification walls and castles (Trigger 1965). The stately burials of the C-Group princes of this period attest to the richness and complexity of the society during Phase 7.

Overall, during this Phase, the subsistence and settlement patterns in Nubia remained much the same as they had been in the previous Phase. The C-Group and Kerma agriculturalists inhabited the Nile Valley, while the hinterlands were occupied by the Medjay nomads. The situation in the Southern Atbai, likewise, remained unchanged, with the Gash Group practicing a mixed or agro-pastoral subsistence strategy. In the Middle Nile region there are no known archaeological remains dating to this time.

Phase 8: ca. 1500-1100 BC

This Phase, coinciding with Egypt's New Kingdom Period, saw another round of massive cultural and political changes all across Northeast Africa. The New Kingdom Period, according to W.Y.Adams (1977), can be characterised as the period of Egypt's outright control of Nubia. Unlike in the Old Kingdom Period, when Egypt's heavy handed foreign policy of direct acquisition led to

the abandonment of the entire Nile Valley, the Egyptian policy during the New Kingdom Period resulted in the acculturation of the Nubians.

Gone were the Kerma Kings who had acquired the control of trade in the previous Phase. With Egyptian occupation of Nubia as far south as the Fourth Cataract (Säve-Söderbergh 1941), occupation at Kerma ceased, and the Deffufas were burnt down (Gratien 1978). Nubians, under the administration of the Viceroy of Kush, became gradually Egyptianised (W.Y.Adams 1977).

The Egyptianisation of Upper Nubia began in the Kerma Recent phase (Gratien 1978) with the building of an Egyptian military fort at the north end of Dongola (Emery 1965; W.Y. Adams 1977). There are indications of a native uprising at Kerma resulting in the sack of the city and the burning of the Deffufas by Tuthmose I: his annals show that harvest, cattle, slaves, gold, ebony and ivory--the traditional exports of Nubia--were given to the Pharaoh as tribute (W.Y. Adams 1977; Säve-Söderbergh 1941). Thereafter, the gradual acculturation of the local population is documented in burials which cannot be distinguished from ordinary Egyptian graves (Trigger 1976; W.Y. Adams 1977). Population levels of Nubia soared at this time as the region was added to Egyptian territory (Trigger 1965). The building of the Amon Temple at Jebel Barkal, founded by Rameses II (Reisner 1917), gives an indication of the completeness of Egypt's ideological and political takeover.

The fate of Lower Nubia was similar. The stage III of the C-Group culture, contemporary with the Kerma Recent phase, witnessed the gradual acculturation of the Nubians into Egyptian culture (Bietak 1968). C-Group burials became identical to the ordinary Egyptian ones and all artefactual traces of the C-Group vanished from the archaeological record (Emery 1965; Trigger 1976; W.Y.Adams 1977). Egyptian staff and administrators occupied the main population centers of Lower Nubia (Trigger 1965). Nubian nobles were taken and schooled in Egyptian ways to provide a local ruling elite with strong loyalties to Egypt (W.Y. Adams 1977). Egyptian garrisons re-occupied the Lower Nubian forts which had fallen into the hands of the Kerma culture during the Second Intermediate Period (Trigger 1976). Egypt again began the process of mining for gold and other precious commodities in the region (ibid.). The local population of Nubia remained

intensively agricultural living in mud brick towns along the Nile much like the felaheen of Egypt proper (Emery 1965; W.Y. Adams 1977).

In the early New Kingdom Period, the Pan-Graves disappeared from the archaeological record. The mercenaries were now buried in typical Egyptian style (Bietak 1966). The Eastern Desert, homeland of the Medjay, was exploited by Egypt for its gold mines (Säve-Söderbergh 1941). What effect this had on the Medjay nomads in the desert is not known. Presumably, Egypt saw in the nomads a ready source of manpower for the backbreaking task of extracting gold from the Eastern Desert mines. If such was the case, it is likely that the nomads scattered to the four winds, probably seeking refuge in the Red Sea Hills, much as the modern Beja of the area are wont to do in times of trouble.

Events in the Southern Atbai of this Phase suggest another possibility. The archaeological record of the Southern Atbai shows a replacement of the Gash Group by that of the Mokram sometime around 1500 BC. Elsewhere (Sadr in press), it has been shown that the Mokram Group material culture strongly resembled that of the Pan-Grave culture: the latter being the archaeological manifestation of the Medjay (Säve-Söderbergh 1941; Bietak 1966, 1986). The suggestion is that some of the Medjay migrated southwards, away from the Eastern Desert. The exact process by which the Mokram Group came to occupy the Southern Atbai is not known. It is clear , however, that the indigenous (Gash Group) population remained, for the most part, in place. The population of the Southern Atbai, as seen in Chapter 5, continued its way of life, with an agricultural and a predominantly pastoral section operating side by side.

In Eritrea, the presence of Mokram-like artefacts on some of the Agordat sites (Arkell 1954; Fattovich, personnal communication) suggests that a similar situation applied there, as well.

While all of this hectic cultural reorientation was taking place in most regions of Northeast Africa, the Middle Nile region seems to have remained depopulated.

Overall, the cultural reorientation during the New Kingdom period had little effect on the local populations' subsistence strategies. The Egyptianised Nubians continued their settled agricultural life, while the agro-pastoral adaptation in the Southern Atbai, likewise, continued.

Presumably, since the New Kingdom texts of Amenhotep IV and Tuthmose IV speak of raids against the Medjay (Säve-Söderbergh 1941), some nomads continued to inhabit the deserts east of the Nubian Nile, and possibly even areas farther south.

Phase 9: ca. 1100-750 BC

This phase coincides with the first half of Egypt's Late Dynastic Period. During this period Egypt underwent its most extended Intermediate Period. The country was again divided north and south. In rapid succession, kings of Lybian, Nubian, Assyrian, and Persian origin ruled or sacked Lower Egypt. Kings of Upper Egypt briefly held sway, as in the twenty-fourth and twenty-sixth Dynasties (Wilson 1951). With Egypt's internal turmoil the entire carefully crafted commercial and political unity of Northeast Africa collapsed.

The Nubian Nile Valley was once again depopulated (W.Y.Adams 1977; Trigger 1976). Only the Amon Temple at Jebel Barkal, and perhaps some as yet unexcavated towns around it may have continued to function during this period (Arkell 1961; Emery 1965). For all intents and purposes, however, settled life ceased in Nubia during this Phase. Firth (1927) and W.Y.Adams (1977) argue that the depopulation was caused by a lowering of the Nile water level which made agriculture impossible in the steep sided Nubian Nile Valley. Insofar as the begining of the Phase roughly coincides with the Post-Neolithic Arid Phase of North Africa (Muzzolini 1982; see also Chapter 3, Figure 3.6), there seems to be some support for this argument. Trigger (1976) however, disagrees, suggesting instead that political turmoil in Egypt and the cessation of gold production caused the abandonment of the Nubian Nile Valley. In either case, some of the Egyptianised Nubians may have moved north to Egypt. Others may have joined the nomads in the desert. There is no evidence to indicate that the Nubians may have moved south along the Nile. The Middle Nile region remained depopulated until the last part of this Phase.

The effects of Egypt's internal turmoil may have been felt as far away as the Southern Atbai. Trade between Egypt and Punt ceased at the end of the New Kingdom Period around 1100 BC

(Fattovich 1985). Actual conditions in the Southern Atbai, however, remained more or less unchanged until the end of this Phase.

Towards the end of this Phase, the Upper Nubian and Middle Nile Valleys were reoccupied. The lowest levels at Meroe in the Middle Nile region, dated to about the eighth century BC (Bradley 1984), contained mud brick houses as well as posthole circles of huts, large grain bins, abundant domesticated cattle, goat and sheep, as well as fish remains. A sedentary population with a mix of subsistence strategies seems to be indicated.

At Napata, in Upper Nubia, reoccupation is indicated by the tumulus graves at Kurru, the earliest of which have been dated to ca. 850 BC (Reisner 1918; Trigger 1976). These graves already contained quite a rich collection of goods and presumably belonged to the elite of society. Unfortunately, none of the town sites around Napata have been excavated, hence, little is known of the population's subsistence and adaptive strategies. In view of the large Napatan cemeteries, and the towns, however, one might assume the population was quite sedentary. Presumably, there were still some populations, probably nomads, occupying the hinterlands. W.Y.Adams (1977) is of the opinion that an alliance betwen the local chiefs, and the priesthood at the Amon Temple of Jebel Barkal gave rise to a durable Nubian state which, as described in the next section, briefly held the key to power in Northeast Africa as the Kushitic Dynasty ruling over a unified Egypt.

Overall, information from this Phase is scarce. The Upper Nubian Nile Valley was presumably reoccupied by populations from its hinterlands. Nothing is known about their adaptation. The populations which reappeared in the Middle Nile Valley as the earliest occupants of Meroe may have been divided into a rural and urban element, as the different types of dwelling excavated there suggest. Perhaps an agro-pastoral adaptation was represented, but the paucity of data makes this mere speculation. In the Southern Atbai, in any case, an agro-pastoral adaptation continued. There is no information about the nomads of the Eastern Desert in this Phase.

Phase 10: ca. 750-350 BC

This Phase, corresponding to the Napatan Period of Sudanese ancient history, starts with the re-unification of Egypt by the Kushitic, or twenty-fifth Dynasty, led by King Kashta and other pharaos of Nubian origin (Trigger 1976; Shinnie 1967). These pharaohs had their capital at Napata near the Amon Temple of Jebel Barkal. While the Kushitic Dynasty was in power, the Egyptian forts in Lower Nubia were occupied by Napatan troops, but aside from these that region remained depopulated (Trigger 1976). The twenty-fifth Dynasty barely lasted a century before it fell to the onslaught of the Assyrian invasion which once again divided Egypt (W.Y. Adams 1977; Trigger 1976). After their defeat the Kushitic kings continued to rule over the largest ancient Sudanese state for nearly a millenium, first from their capital at Napata and later from Meroe in the Middle Nile region. The rituals, symbols and religion of the Kushites were inspired by the Egyptian model, and their kings continued to proclaim themselves the heirs to the throne of Egypt (W.Y.Adams 1977, Trigger 1976).

