Livestock Husbandry, Pastoralisms, and Territoriality: The West African Record

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Evidence for livestock found in West African Holocene sites are considered in relation to patterns of settlement distribution in the context of changing climatic circumstances. The development of livestock husbandry appears to coincide with the advent of a drier Middle Holocene climatic, followed by a relatively fast expansion all over West Africa. Pastoral-nomadic strategies developed in the northern Saharan part are hardly distinguishable from Late Stone Age settlement-subsistence traditions, while genuine agro-pastoral systems emerged in the south, along the Sahara-Sahel margins. In all the cases, stone tumuli burials, rock art stations, and intermittent or permanent settlements were used as de facto territorial markers, effective signposts of West African Collector, herder, and peasant territoriality. © 1998 Academic Press

INTRODUCTION

In prehistoric contexts, livestock husbandry was probably inextricably imbedded in the fabric of social systems. As socioeconomic subsystem, it ranges from the rearing of few animals within the domestic sphere of activity to specialized long-range trade and market-oriented pastoralisms. The social, economic, and political impact of animal husbandry thus increases from one end of the spectrum, that of small household-based systems to the other, that of more specialized pastoralist ones. Pastoralism involving diverse animal species and varying patterns of socioeconomic relationships, is a multifaceted phenomenon with many possible definitions (Khazanov 1984; Cribb 1991; Smith 1992a,b; Bar-Yosef and Khazanov 1992; Frankfort 1990). According to Khazanov (1984), its nomadic variants developed in specific circumstances. He states that “... nomads could never exist on their own without the outside world and its non-nomadic societies, with their different economic systems. Indeed, a nomadic society could only function while the outside world not only existed but also allowed for those reaction from it—reactions which were economic, social, political, cultural, in a word, a multifaceted response—which ensured that the nomads remains nomads” (Khazanov 1984: 3). Khazanov views clearly refer to specialized trade and market-oriented pastoral nomadism, more or less integrated within the fabric of Near-eastern and Central Asian centralized state societies from the ca. fourth millennium B.C. onward. It is doubtful that this scenario is applicable without serious alteration to all cases of development of pastoral nomadism (Holl 1990). The archaeology of pastoral nomadism is strongly constrained not only by the ambiguity of cultural remains, but also by the low preservability and visibility of sites (Cribb 1991). In this regard, the analysis of livestock husbandry systems developed by West African prehistoric societies presented in this paper will consider the documented faunal repertoires with due emphasis on chronology, environment, attested domestic species, regional variability, settlement
types and distribution, as well as processes of territorial demarcation if any. The study area under consideration here is limited in the north by the Ténéré in Niger in the East and the mouth of Wadi Dra in Western Sahara in the West, its southern limit corresponding to the northern sahel margins on the latitude of the Niger bend (Fig. 1).

The chronological and cultural background from which varying animal husbandry strategies developed can fruitfully be considered is that of Early Holocene West African Late Stone Age societies (Fig. 1). Late Stone Age sites with and without pottery and bone tools dated to ca. 9500 to 6000 B.P. have been recorded in different areas in West Africa. (Fig. 1) In Niger, few sites were tested at Tagalagal in the Air; Temet, Fachi (Roset 1974, 1983), and Adrar Bous (Clark et al. 1973) in the Ténéré, and Tamaya Mellet in the Aza-waghi valley. In Mali further west, Early Holocene settlements were found in the Erg-in-Sakane, Erg Jmeya, and Hassi el Abiod areas in the north and desertic part of the country (Petit-Maire and Riser 1983; Petit-Maire et al. 1983) and the Sahelian southwest in the Vallée du Serpent (McDonald and Allsworth 1994) and the Mema region (Togola 1996). An extensive Late Stone Age complex with microlithic components has been recorded all over the Sudano-Sahelian belt, from Nigeria to Senegambia (Andah 1979; Philipson 1982; Ballouche et al. 1993; Connah 1981; Breunig et al. 1996).

In general, with minor variation from one area to the other, the Early Holocene (ca. 11,000–6000 B.P.) climate was humid and wet, with abundant rainfall (Williams and Faure 1980). West African vegetation belts shifted northward, with most of the present-day desert turned into a more or less rich grassland (Schulz 1991), with ex-
With the onset of the Mid-Holocene arid climatic phase (ca. 5000–4000 B.P.), vegetation belts shrunk and/or shifted southward. It is basically in this environmental context that livestock husbandry appears to have expanded at a relatively fast speed in West Africa. This formulation does not have to be read as environmental determinism; the timing (ca. 5000–4000 B.P.) at archaeological time scale is inescapable, but the expansion of livestock in some areas and not in others suggests the operation of other parameters.