Judging by the fact that the main Napatan sites are all located at the termini of major overland and riverine trade routes, as well as the presence of large amounts of imported wares, it is clear that trade played a major role in the functioning of the Kushite state (W.Y.Adams 1977). Its main export to Egypt was gold from the Eastern Desert mines which by now had fallen into Napatan hands (W.Y.Adams 1977). Since iron production had already begun at Meroe (Bradley 1984), its export to southern lands may have formed part of the economy of Kush. Egypt probably exported finished goods and perhaps grain products, since the Napatan centers were not located in particularly optimal agricultural terrain (W.Y.Adams 1977).

Towards the end of this Phase, around the fifth century BC, a pre-Axumite culture appeared in highland Ethiopia (Fattovich 1984d; Anfray 1968). This period of Ethiopian ancient history, known as the Ethiopian-Sabean Period (Fattovich 1984d), witnessed the appearance of a complex society in Northern Ethiopia, the iconography of which showed many similarities to contemporaneous South Arabian examples. The sites of the Pre-Axumites suggest a sedentary agricultural population living in masonry towns complete with temples and other monumental

art and architecture (Fattovich 1984d). Since so little is known about the preceding cultures of the area, it is not clear how much of the impetus for the development of the Pre-Axumite kingdom came from indigenous groups and how much was introduced from Arabia.

Coincident with the rise of complex state economies in Upper Nubia and the Middle Nile region, and Northern Ethiopia at a somewhat later date, there was a major disjunction in the Southern Atbai sequence. A small colony of Mokram cultivators remained in the region, but other than that the Southern Atbai became the domain of the nomadic Hagiz Group (see Chapter 6). The Region had become--economically rather than ecologically--a marginal zone. Whereas up till now Egypt, Kerma and Punt had formed the major axis of interaction in Northeast Africa, in the present and subsequent Phases the axis shifted to include Egypt, Kush and the kingdoms of highland Ethiopia.

Meanwhile, north in the Nubian Desert, the nomads there continued to operate, alternatively cooperating or competing with the Napatan Kingdom. During the ascendancy of the Kushitic Dynasty which unified Egypt the nomads may have served in the Napatan army. At times they may have been active on the trade routes to and from Egypt which ran overland on the Korosko road (W.Y.Adams 1977). At other times they came into conflict with the Napatans: the Kushite King Anlamani fought against the Beja, and so did a series of later kings, who on their way to coronation at Napata, boasted of defeating the Rehreh and the Medded (probably Medjay) populations on the east side of the Nile Valley north of Meroe (Shinnie 1967).

In sum, there is very little actual information on adaptive strategies of the Phase 10 populations. Most information concerns the political history of the Kingdom of Kush. It is interesting to note, however, the reappearance of nomads in areas bordering the state societies. Partially, this correlation may be self-fulfilling: the nomads are known to us through the writings of the state, hence, they only appear when a state is present nearby. However, in the Southern Atbai, at any rate, the emergence of nomadism is documented independently of the states' textual records.

Phase 11: ca. 350 BC-AD 1

This Phase begins with the re-unification of Egypt under the Ptolemaic Dynasties, following Alexander's conquests (Wilson 1951). This coincides also with the shift of the Kingdom of Kush's capital from Napata to Meroe (hence the distinction between the Napatan and Meroitic kingdoms) (W.Y.Adams 1977; Shinnie 1967). The Meroitic kingdom was heavily involved in the trade of luxury goods with Ptolemaic Egypt (ibid.). Since no Egyptian food and wine containers are found at Meroe, it is assumed that trade in subsistence products took place at a smaller regional scale (Bradley 1984). Among other things, the Ptolemies imported war elephants from the Meroitic and later from the Axumite Kingdom, as well (W.Y. Adams 1977; Kobishchanov 1979).

The Meroites were townspeople supported by an agricultural and perhaps mixed economy base population who farmed millet in the Nile Valley and the wadis leading to the river (Strabo *Geography* 17, 1,2 in W.Y. Adams 1977: Shinnie 1967). Nomads may have operated in the grasslands of the eastern Butana, playing the role of Meroe's (to use Toynbee's appropriate label) external proletariat (Bradley 1986; Strabo and Pliny in W.Y.Adams 1977). During the Meroitic period the temple/hafir complexes, such as at Musawwerat es Sufra, were constructed at the margin of the Butana pasturelands. Bradley (1986) and others (Ali 1972; Arkell 1961) consider these to have been the contact points between the sedentary agricultural Meroitic Kingdom and the pastoral nomads of the eastern Butana steppe. The Butana Expedition of 1958 found only a large number of tumuli, rock drawings, and hafirs (water pools) in the eastern Butana steppe; they gained the impression that it was a region of stone age hunters and nomads (Hintze 1959).

More concrete evidence for the presence of nomads comes from some burial excavated at Geili (Caneva 1984, 1985a). The scattered graves contained pots unrelated to the Meroitic assemblage, but found in small quantities at Meroe and thus datable to roughly the third century BC. The pots resemble bottles used by modern nomads for transporting liquids. The low strontium levels in the human bones were interpreted to reflect low reliance on agricultural foods. Also, the isolated, dispersed graves, and the absence of any settlements with related pottery led the excavator to the conclusion that a nomadic population was represented. Since their burial

custom, as defined by the shape of the grave and orientation of the body, differs from that of the Meroitic population it is assumed that the nomads formed an independent culture.

Classical texts indicate that the entire eastern flank of the Meroitic kingdom was inhabited by the Beja nomadic groups, while the western flank was occupied by Noba nomads (W.Y.Adams 1979). Both these populations probably were involved in the Meroitic overland trade traffic. The acquisition of camels in this Phase must have made the nomads particularly adept at alternating their role from caravaniers to raiders (Trigger 1965). Indeed, Eratosthenes (third century BC), and Strabo (end of first century BC) described the Noba of the Bayuda as nomads and brigands threatening the Meroitic trade routes (Strabo *Geography* 17, 1, 2; Kirwan 1974 , 1972 b).

Meanwhile, farther east in Northern Ethiopia, the Pre-Axumite culture was going through its Intermediary Period when that culture lost many of its South Arabian traits and became recognisably more Ethiopian (Anfray 1967). The Pre-Axumite settlements consist of villages, as at Ona Hachel (Anfray 1970), towns, such as Matara and Yeha (Fattovich 1972; Anfray and Annequin 1965), and ceremonial centers as, for example, at Hawlti and Melazo (Leclant 1959; Anfray 1965). The base population practiced plough agriculture (Fattovich 1984d). The port of Adulis, the main Northeast African gateway for trade to areas as far away as India and Ceylon, began operation during this Phase (Anfray 1967).

Neighbouring the Pre-Axumites, the Hagiz nomads of the Southern Atbai continued as before. Possibly by now the remnant Mokram Group population of the region had already vanished. The trade routes from highland Ethiopia to the Nile, which would have run down the length of the Atbara (Kobishchanov 1979), could have provided the Hagiz Group with profitable opportunities. Contact is attested by the presence of some pre-Axumite sherds found in the Hagiz Group sites (Fattovich, Marks and Ali 1984). Perhaps, the Hagiz Group can be equated with the Megabaroi nomadic herders occupying the Gash Delta region, who are known to us through the accounts of the classical geographer Agatharchides (in Fattovich 1987).

Little is known about the nomads of the Nubian and Eastern Deserts of this time. The Gold mines of the Eastern Desert were under the control of the Ptolemies, who by now had also

occupied the northern half of Lower Nubia , the Dodekaschoenos (W.Y. Adams 1977). As Agatharchides described the situation ca. 130 BC, the depopulated southern half of Lower Nubia was occasionally visisted by desert nomads watering their herds (Trigger 1965).

Overall, there is good evidence for nomadic populations operating on the borders of the states during Phase 11. The Meroitic hinterlands were occupied by nomads of an independent ethnic group unrelated to the Meroitic culture, as the differences in burial customs and pottery types suggest. The borders of the Pre-Axumites states were, likewise, inhabited by independent nomadic societies: many are known only from records left behind by classical geographers, but in the Southern Atbai their presence is documented archaeologically, as well. Classical texts also indicate the presence of nomads in the hinterlands of the Lower Nubian Nile.

Phase 12: ca. AD 1-350

During this Phase Egypt, with the death of Cleopatra in 30 BC, passed into Roman hands (Wilson 1951). The Dodekaschoenos became heavily fortified by a string of Roman military stations to ward off the the nomads of the Eastern Desert (W.Y. Adams 1977). In AD 289 Rome abandoned the Dodekaschoenos partly as a result of the incessant raids by these nomads, and partly because of changes in her frontier zone policies (Trigger 1965; Kirwan 1974, 1978). With Rome's retreat the gold and emerald mines of the Eastern Desert fell in the hands of the Beja nomads, and trade in emeralds to Axum became an important part of their economy (W.Y. Adams 1977; Kobishchanov 1979).

The Beja in the south, bordering the Eritrean highlands, were economically connected or even dependent on the Axumite state (Kobishchanov 1979). Pastoral production played a large role in this interdependency: King Ezana II is recorded to have given some twenty-five thousand head of cattle to a Beja group (Kobishchanov 1979). Possibly, as their Medjay ancestors did for Egypt in the Twelfth Dynasty, the Beja nomads looked after the herds of the Axumite state. Bordering the Axumite kingdom, the Hagiz nomads of the Southern Atbai may have been similarly associated with the highland state.

By the third century AD, Axum began to flex its military muscle; first in the campaigns against Meroe around 350 AD, and later in campaigns against her tribal neighbours, and even across the Red Sea against the South Arabians (Fattovich 1984d; Kobishchanov 1979; Kirwan 1972 a).

The Meroitic kingdom continued to dominate the Middle Nile in this Phase. There were strong ties between Meroe and Roman Egypt, as manifested in many of the Roman artefacts and architectural examples found among the ruins of the Meroitic towns (Kirwan 1978). Meroe may have been a client state of Rome at this time (W.Y.Adams 1977; Bradley 1984).

In this Phase, the southern half of Lower Nubia was repopulated for the first time since the Egyptianised C-Group abandoned the region around 1100 BC (W.Y. Adams 1977). It is argued that the repopulation of Nubia was made possible by the use of the saqqia irrigation technology which allowed the raising of water to sufficient heights to tend to agricultural fields (W.Y. Adams 1977; Firth 1915; Trigger 1965). The population which moved into Lower Nubia was culturally Meroitic, but without any of the palace or temple complexes associated with the Meroitic heartland in the Middle Nile region (W.Y. Adams 1977). The Northern Meroites, living in congested towns and villages such as Wadi el Arab (Emery and Kirwan 1935), Arminna (Trigger 1967) and Meinarti (W.Y.Adams 1977) were intensively occupied in agriculture and may have fed Roman Dodekaschoenos, an area with less than optimal agricultural potential (Griffith 1924). They also supplied Rome with the gold of Nubia (Kirwan 1982).

South, in the Gezira, the occupation at the site of Jebel Tomat dates to between AD 40-430 (Clark and Stemler 1975). This six hectare site with eleven midden levels appears to have been a permanently occupied village. A mixed subsistence economy seems to have been practiced. Unfortunately, little else is known of conditions in the Gezira at this time.

Overall, there is again some evidence--in the case of the Beja bordering the Axumite kingdom--for the role of nomads as something akin to a ranching industry of the ancient states. In the north, the nomads apparently played a different role: that of raiders against the settled communities and garrisons of Roman Nubia. Perhaps this can be taken as an indication of a

breakdown in the trade relations between the nomads and sedentary populations, forcing the former to acquire by force that which they could previously obtain through trade. Presumably, in the Middle Nile region the nomads continued their relations with the Meroites as before.

Phase 13: ca. AD 350-600

This Phase begins with yet another round of massive political upheaval which affected all regions of Northeast Africa.

Between AD 325-350 the Axumite King Ezana II campaigned against Meroe. This much is known from his inscriptions left behind at Meroe and Axum (Kobishchanov 1979). On his way to Meroe, Ezana stopped to beat the local nomads--perhaps including the Hagiz Group--at Kemalke ford, located a few miles upstream from Khashm el Girba (Hintze 1967). Having defeated them, he packed them off (six tribes comprising four thousand souls, Kirwan 1974) to another part of his kingdom, and continued across the Butana steppe to the Gezira (Kirwan 1972 b). Meroitic towns in that area and in the north, at the confluence of the Atbara and the Nile, had already fallen into the hands of the Noba, who previously operated as nomads in the Bayuda west of the Nile (Kirwan 1972 b). Meroe itself was still functioning, so Ezana sacked it and erected his victory stela there. The combination of Ezana's attack, the changing face of inter-regional trade relations brought on by Rome's withdrawal from Dodekaschoenes, and the ascendancy of the rival trading kingdom at Axum, all conspired to bring about the end of the Meroitic kingdom's hegemony in the Sudan (W.Y.Adams 1977; Kirwan 1972 a,b).

Ezana's raid may have left the Southern Atbai depopulated. Possibly, the region became a no-man's land, acting as a buffer zone between the Axumite Kingdom and the Noba occupiers of the Middle Nile region. Other populations in the Ethio-Sudanese borderlands, exhaustively listed in such documents as the Adulis and Ezana's inscriptions (Kirwan 1972 a,b; Kobishchanov 1979), and in the accounts of classical geographers such as Agatharchides and Eratosthenes (Kirwan 1972 b; Fattovich 1987), continued to be connected with the Axumite Kingdom through commercial links between the highlands and the lowlands (Kobischchanov 1979).

With the fall of Meroe, the Noba (Ezana's Black Noba) seem to have occupied the Nile from Dongola to Sennar in the Gezira (Trigger 1965; Kirwan 1982). These Noba, archaeologically manifested as the Tanqasi culture, lived in the ill-repaired Meroitic towns and also in villages of reed huts (Kirwan 1982). Ezana's records indicate that they were cultivators (ibid.).

Other Noba (Ezana's Red Noba) took over parts of Lower and Upper Nubia from Dongola to the Dodekaschoenos. Most of the main population centers, and even individual houses of the previously northern Meroitic population were occupied by the Ballana culture (Trigger 1965). The Ballana culture is the archaeological manifestation of the textually known Red Noba. Other sites of the Ballana culture were smaller and more dispersed, but the population remained sedentary and agriculturally oriented (W.Y.Adams 1977). An examination of the dentition of Meroitic, Ballana and later Christian populations of the Nubian Nile Valley showed strong genetic continuity, suggesting that all three comprised basically the same population (Greene et al. 1972; Greene 1967). Thus, it would appear that the conquest of the Red Noba was principally a political matter which did not result in any significant population displacement. Life went on in the region much as it had before, only now the population was ruled by Ballana kings.

The Dodekaschoenos, the northern half of Lower Nubia, had fallen into the hands of the Blemmyes, after the Roman garrisons retreated around AD 289. Some of the Blemmyes Beja may have settled in the Nile Valley. But for the most part the population of Dodekaschoenos--which had the same material culture as that of the Ballana culture--was obviously descended from the northern Meroites and Romans who inhabited that region in the previous Phase. There is no archaeological evidence for an influx of actual nomads into the valley (Kirwan 1982). As in southern Lower Nubia, the sedentary agricultural population of the valley had come under the control of a new master, in this case the nomads of the Eastern Desert.

The Blemmyes were in conflict with the Noba. The Noba/Ballana sites south of the Dodekaschoenos were located on the west bank of the river, in order to afford some protection against the east bank where the Blemmyes nomads were. Also the Ballana kings had only Egyptian silver for their royal jewelry; the gold of the Eastern Desert was apparently inaccessible

to them (Trigger 1965). As the Kalabsha inscription shows, towards the end of this phase--during the early fifth or sixth century AD--the Noba King Silko defeated the Blemmyes in Dodekaschoenos (Kirwan 1974, 1982; W.Y.Adams 1977).

The disjunction between the presence of only one archaeological culture--the Ballana--but textual references to two peoples in Nubia at this time--the Noba and the Blemmyes--has led to long drawn discussions about the so-called X-Group problem (after Reisner's original term for the Ballana culture)(Monneret de Villard 1938; Emery 1938; Trigger 1969; Kirwan 1982; W.Y.Adams 1977,1982, among others). It would seem there need not be any contradictions between the archaeology and the texts. The latter speak of the ruling stratum of society of which there were two; the Noba and the Blemmyes. The former, however, deals with the material culture of the population of Nubia, all of whom were simply the post-Meroitic residents of the area.

The Noba and Blemmye elite almost certainly began as the chiefs of nomadic populations in the hinterlands of the Nile. Accounts by Olympiodorus (ca. 425 AD) speak of a visit to the camp of the Blemmyes chiefs located not in the Nile Valley, but in the desert (Kirwan 1974). Procopius likewise suggests that the Blemmyes were in the desert not in the riverside towns (Kirwan 1958). As in other cases of a nomadic takeover of sedentary society (for example the modern Baluchi case described by Salzman 1978), the Blemmyes and the Noba were probably content to live as nomads, as long as they held control of the sedentary populations in the agricultural zones.

Probably, the influx of foreign rulers into Nubia was a result of changes in Rome's foreign policy. Instead of manning the forts in the frontier zone, Rome may have been content to hand over the frontiers to lesser vassals who would be contracted to maintain peace and prosperity, and act as a buffer zone to the Roman Empire (Kirwan 1978, 1982). The subsequent defeat of the Blemmyes at the hand of Silko may have been part of Rome's attempt to exert some control by playing one client state against another (Kirwan 1974, 1982).

Meanwhile, in Ethiopia the Axumite kingdom had become the principal commercial node of Northeast Africa, without any competiton from the Sudan, and with far flung trade routes connecting India and Arabia to Egypt and the Mediterranean world. At the beginning of this

Phase, the Axumite royalty had converted to Christianity (Kobishchanov 1979). By the end of the Phase Christianity had also made great headway into Egypt and the Sudan (W.YAdams 1977).

The role of nomads during this Phase is illuminating. Having gained control of Lower Nubia, neither the Blemmyes nor the Red Noba seem to have settled down to an agricultural life: the agricultural valley dwellers, the erstwhile Northern Meroites, seem to have remained in place as the Ballana population. Presumably, at least as far as the Blemmyes are concerned, being in control of nomad/ sedentary interactions, the nomads were absolved of the need to raid the valley dwellers.

It is interesting that in the south, the Black Noba occupied the Middle Nile region as sedentary farmers or as a mixed economy population. Unfortunately, it is not clear whether these Noba were previously nomads, or lived a sedentary life. If the former, it would have been interesting to know why, unlike the northern Red Noba , the Black ones--the Tanqasi culture--did seemingly settle to an agricultural life.

CHAPTER IX

THE DEVELOPMENT OF NOMADISM IN NORTHEAST AFRICA

Introduction

The Northeast African archaeological sequence, as presented in the previous Chapter, contained several gaps. Aside from this problem, there have been uncertainties in assigning some archaeological groups to one or another type of adaptive strategy. Agriculturalists and mixed economy populations are more easily identified than nomads. Agro-pastoral adaptations have been difficult to isolate, since in the archaeology of Northeast Africa large enough areas which can reveal the existence of separate, economically specialised sections have rarely been surveyed. In the following pages the agricultural, mixed economy, nomadic and agro-pastoral societies recognised in the sequence are briefly reviewed prior to testing the three models for the development of nomadism.