Archaeological sites with livestock remains dated from ca. 6000 B.P. onward have been recorded in the Ténéré at Adrar Bous, Arlit in the Air (Smith 1992a,b), in numerous localities of the In-Gall Te-gidda-n-Tesemt basin (Grébénart 1985, Paris 1984, 1992), the Tilemsi (Smith 1980; Gaussen and Gaussen 1988), the Taoudenni basin in Northern Mali (Petit-Maire and Riser 1983), Western Sahara (Petit-Maire 1979a), and finally, the Dhar Tichitt region in Southeastern Mauritania (Munson 1971; Holl 1985a,b, 1986). Several other sites, with evidence of livestock but dated to a later ca. 4000–3000 B.P. time range, have been tested during the past decades. Some of them, like the Kintampo-culture settlements Mumute and Tereso, are located as far south as the forest–savanna ecotone in Ghana (Flight 1976; Andanquah 1993; Stahl 1993), while others are found in the southwestern part of the Chad basin (Connah 1981; Breunig 1995; Breunig et al. 1996). Single-site sequences present important well-contextualized archaeological data, but their integration in a study geared toward an analysis of prehistoric pastoral territories is not yet feasible. This paper will thus be based on a sample of the best documented regional sequences, with the hope to gain some insight on prehistoric herders’ social territories.
highly uncertain. According to Guédin and Faure (1983: 245), "these 5 teeth differ from the rest of the material collected at AR 7 by their very white patina, and their surface aspects, they are perhaps of a recent age." In addition, as far as domestic animals are concerned, a second cattle phalanx was found at Site MK 2 and dated to 4750 ± 120 B.P. Formerly assigned to a buffalo, that phalanx appeared to be too small in size to Gauthier (1991: 173–174) who considers it to belong to Bos taurus and not to the ill-defined Bos ibericus.

If considered in relation to changing Holocene climatic patterns, two main sequences of occupation with slightly distinct subsistence systems but comparable site-location strategies are attested in the Taoudenni basin. An earlier Late Stone Age hunter-collector occupation sequence dated from ca. 8500 to 5000 B.P. during the Early Holocene humid phase, followed by a later collector-herder sequence, singled out by the presence of cattle during the mid-Holocene dry phase. As can be judged from the frequency of recorded faunal remains, hunting of wild game and the exploitation of aquatic resources and wild grain were predominant subsistence pursuits during both settlement sequences. Sites were preferentially located near freshwater lakes and lagoons; pottery, grindstones, and grinders are abundant in almost all the recorded localities. There is no remarkable change in stone tool types and knapping techniques. The adoption of cattle husbandry thus clearly seems to coincide with the advent of drier climatic conditions. It can be suggested that livestock husbandry based on cattle herding may have been an alternative settlement–subsistence strategy devised by the Taoudenni Basin Mid-Holocene folks to face decreasing productivity of their home range. Site-location strategies were based on a "traditional Late Stone Age" model of mobility, with dispersed small sites at one end of the settlement spectrum, and at the other, relatively larger sites located along more or less permanent water places.

The Western Sahara along the Atlantic Coast

Along the Atlantic coast, an extensive but narrow stretch of land, 2000 km long north–south and 50-km-wide east–west in average, was surveyed by N. Petit-Maire and her research team (Petit-Maire 1979a,b, 1980). The investigated area is limited in the north by wadi Draa and Cape Timiris in the south. Twenty-one archaeological sites, ranging in time from ca. 8000 to 2000 B.P. have been recorded and mapped. They consist of several shallow surface sites with more or less loose scatters of cultural evidence, concentrated or dispersed burials, shell-middens, and relatively bulkier settlement evidence found at Tintan and Chami. Subsistence systems devised by Western Sahara mobile prehistoric folk consisted of hunting, fishing, wild plant gathering and the exploitation of sea mollusks, a subsistence package to which livestock husbandry was added later. In the context of a drier Mid-Holocene climate, fresh water may have been a critical resource.

The prehistoric sequence recorded in the Western Sahara study area is divided into two chronological periods. The earliest dated from ca. 8000 to 4500 B.P. is characterized by an extremely low density of settlement consisting of low shell-middens found along the coast, with very little evidence of material culture (Petit-Maire 1979a). The second chronological period is dated from ca. 4000 to 2000 B.P. It is characterized by a higher density of settlements, ranging from shell-middens and cemeteries to bulkier sites. Archaeological data are much more diversified; stone tools, pottery, and grinding equipment as well as faunal remains of wild and domes-
tic mammals have been recorded. Two sites, Tintan on the coast and Chami farther inland, have been submitted to more intensive archaeological investigation.