Agriculturalists

The specialised agricultural populations are recognised by permanent and generally large sites which are located in optimal agricultural zones. Features such as grinding stones, grain bins, ploughs and irrigation canals and other devices facilitate the identification. Also, the absence of evidence for a mixed or intensively pastoral economy plays a role in identifying specialised agricultural populations.

Specialised agricultural populations are known from Phases 3-13 in the Upper Egyptian Nile Valley; in Phases 6-8 in the Lower and Upper Nubian Nile Valleys (later C-Group and Kerma cultures), and then again in Phases 10-13 in Upper Nubia (Napatan and Post-Meroitic), and Phases 12 and 13 in Lower Nubia (Ballana Post-Meroitic). Elsewhere, they are known in the

Middle Nile Valley of Phases 11 and 12 (Meroitic), and Phases 10-13 of Northern Ethiopia (Pre-Axumite and Axumite cultures).

It is not impossible that some of the agricultural populations thus identified actually formed the specialised agricultural section of an agro-pastoral society. However, there are no pertinent data to confirm or reject this possibility. There are, however, cases where faint indications suggest the presence of a separate pastoral section (e.g. the early C-Group and Kerma Ancien of Phase 5, or the early Meroitic of Phase 10). These are provisionally identified as agro-pastoral cultures.

Mixed Economy

Sites of mixed economy adaptations have been identified by the presence of a large variety of faunal and floral remains. These may include domesticated plants and animals as well as the remains of hunting, fishing and gathering activities. Subsistence related artefacts also form part of the evidence used in identifying mixed economy sites. The mixed economy groups generally have a settlement pattern including base and satellite camps.

In the earliest parts of the sequence, mixed economy adaptations are found in most regions of Northeast Africa. These include the Badarian in Upper Egypt, the Abkan and Early A-Group in Lower Nubia, the populations of the Wadi Howar area, the Khartoum Neolithic and Late Neolithic of the Middle Nile Valley and the Gezira, the Saroba and Butana Groups, and perhaps also the early Gash Group of the Southern Atbai. Other cultures of these early Phases, such as the Post-Shamarkian, Khartoum Variant, Tergis and Karamakol industries of Lower and Upper Nubia, since they have no associated faunal remains, cannot be assigned with certainty to a mixed economy category. However, in view of their settlement patterns and the time and place in which they are found--amidst other mixed economy populations--it seems reasonable to assign them to this category. In later Phases, a mixed economy adaptation is apparently represented at Shaqadud, in the Butana grasslands.

Nomadic

Several cases of nomadic adaptation, each documented to varying degrees of certainty, are represented in the sequence.

In Phase 3 two possibly nomadic groups are known: the Karat Group of the Dongola Reach, and the Kiseiba herders of the Western Desert. Their known sites, all small, ephemeral and containing little evidence for activities other than herding can with some certainty be assigned to a pastoralist population. In neither case is it certain that other, as yet unknown portions of their settlement patterns will not reveal the existence of more permanent, agriculturally oriented settlements. Be that as it may, given that there are no Karat Group or Kiseiba related base camps or semi-permanent agricultural settlements in the Nile Valley or in the Western Desert playa zones--where one would expect them if the populations were indeed mixed economy or agro-pastoral--the notion that they were nomadic seems to be supported.

During Phase 6 nomads were probably present in the Eastern Desert, as the Semnah Despatches (Smither 1945) and the paintings at Meir (Blackman 1914, 1915a, 1915b) indicate.

During Phase 7 the Pan-Graves and Egyptian texts suggest that nomads inhabited the Eastern Desert.

For Phase 10, nomads have been identified in the Southern Atbai. The pertinent evidence concerning the Hagiz Group was presented in Chapter 6. Also in this Phase, Napatan texts, such as those referring to King Anlamani's conflicts with the Rehreh and Medded, indicate the presence of nomads in the desert east of the Upper Nubian Nile.

In Phase 11 nomads were probably active in the Butana grasslands, as the Meroitic Temple/Hafir complexes and the graves at Geili indicate. In the same Phase, the classical texts of Strabo, Pliny and Eratosthenes speak of nomads in the Bayuda Desert and areas east of the Upper Nubian Nile. The Hagiz nomads continued into this Phase. Classical texts, notably those of Agatharchides, seem to indicate the presence of nomads on the northern Ethio-Sudanese borderlands. Agatharchides also noted that nomads visited the Lower Nubian Nile Valley at about this time.

In Phase 12 nomads are indicated in the Eastern Desert, as the evidence of their raids against the Roman garrisons in Lower Nubia suggests. Axumite texts indicate that there were Beja nomads on the northern Ethio-Sudanese borderlands at this time. The Hagiz Group occupied the Southern Atbai during this Phase, as well. The nomads of the Butana grasslands seem also to have continued into this Phase.

In Phase 13 nomads are indicated in the Eastern Desert by the texts of Olympiodorus and Procopius who reported about the Blemmyes population there. Probably, during this Phase the Red Noba of Ezana's texts were nomads in the Western Desert and areas west of the Upper Nubian Nile. Axumite texts indicate that nomads continued to occupy the northern Ethio-Sudanese borderlands.

Agro-Pastoral

Since the identification of an agro-pastoral adaptation requires evidence for two ecologically separated economic sectors within the same archaeological culture, and since archaeology in Northeast Africa has been predominantly conducted at a site specific level and generally only in the optimal ecological zones, agro-pastoralists are undoubtedly underrepresented in the sequence. Only a few possible cases are evident.

In the Southern Atbai of Phases 6-9 the later Gash Group and the Mokram remains suggest an agro-pastoral adaptation. The pertinent evidence was presented in Chapters 4 and 5.

Elsewhere, in Phase 2 of Upper Egypt, the Naqada I culture's remains may indicate an agro-pastoral adaptation, as well. The presence of large sites with rectilinear masonry structures in the alluvial zone, and small sites containing huts, located at the edge of the desert (Hoffman 1982) suggest the possibiltiy of two economic sectors operating side by side within the same culture.

In Phase 5 of Upper Nubia the impermanent Kerma Ancien settlement at Sai island, in contrast to the permanent settlement at Kerma itself, also suggests the possibility of two economic sectors operating within the same culture. The evidence, however, is very tenuous.

In the Middle Nile of Phase 10, the earliest levels at Meroe contained both rectilinear brick structures and postholes of hut structures. Perhaps, this could be taken as evidence for a rural and urban component to the population (Bradley 1984).

In the same region during Phase 13, the Noba occupation of the old Meroitic towns as well as vilages of reed huts may also indicate a duality in economic adaptations within one culture.

With the exception of the Southern Atbai and possibly the Upper Egyptian evidence, none of the other cases of agro-pastoralism are adequately documented. Much more data beyond house and settlement types would be needed to confirm the identifications. Other cases, such as the Classic A-Group and even the early C-Group from Lower Nubia of Phases 3 and 5, may have been agro-pastorally adapted since their remains do not clearly indicate either a mixed economy or a specialised agricultural one. However, the data to confirm this are simply not available.

In sum, much remains unknown about adaptations in the Northeast African sequence. Of what is known, many cases are questionably documented and the identification of their adaptive strategies may, given additional data, prove to be erroneous. For now, within the limitations of the data, Figure 9.1 shows the distribution of adaptive strategies by Phase and region as best as can be reconstructed. From this basis the tests of the three models on the origin of nomadism will be carried out.

Ecological Model

The ecological model attributes the rise of nomadism to two alternative factors: 1) a rise in the population levels of optimal zones, which forces some elements into marginal lands where they have no choice but to adapt as nomads; 2) the creation of marginal lands in previously optimal ones, which forces the residents to give up a settled agricultural life in favour of a nomadic pastoral one. To test against these hypotheses, each case of nomadism known from the archaeological sequence is examined in the following pages.

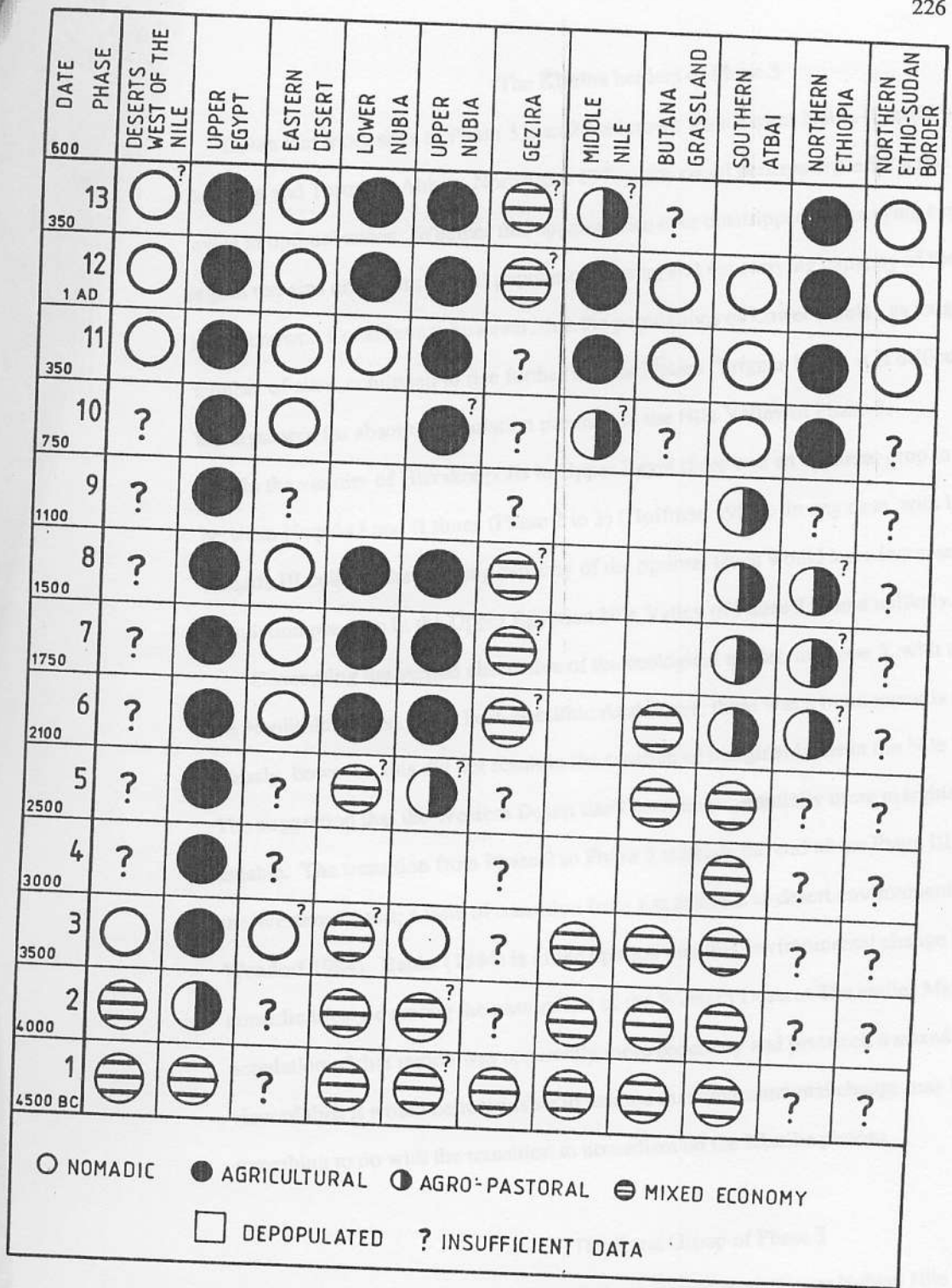

Figure 9.1. Chart summarising the ancient Northeast African adaptive strategies by Phase and region.

The Kiseiba herders of Phase 3

Given that more sites of Phase 3 than 2 are known from Lower Nubia (Classic versus Early A-Group and Terminal Abkan; Nordström 1972), one could perhaps argue for a rise in population levels in optimal zones. Whether this apparent rise ever outstripped the carrying capacity of that region remains unknown: actual population counts, and the carrying capacity of the Nile Valley are unknown. Considering, however, that the populations of Lower Nubia , as judged by the number of sites, continued to rise further in later Phases (Trigger 1965), it is difficult to support the argument for absolute population pressure in the Nile Valley of Phase 3.

In the vicinity of Hierakonpolis in Upper Egypt there was an apparent drop in population between Naqada I and II times (Phase 2 to 3) (Hoffman 1982). In any case, with irrigation in Naqada III culture, the carrying capacity of the optimal lands would have increased. Thus, population pressure in the Upper Egyptian Nile Valley of Phase 3 seems unlikely.

Concerning the second alternative of the ecological model, in Phase 3, with a transition from the Neolithic Humid to the Post-Neolithic Arid Phase, there was a trend towards a drier climate. Clearly, however, this did not result in the creation of marginal lands in the Nile Valley itself. The suggestion that the Western Desert itself became substantially more marginal is more tenable. The transition from Phase 2 to Phase 3 matches the end of the Playa III formation in the Western Desert: a time of transition from a grasslands to desert environment (Schild and Wendorf 1984). Banks (1984) is of the opinion that this environmental change led to a more nomadic lifestyle among the pastoralists of the Western Desert. The earlier Middle Neolithic population of that region was apparently more sedentary and practiced a mixed economy. In view of this, it would be reasonable to assume that environmental change may have had something to do with the transition to nomadism on the Kiseiba plateau.

The Karat Group of Phase 3

There are no indications of population pressure in the Upper Nubian Nile Valley of Phase 3. In the Dongola reach, the 25 sites of the Karat Group were apparently the only occupations.

Admittedly, the exact chronological position of the preceding Tergis Group, and the two sites of the enigmatic El Melik Group (Shiner 1971b) are unknown, but even if they were contemporaneous to the Karat occupations, population densities would have remained low.

It is unknown whether there was population pressure in the hinterlands of the Dongola reach, specifically in the Wadi el Milk area where the core of the Karat Group population is assumed to have resided. This seems unlikely given that the Nile Valley itself was underpopulated. Thus population pressure does not seem to explain the nomadisation of the Karat Group.

As far as environmental change is concerned, it is possible that the drying trend towards the Post Neolithic Arid Phase affected the population of the Wadi el Milk area. Presumably, that is part of the reason why the Karat Group herders came to the Nile Valley. However, whether the degradation of the hinterland environment actually led to the nomadisation of the Karat Group cannot be answered without further data. Logically, it would seem that if during Phase 2 or earlier, there were mixed economy populations who lived a semi-sedentary life in the Wadi el Milk area, a degradation of the environment there should have led those populations to the Nile Valley where they could have continued their mixed economy life. For the Kiseiba herders such a choice was clearly not available, since the Lower Nubian and Upper Egyptian Nile Valley was already occupied by the Naqada II and the A-Group population. However, in the Upper Nubian Nile, specifically in the Dongola reach, there were no such well entrenched population to prevent the Karat Group colonising the valley. Albeit, it must be kept in mind that the Upper Nubian stretch of the Nile is not well known. It is not impossible that other factors were involved, as well.

Overall, the ecological model does not seem to fit the Karat Group quite as well as it does the Kiseiba herders.

The Medjay in the Eastern Desert of Phase 6

Following the logic of the ecological model, one would expect that as a first alternative, occupation of the Eastern Desert began as a response to overpopulation in the Lower Nubian and

Upper Egyptian Nile Valley during Phases 5 and 6. The absence of raw population counts, and the uncertainties about the true carrying capacity of the Nila Valley prevent a thorough testing of this hypothesis. However, as far as numbers of C-Group and Kerma culture sites indicate (Trigger 1965; Gratien 1978), there was apparently a rise in the population of Lower and Upper Nubian from Phase 5 to 6.

Even if there was population pressure, it seems unlikely that the Medjay, known from twelfth Dynasty texts, were a displaced Nile Valley population. As they are known archaeologically from the Pan-Graves of Phase 7, the Medjay had a material culture which was clearly not derived from C-Group or Kerma ones (Gratien 1978; Säve-Söderbergh 1941). Further, anthropometric analyses showed that the Pan-Grave and C-Group population were not of the same stock (Ehgartner and Jungwirth 1966; Bietak 1986).

Although the bones and pots indicate that the Medjay were not erstwhile valley dwellers, there is some evidence to the contrary in Egyptian texts of the sixth Dynasty. In these texts the term "land of the Medjay" (*Md3*) referred to an area along the Nile in Lower Nubia (Sethe 1932). Sixth Dynasty (2345-2182 BC) and twelfth Dynasty (1991-1786 BC) Egyptian terminology, however, need not necessarily refer to the same thing: the earlier texts speak of a land while later ones speak of a people (*Md3* versus *Md3j.w* ; Bietak 1966). Further the inhabitants of the sixth Dynasty Land of Medjay are referred to as *Nhs'j.* , which also in the Midle Kingdom texts referred to the Nubian Nile Valley dwellers, distinct from the *Md3j.w* inhabitants of the Eastern Desert (Posener 1958). During the sixth Dynasty the only archaeologically known occupations in Lower Nubia were possibly those of the earliest C-Group. Thus, overall, there is little indication that sixth Dynasty texts can be taken as an indication that the Medjay started as Nile Valley dwellers prior to becoming nomads in Phase 6.

As concerns the second alternative of the ecological model, insofar that Phases 5 and 6 (2500-1750 BC) fall within the Post-Neolithic Arid Phase, one could argue that the Medjay nomads of Phase 6 were the indigenous population of the Eastern Desert who earlier, under more favourable climatic conditions, lived there as a semi-sedentary or sedentary mixed economy

population. Unfortunately, there is no relevant archaeological data from the Eastern Desert which could shed light on this hypothesis. If the Medjay had indeed started as mixed economy folks, the ecological model would be supported. It is instructive, however, that later, under the more favourable conditions of the Post-Neolithic Humid Phase (ca, 1000 BC-AD 1, Phases 9 through 11) there were still nomads to be found east of the Nile: if the drying climate induced a shift to nomadism during the Post-Neolithic Arid Phase, it is interesting that a trend to a wetter climate did not, apparently, result in a reversal of the process. This could be taken to suggest that even if environmental degradation was an important factor, it was not the sole cause of a shift to nomadism.

The Hagiz Nomads of Phase 10

Nomadism in the Southern Atbai does not fit the ecological model. As argued in Chapter 7, neither population pressure nor environmental degradation can be invoked as an explanation for the Hagiz nomads. Population levels were already on a declining trajectory prior to the arrival of the Hagiz. By Phase 10, the Hagiz were the sole occupants of the optimal zones of the Southern Atbai: had they become nomadic because of a shortage of optimal lands, they should surely have reverted to a settled agricultural life once they had control of the optimal zones.

Phase 10 Nomads in the Upper Nubian and Middle Nile Hinterlands

Napatan texts refer to Rehreh and Medded nomads occupying the lands east of the Nile and north of the Atbara confluence. W.Y.Adams (1977) points to the likelihood that the Napatan state arose through an alliance betwen the Jebel Barkal priesthood and the local chiefs who, in view of the near absence of population in the Phase 9 Upper Nubian Nile Valley, may have been the leaders of the hinterland, probably nomadic, populations. The nomads of this area, as the name Medded suggests, were probably related to the Medjay of the Eastern Desert. They may also have included some populations who joined the nomads after the Egyptianised C-Group and

Kerma populations of Phase 8 abandoned the Nubian Nile at the end of the new Kingdom Period.

If so, these latter populations may confirm the ecological model's prediction for the cause of nomadism. As W.Y. Adams (1977) noted, the Nubian Nile Valley may have been abandoned, at the end of the New Kingdom Period, because of a drop in the Nile level (but see Trigger 1976 for a contrary argument). W.Y.Adams' argument is based on the point that the repopulation of the Lower Nubian Nile in Phase 12 (after ca. AD 1) correlated with the introduction of *saqqia* irrigation technology in that region. This suggests that agriculture there in the time between the end of Phase 8 and the beginning of Phase 12 had been impossible without this water-raising technology. Interestingly, however, the paleoenvironmental reconstruction of North Africa suggests that around 1100 BC (end of Phase 8) the Post- Neolithic Humid Phase was in effect. Thus, it is not entirely clear whether the abandonment of the Nile Valley was in fact a result of the lowering of Nile levels. If that were the case, however, and if some of the populations from the valley did indeed join the hinterland nomads, the ecological model would be supported. Clearly, there are a lot of "if"s involved, and the supporting data are tenuous, at best. In any case, the continued presence of nomads in the hinterlands, even after environmental conditions improved and populations returned to the Upper Nubian Nile Valley, suggests that ecological factors were not the sole cause of nomadism.

Phase 11 Nomads in the Butana Grasslands

The nomads of the Butana grasslands inhabited that area at a time when the climate was slightly wetter than it is today. The ecological model is in this case untenable. Even today, the inhabitants of the Butana grasslands, at least in the vicinity of Shaqadud fifty kilometers inland from the Nile, live in semi-permanent settlements practicing a mixed economy (Magid n.d.; personnal observation). During Phase 10 there were even large Meroitic towns, as at Naqa and perhaps at Musawerrat es Sufra, inhabited as much as 30-40 kilometers inland from the Nile. Thus, contrary to the ecological model, it is clear that the grasslands could have supported adaptations other than nomadism.

Concerning the population pressure aspects of the ecological model, it seems unlikely that the Butana grassland nomads were erstwhile valley dwellers pushed out of a congested optimal environment. The Phase 11 Meroitic inhabitants of the Middle Nile Valley occupied several nucleated towns and some smaller scattered settlements along the river, but, as the Meroitic site distributions (W.Y.Adams 1977) suggest, the valley was by no means congested.

Other Nomads

Little can be said about the nomads of the Ethio-Sudanese borderlands of Phases 11-13. Aside from the Hagiz Group, they are known only through Axumite texts and records left behind by classical geographers. The pre-nomadic occupations of the area are quite unknown, hence the ecological model cannot be tested.

Among the nomads of the latest Phases, the Blemmyes were apparently descendants of the Medjay, hence their probable origin has already been discussed. The origin of the Red Noba cannot be placed in space and time, and thus cannot be tested against the ecological model.

In sum, the ecological model can possibly explain some of the cases of nomadism in Northeast Africa: the Kiseiba herders, and possibly some nomads of the Phase 10 Upper Nubian hinterlands may have emerged in response to environmental degradation. In other cases, notably the Hagiz in the Southern Atbai and the Butana grasslands nomads of Phases 11 and 12, the emergence of nomadism seems to have had no relation to environmental or demographic factors. The remaining cases present insufficient or conflicting pieces of evidence: in these cases, the ecological model can be neither supported nor rejected.

The Military Mobility Model

The model postulates that conflicts between the state and the population of marginal lands led to the adoption of nomadism by the latter as a means for defense.

ancient texts often report royal campaigns. The content of the texts, concerning the causes, conditions and outcomes of various campaigns, are liable to tell us more about the state's self-image rather than give an objective account of the conflict. As such they have to be interpreted cautiously. For present purposes, however, it suffices to known that the campaigns took place at all: the stated purpose and consequences of the conflict need not be of immediate concern. In the following pages, the known cases of nomadism are examined for the possible effect that conflicts may have had on their development.

Phase 3 Kiseiba and Karat Group Nomads

There is no evidence for conflict in either the Nubian Nile Valley or in its hinterlands during this Phase. Only late in the Phase is there some information about conflicts, but these concern the unification of Egypt in the Early Dynastic Period and seem to have been more or less restricted to the Egyptian Nile Valley (Wilson 1951). Major campaigns against the hinterlands are not reported. It is unknown whether any conflicts took place in the Lower Nubian Nile Valley, at the time of the transition from Phase 2 to 3, when the Classic A-Group replaced the Abkan industry.

Phase 6 Medjay in the Eastern Desert

The Semnah Despatches (Smither 1945) and the tenth Egyptian fort in Lower Nubia which was called "repelling the Medjay" (Säve-Söderbergh 1941; Bietak 1966) indicate conflict between the Egyptian state and the nomads of the Eastern Desert. However, to see if conflicts led to the nomadisation of the Medjay, it is necessary to look at the situation in earlier Phase, since by Phase 6 the Egyptians were clearly in conflict with populations who were already nomadic.

In Phase 4 the Upper and Lower Nubian Nile Valley was apparently depopulated as a result of Egypt's aggressive foreign policy. Egyptian aggression is documented by the reliefs at Jebel Sheikh Suleiman (Arkell 1950), and the Khasekhem victory stela at Hierakonpolis (Säve-Söderbergh 1941) both of which refer to Egyptian attacks into Lower Nubia. The

another indication of the prevalent hostilities in this Phase. The fourth Dynasty Palermo stone, referring to Senefru's raids which led to the confiscation of some 200,000 head of cattle (Breasted 1906), suggest that campaigns were carried out against pastoral populations.

It is not unreasonable to suggest that these campaigns forced the Nubians to abandon the Nile Valley. They may have taken to the hinterlands to live a nomadic life. However, there is no pertinent evidence available from the hinterlands.

Notwithstanding the lack of direct evidence, if there were already nomads operating in these hinterlands during Phase 3 (as some indirect evidence suggests, Hofmann 1967; Nordström 1972), then it would be difficult to ascribe the origin of the Medjay nomads to the Old Kingdom Egyptian campaigns which took place in Phase 4. Furthermore, it is difficult to describe the Medjay's nomadism as purely a defensive tactic, since the evidence suggests that during Phase 7, at a time when there seems to have been no hostilities between Egypt and the Medjay, the latter continued to inhabit the Eastern Desert as nomads. Nevertheless, the depopulation of the Nile Valley in Phase 4 needs to be further investigated. It remains possible that the displaced Nubians adopted nomadism in order to avoid Egyptian aggression.

The Hagiz Nomads of the Southern Atbai

There are no indications of state directed conflict in the eastern Sudan to explain the Hagiz Group's nomadism. There, state sponsored aggression and expansionism occured at the end of Phase 12, with Ezana II's campaign against the Sudanese lowlands ca. AD 325. That campaign may have been responsible for terminating the Hagiz Group's occupation of the Southern Atbai. Thus, in this case, military action may explain not the beginning of nomadism, but its end.

Phase 10 Nomads in the Upper Nubian Hinterlands

There are indications of periodic conflict between the Napatan state and the hinterland nomads of Upper Nubia, as documented in such texts as King Anlamani's (Shinnie 1967). But

origin of the nomads in that area must lie farther back in the sequence.

Nomads of the Butana Grasslands

The Meroitic Temple/Hafir complexes of the Middle Nile region dating to Phases 10 and 11 suggest, if anything, a symbiotic rather than competitive relation between the nomads and sedentary populations of the area. Since Meroitic texts cannot yet be deciphered, no indications of nomad/sedentary conflicts can be gained from them. There are no further indications of conflict.

Phase 12 and 13 Nomads in the Hinterlands of the Nubian Nile

The origin of the Blemmyes, who are identified as a branch of the Beja/Medjay nomads, must be sought in earlier Phases. It is, however, instructive that with the takeover of Dodekashoenos from the Romans, and the imposition of Blemmyean rule over the agricultural Ballana culture there, the nomads do not appear to have settled down, but to have continued inhabiting the Eastern Desert. The same seems to have applied to the probably nomadic Red Noba who took over the southern half of Lower Nubia and its resident Ballana population. Thus, even if the origin of these nomads were to be ascribed to a need for adequate defense, that they did not revert to a settled life after the conflicts were resolved suggests that there were additional reasons for their nomadic lifestyle.

In sum, the military mobility model, as far as the presently available data allow one to judge, does not seem to explain many cases of nomadism in the Northeast African sequence. Its most promising application is to events in Phase 4 when Egyptian aggressions led to the depopulation of the Nubian Nile Valley. It would be illuminating to have archaeological coverage of the hinterlands of the Nubian Nile in order to assess the impact of Egyptian raids on the displaced Nubians.

In most other cases, conflicts are recorded against existing nomadic populations. In some cases, as in the Southern Atbai, conflict may have terminated nomadism. Elsewhere, as in the Meroitic Middle Nile, nomadism flourished in the apparent absence of any conflict.

In addition to the lack of agreement between the archaeological sequence and the military mobility model, some logical arguments can be brought to bear against its general applicability. Conflicts are fairly short term affairs. Clearly, they can lead to the abandonment of settled life, but that is not to say they lead to nomadsim. Ethnographic case studies clearly illustrate this (Fukui and Turton 1977; James 1979). In known cases, once hostilities cease populations return to their hamlets and fields, resuming a settled life. Even if we imagine a rather long term case of hostilities, lasting for, say, a few generations, where the afflicted population did turn to nomadism as a means for defense, that relatively short period would be hardly visible in the archaeological record. How then can mobility as a defensive tactic explain a nearly thousand year period of nomadism in the Taka Phase of the Southern Atbai, or the long sequences of nomadism in the Eastern Desert? There appears to be a disjunction in the temporal scale of hostilities, and in the scale of nomadic adaptations. This suggests that warfare, by itself, cannot explain nomadism.

Another problem with the military mobility hypothesis is that it assumes nomadism to be a natural extension of a settled mixed economy adaptation: that a settled farmer can in times of trouble simply pick up his herds and head into the hills to be a nomad until the troubles pass. This appears illogical. I t is doubtful that, for example, the average Beni Amer peasant living in the Southern Atbai today, who entrusts his herds to his sons for grazing within a short radius of the village, really knows that much about the complex herd managment strategies required to become a viable pastoral nomad. The strategies required in keeping a large herd fed in a marginal zone, where the delicate balance of resources can be easily upset, as well as the knowledge of pastures far and wide which a nomad must have to be able to tide over lean periods, are not innate to the average farmer who has lived all his life in a village and whose detailed knowledge of the regional ecology is limited to a day or two's walk away from his home. To suggest that as a result of short-term warfare the peasant can just get up and start being a

versa), capable of switching adaptations whenever necessary. This is not realistic.

knowledge needed to survive as a pastoral nomad, just like the knowledge required to be a successful cultivator, is something learned through generations of trial and error. It cannot be all that simple to switch from one to the other. If it were, there should hardly be such a thing as a "nomadic problem" facing almost all modern governments in the Near East and Northern Africa.

The M/V Model

This model postulates a general condition wherein wider spheres of interaction and exchange (made possible through the political and economic unification of ever larger groups of people) provided the stimulus for larger groups to become specialised producers.

The model thus suggests an orderly progression in the evolution of nomadism. The evolutionary trajectory begins with a mixed economy adaptive strategy, where specialisation in the production or acquisition of basic subsistence goods (meat and vegetal) and their consequent exchange occur among small demographic blocks (within or between families, for example). It goes on to an agro-pastoral economy, where specialisation and exchange occurs among larger demographic blocks (between several communities, or among sections of the same tribe, for example). Finally, the trajectory leads to a specialised agricultural and a specialised pastoralist society, where production and exchange occur among the largest demographic blocks (entire societies, tribes or ethnic units).

It is assumed that the final stage, which by its very scale requires an organised exchange system and coordination of the efforts of several thousand souls, could not exist without the unifying and administrative abilities of a state society. At the lowest stage, where exchange occurs among families, very low levels of organisation suffice to keep the system moving. At the intermediate stage--the agro-pastoral adaptation--it is assumed that an intermediate level of political and economic organisation, something akin to a chiefdom, would be required to coordinate specialised production and exchange among the demographic blocks involved.

document the actual M/V production and exchange at its pertinent demographic scale. Second, to document the orderly evolution of M/V production and exchange from between smaller to larger demographic blocks. And third, to show the parallel evolution of societal complexity from tribal to chiefdom to state level societies. The latter two are most readily documentable; the first is considerably more problematic.

As far as the second aspect is concerned, the archaeological sequences of select regions of Northeast Africa show the orderly progression from mixed economy to agro-pastoral and finally to specialised agricultural and pastoral adaptations (Figure 9.1). In the Southern Atbai sequence this progression was documented in Chapters 4 through 6. There the sequence began with the mixed economy populations of the Butana and early Gash Groups, progressed to the agro-pastoral adaptation of the later Gash and the Mokram Groups, and finally ended with the nomadic Hagiz Group. A specialised agricultural society, to complement the nomadic Hagiz Group, was not evident in the Southern Atbai at the final stage of the sequence, but its presence is documented in neighbouring regions, specifically in Northern Ethiopia and in the Central Sudan.

Elsewhere, the progression is not so evident, principally because the agro-pastoral stage is difficult to document in the archaeological sequence. Nevertheless, there are hints of agro-pastoral adaptations in some regions: these also fit into the evolutionary trajectory postulated by the M/V model.

In Upper Egypt of Phase 2 , the early Predynastic or Naqada I settlements at Hierakonpolis, which show a dichotomy in site types of the alluvial and desert edge zones, bring to mind two specialised economic sectors operating side by side within the same culture: an agro-pastoral adaptation may be indicated. Thus, in the Upper Egyptian squence, there also seems to be a progression from a mixed economy among the Badarian populations of Phase I, to a possible agro-pastoral adaptation among the Naqada I population of Phase 2, and finally to a more specialised agricultural adaptation in the Naqada II and III of Phase 3. These Phase 3 specialised agriculturalists are complemented by the apparently nomadic populations of the Western Desert,

Elsewhere, there are no well documented agro-pastoral adaptations: the Kerma Ancien population may have been agro-pastoral, assuming that the evidence for two types of sites represented at Kerma and Sai can be used as an indicator of two separate economic sectors. There is insufficient information to be certain of this identification, but if it is correct, the agro-pastoral adaptation there precedes a time when specialised agriculturalists occupied the Nile Valley and nomads operated in the hinetrlands (Phase 6 of Upper Nubia and the Eastern Desert).

Aside from the orderly progression from mixed economy to specialised food producing societies, the third aspect of the M/V model--the parallelism in the evolution towards nomadism, and the evolution towards the state--is also readily observed in the Northeast African sequence (Figure 9.1). All the cases of mixed economy adaptations are found in archaeological cultures which show no evidence for levels of societal complexity above an egalitarian tribal one. Such a level of societal complexity is best documented in the absence of any clear site hierarchies, evidence for equal distribution of wealth and absence of unusually rich burials. The idea that the mixed economy Badarian, the Lower and Upper Nubian cultures of Phases 1 and 2, the Wadi Howar sites and Tenerian culture of Phase 2, the Khartoum Neolithic and Late Neolithic of the Middle Nile were all existing at the simplest levels of social organisation is not disputed in the literature. Likewise, the studies in Chapter 4 indicated that the mixed economy Butana Group and the earlier Gash Group were also apparently at a simple egalitarian stage of social organisation.

The few cases of agro-pastoral adaptations known, seem to occur among cultures at a somewhat higher level of social organisation. Although it cannot be documented that the later Gash Group and the Mokram Group agro-pastoralists of the Southern Atbai existed at precisely a chiefdom level of organisation, their site hierarchies and the differential distribution of wealth among their settlements suggest a level of social organisation higher than a tribal, egalitarian one. At the same time there is no evidence of monumental architecture, royal graves, or any of the

In Upper Egypt, the apparently agro-pastoral Naqada I culture also seems to have enjoyed a level of social organisation akin to a chiefdom. The site hierarchies, with internally diversified large settlements and large rich tombs found at Hierakonpolis (Hoffman 1982) suggest a ranked society, which in comparison to the later developments in the area, was probably not yet at a state level of organisation.

Much the same can be said for the possibly agro-pastoral Kerma Ancien culture. The presence of a fortification wall around Kerma itself, a possible public building, and the wealth differentiation among the Ancien burials (Bonnet et al. 1986) suggest a form of ranked society, which apparently was not yet at a level comparable to a state society.

Most of the specialised agricultural societies known in the sequence existed at the state level of social complexity. The Upper Egyptian Naqada II and III occupations of Phase 3, with towns, craft production centers, long distance trade, and elaborate, rich burials suggest at least a proto-state level society. It goes without saying that dynastic Egypt, and later Ptolemaic and Roman Egypt all functioned as state level societies. In Lower Nubia the Phase 7 C-Group, and in Upper Nubia the Kerma Classic societies were likewise at least at a proto-state level of development. This is indicated not only by the wealth of these respective societies, but also by the monumental architecture (castles in the C-Group and the Deffufas at Kerma) found on their sites. The Phase 6 C-Group and the Kerma Moyen occupations of the same Phase may not have had achieved such levels of complexity yet. In any case the Phase 6 C-Group seems to have been greatly under the influence of Egypt, and the inhabitants of Lower Nubia at this time may have formed the external proletariat of the Egyptian state. Later agricultural societies in Upper Nubia, the Egyptianised Kerma culture of Phase 8, the Napatan and Meroitic societies of Phases 10-12 , and the Ballana culture of Phase 13, as well as the Lower Nubian Northern Meroitic occupants of Phase 12 can all safely be described as state level societies, or in some cases closely attached to such. The Meroitic society of the Middle Nile, and the Pre-Axumite and Axumite societies of Northern Ethiopia were also organised as states.

neighbouring the state level societies noted above. This correlation is clearly visible on Figure 9.1. During Phase 3 the Kiseiba herders operated in the desert west of the Lower Nubian and Upper Egyptian Nile at a time when the Naqada II and III proto-state or state level societies were occupying Upper Egypt. The Karat Group herders of Upper Nubia may have been active at the same time, although they seem inordinantly far from the Upper Egyptian Nile Valley. The Medjay nomads of the Eastern Desert, known from Phases 6-8 were operating on the borders of Dynastic Egypt. Later nomads in the same area were active when Upper Egypt was governed by the Late Dynastic, Ptolemaic and Roman Egyptian states. The nomads of the Upper Nubian hinterlands are known from the time when the Napatan state controlled that stretch of the Nile, and farther south the nomads of the Butana grasslands neighboured the Meroitic kingdom of the Middle Nile region during Phases 11 and 12. In the east, the Hagiz nomads and other nomads in the Ethio-Sudanese borderlands were in place at the same time that the Pre-Axumite and Axumite states governed Northern Ethiopia.

These correlations, though striking at first glance, must be approached with caution. Since most cases of nomadism in Northeast Africa are known through the historical texts left behind by the states themselves, the possibility exists that the pattern is partly self-fulfilling. There are, however, at least four cases of nomadism--the Kiseiba and Karat Group herders of Phase 3, the Hagiz Group of Phases 10-12, and the Butana grassland nomads of Phases 11 and 12--which are known by their archaeological remains; since these also fit the pattern of co-occurence with agricultural state level societies, confidence in the validity of the overall correlations is increased. Confidence in the pattern is further enhanced given that archaeological remains of nomadic societies are unknown from times and places where agricultural state level societies were absent. Thus, in spite of the fact that several gaps exist within the sequence, there seems to be a relatively strong correlation suggesting that nomadism occurs on the borders of state level agricultural societies, as the M/V model predicts.

Although the second and the third aspects of the M/V model--the progression from mixed

economy to specialised agricultural and pastoral adaptations. The [illegible]

evolution of nomadism and the evolution of complex societies--can, within the limitations of the data, be shown to apply to the Northeast African archaeological sequence, they alone cannot confirm the model. To do this, the first aspect of the model--the actual M/V exchange--has to be demonstrated. This is, unfortunately, all but impossible. Actual exchange of subsistence products is doomed to be invisible in the archaeological record: floral and faunal remains cannot, in the present cases, be traced to their point of origin. There are, however, some cases where circumstantial evidence provides a picture of possible M/V exchange between nomadic and sedentary populations.

The archaeological evidence suggest that during Phase 3, the A-Group of Lower Nubia may have been acting as the middleman in the trade of livestock to Egypt. That the A-Group was receiving livestock from outsiders seems fairly clear: the amounts of pastoral products found in A-Group sites and burials (ox-hides, dung tempered pottery), and the evidence that the A-Group was not adapted as a predominantly pastoralist population (few domesticated faunal remains, site locations in optimal zones, artefactual and macrobotanical remains indicating a strong reliance on cultivation) might suggest that the products were traded from other, more predominantly pastoral populations in the neighbouring regions. This opinion is shared by specialists of A-Group archaeology (Nordström 1972; Hofmann 1967).

For the opposite flow of goods, the presence of Egyptian necked jars, used for transporting beer and wine, as well as textual records, indicate a traffic in agricultural products from Egypt to Lower Nubia (Nordström 1972). Thus, it only remains to be shown that some of the livestock acquired by the A-Group found its way to Egypt, and that the nomads received some of the agricultural products exported from Egypt to Lower Nubia. This would complete the picture of M/V exchange between the nomads and sedentary populations of Phase 3. Sadly, pertinent data are lacking.

Elsewhere, there are no data to document M/V exchange between nomadic and sedentary populations. One possible exception is the Phase 11 and 12 situation in the Middle Nile region.

and state level agricultural peoples. Built at the edge of the grasslands, the Hafirs--large man-made reservoirs--were most likely intended for use as watering holes for the herds of the hinterland nomads (Ali 1972). Their association with Meroitic Temple might suggest a complex relationship between the nomads and sedentary folks, wherein, it would be reasonable to assume, the trade of M/V products played a part. Again, direct evidence is lacking.

Direct M/V exchange, in any case, need not have always been the focal point of nomad/sedentary interactions. The concept is, after all, an idealised construct used to clarify the model: nomad.sedentary interactions could have taken other, more complex forms. The tomb paintings of Meir, which show Egyptian cattle in the care of apparently Medjay herders, suggest that the relationship could have taken a form wherein the nomads acted as the caretakers of the herds of sedentary populations. The Axumite texts which speak of Ezana's gift of several thousand head of cattle to a Beja nomadic group might indicate a similar relationship. In some parts of the sequence there are indications that nomads may have played the role of caravaniers on the trade routes between states: this may point to another form of nomad/sedentary interaction, which could be taken as a complex expression of M/V exchange.

There are , however, cases in the archaeological sequence where the existence of any form of M/V exchange is open to doubt. Those cases where there was recorded conflict between the nomads and the state level societies, as between the Middle Kingdom Egyptians and the Medjay of Phase 6, or between the Napatans and the nomads in the hinterlands of Upper Nubia, or the periodic conflicts between Axum and her lowland neighbours, tend to contradict the M/V model. One assumes that M/V exchange could not have taken place between hostile groups. There are, however, several possible alternatives. The nomads may have entered trade relations with other, less hostile agriculturalists. Or, through the use of middlemen, the conflicts could have been bypassed. Most likely, however, in view of the short duration of most conflicts, the nomads may have weathered the storm and then continued with their trade relations: nomad/sedentary interactions, as known from ethnographic case studies are notoriously unstable arrangments at

point of the M/V model.

There is no direct evidence for M/V exchange at the other stages of specialised production (i.e. the agro-pastoral and mixed economy adaptations). One presumes that among agro-pastoral societies such as the Gash and Mokram Groups of the Southern Atbai or the Naqada I of Upper Egypt, M/V trade would have been conducted between the specialised sections. This, however, cannot be demonstrated with direct evidence. Likewise, it seems reasonable to assume that in the sites of mixed economy population, trade in M/V products would have taken place within the settlements, among the members of the community. This is indirectly evident insofar that a variety of subsistence products were available in these communities, hence there would be little need for trade with other communities. Direct evidence of intra-site M/V exchange, however, does not exist.

In the absence of direct evidence, one can present logical arguments as a partial substitute. The concept of M/V exchange is closely allied to the idea of self-sufficiency. At a mixed economy level of adaptive strategies, where each community produces or aquires all the basic subsistence goods it needs, that community is clearly a self sufficient unit. It has no need to trade for foodstuff with other communities. At an agro-pastoral level, where there is some specialisation among different sections, each section is not self-sufficient: if one is predominantly pastoral it needs to import agricultural products. Likewise the agriculturally oriented section will not be self sufficient, lacking pastoral goods and by-products. Trade in M/V, then, should logically take place between the sections: in that way, even though the sections are not self sufficient, the tribe actually is. At the higher level, a specialised agricultural society is not self sufficient since it lacks pastoral products, and a nomadic society is likewise lacking in agricultural goods. Clearly to achieve a balance they should enter into trade relations with each other. Thus, neither society is a self sufficient unit, but when they trade, a form of self sufficinecy exists at an inter-regional scale, in a unit containing two or more tribes. Clearly, self-sufficiency is maintained at a relative scale: if a nomadic society cannot enter trade relations with an agricultural one, it will of

within itself, in order to maintain its balanced M/V intake and be self-sufficient at least at an intra-regional scale. The same applies to the specialised agricultural society, which, if it cannot obtain pastoral goods from outside, will have to produce it by itself, i.e. it will have to create a pastoral section. Both will have, by definition, moved down the scale of specialisation to become agro-pastoral societies.

Thus, even though M/V exchange can barely be documented in the archaeological record, it is logical to assume that it took place between two neighbouring specialised societies, or sections, or even communities. Without the exchange, those societies, sections or communities could not have remained specialised.

Summary and Conclusion

Overall, of the three conditions of the M/V model two of them can be shown to apply to the Northeast African sequence. The first condition, the actual M/V trade, is difficult to document, but there are a few hints that it may have applied as well. Keeping all the limitations of the data in mind, the M/V model appears to fit the archaeological sequence better than either the ecological or military mobility model. The latter two possibly serve to explain some cases of nomadism but not others, while the patterns predicted by the M/V model can be seen, albeit dimly, in all known cases of nomadism in ancient Northeast Africa.

One last aspect of the archaeological sequence serves to support the M/V model. This concerns not the origin of nomadism, but the outcome of nomad/sedentary interactions. The Northeast African sequence reveals several possibles outcomes of nomad/sedentary interactions. One of these is of particular interest. It involves the takeover of the sedentary communities by a nomadic elite, but without a concomitant displacement of the agriculturalists, nor the sedentarisation of the nomads. Examples include the Blemmye takeover of post-Roman Dodekaschoenos, as well as the Noba takeover of the post- Meroitic populations in Nubia and the Middle Nile regions. The Medjay-related Mokram Group takeover of the Southern Atbai (Chapter

non-African modern contexts. One is reminded of the takeover of the Nakibi cultivators by the Gambarzai and Malukzai nomads in Iranian Baluchistan, as described by Salzman (1978).

The takeovers are similar in form. There are indications that the nomadic elite imposed its control on the sedentary populations, without causing any change in the basic adaptive strategies. The Noba presumably formed the backbone of the Ballana royalty, while the Blemmye were clearly in charge of the post-Meroitic population of Dodekaschoenos. In all cases the vanquished agricultural society continued in its usual way. One might assume that an aim of the takeover was not change, but continuation of the system.

Why should this be so? Following the logic of the M/V model, if the exchange link between the specialised agricultural and specialised pastoral population breaks down, the nomads are faced with three choices. Either they have to fix the links, or find a different agricultural population with whom new links could be established, or downgrade the interaction and trade spheres to become self-sufficient at the tribal (regional) level rather than at the inter-tribal (inter-regional) scale. This last choice requires a more generalised adaptation mixing agriculture and pastoralism, which in turn requires at least a partial sedentarisation of the nomads to an agro-pastoral or mixed economy adaptation. Which choices are taken must depend on historical conditions and characters. Often, however, one might assume that an attempt is made to re-establish trade links simply by taking over the administration of the sedentary agriculturalist population: not in order to change anything, but to keep things from changing.

In this light, it is interesting to note that the Blemmyean takeover of Dodekaschoenos, and the Noba takeover of the rest of Lower Nubia occured at a time when the structure of Northeast African inter-regional trade had begun to change as a result of Meroe's collapse and the ascendancy of Axum. The Mokram Group takeover of the Southern Atbai, likewise, occured at a time when the Northeast African trade, specifically between Kerma and the Southern Atbai Punt, was upset by the Egyptian takeover of Upper and lower Nubia at the beginning of the New Kingdom Period (Phase 8). Such upheavals, which would presumably have affected

preserve, or at least salvage a part of the status quo.

That the nomads did not interfere with the day to day activities of the sedentary population supports the idea that interaction and trade with the specialised agriculturalists allowed for the existence of the nomads in the first place. It is a logical action for nomads to attempt to preserve the status quo only if that status quo is essential to nomadic life. That the nomads remained nomads supports neither the ecological nor the military mobility model. In both cases, the logic of the models demands that the nomads should settle back down to an agricultural life: from the point of view of the ecological model because optimal zones were now available for sedentary life, and from the military mobility model's perspective because there was no longer any conflict necessitating nomadic mobility. In view of the above examples, the central argument of the ecological and military mobility models--that nomads are such because they have no other choice--seems to carry little weight.

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