The faunal evidence from Tintan, the coastal site, consists exclusively of sea mollusks. Five species have been identified; these are *Anadara senilis*, *Conus papilionaceus*, *Murex hoplites*, *Cymbium neptuni*, and *Semifusus morio* (Elouard 1979: 228–229). Tintan was probably settled intermittently, on a seasonal basis; its position in the subsistence–settlement spectrum appears clearly as a special-purpose site. Chami is located approximately 100 km farther inland, near a freshwater spring. Fireplaces, grinding tools, pottery, and faunal remains are much more abundant on the settlement, extended over 1 ha. Animal bones are distributed into remains of large wild mammals, *Phacochoerus aethiopicus* (wild boar), *Oryx algazel* (oryx), *Loxodonta africana* (elephant), *Cerathotherium simum* (rhinoceros), *Lepus capensis* (hare), and *Gazella* sp., and livestock with *Bos* sp. (cf. Taurus) and *Ovis* sp. Frequency distribution of species recorded in the Chami faunal sample is unknown. It is however specified that cattle is one among the three predominant species (Petit-Maire 1979a: 234). The presence of a freshwater spring and a diversified faunal material, as well as bulkier settlement evidence, suggest that Chami may have been located in an optimal herding area. It was probably part of the Late Stone Age herder–collector home range, settled preferentially during dry seasons.

Evidence of material culture shows strong similarities between Tintan and Chami archaeological records. Both settlements are contemporaneous and situated 100 km from each other; the former on the coast and the latter in the hinterland. The recorded difference in ecological settings thus suggests that both sites may have been part of a broad Late Stone Age collector–herder home range with complementary components. The coast may have been visited by dispersed small groups of herders during rainy seasons when fresh water was easily available, with a focus on the exploitation of marine resources at several dispersed localities, Tintan being one of them. During dry seasons, humans, livestock, and wild mammals may have converged toward permanent freshwater places situated farther in the hinterland. Repeated occupation of the same place has resulted in the formation of bulkier and extensive archaeological sites, as is the case for Chami. As has been shown for the Taoudenni basin, evidence for livestock, in this case cattle and sheep, also appeared in the western Sahara archaeological sequence during a climatic phase characterized by a sustained trend toward increased aridity. Livestock husbandry thus appears as a new alternative integrated within an earlier mobile Late Stone Age settlement–subsistence tradition.

The Tilemsi Basin, South Central Mali

The Tilemsi is an extensive “fossil” river drainage basin, 700 km in length from the southern part of the Tanezrouft in the north to the Niger river in the south and 400 km wide (Fig. 1). It is limited in the northeast by the Adrar-n-Ifogha plateau (Gaussen and Gaussen 1988). Several Late Stone Age sites ranging from low mounds (Smith 1975, 1980, 1992a,b), surface sites with more or less dense scatters of archaeological evidence (Gaussen and Gaussen 1988; Raimbault 1991), cemeteries with stone tumuli, carnelian bead workshops, and rock-art stations (Lhote and Tomasson 1967) have been recorded.

Surveys and few archaeological test excavations have been carried out. The *Nécropole de la Frontière*, a cemetery with 20 stone tumuli, measuring 260 m in length and 150 m in width, has been recorded in the north, on the edge of the Tanezrouft. One of the tumuli has been
excavated and dated to 4750 ± 80 B.P. The deceased was buried with five pieces of pottery, eight ground axes, and two bone tools, a spatula and a point. Several surface sites have been found in the extensive Asselar depression, situated on the western part of the Tilemsi basin. A well known well of brackish water, attracting present-day populations of pastoralists for their annual “cure salée,” is situated at the center of the depression. An archaeological site, 3 to 4 ha in surface area was discovered in the proximity of the well. A sample of 5170 stone tools collected from the surface comprises 710 arrowheads, 600 end scrapers, 1399 geometric microliths, 810 borers, 598 blades, bladelets, backed and retouched flakes, and finally, 118 ground-stone pieces. The collected faunal material consists of freshwater mollusks (Melania sp.), a large quantity of catfish, and few pieces wild boar, gazelle, antelope, and rhinoceros bone. No livestock remains have been reported. The situation is different at Aguendemen, a site located at 20 km of Asselar, where cattle bones have been found in a context with quite similar material culture (Gaussen and Gaussen 1988: 83).

Two mounds have been tested at Karkarichinkat A and B in the south (Smith 1975, 1980, 1992a,b). Both mounds, inhabited from ca. 4000 to 3300 B.P., are located in the bed of the Tilemsi river. Pottery is abundant and stone tool repertoires consist of grinding equipment, microliths, end scrapers, burins, borers, bifacially retouched arrowheads, and finally ground axes. Numerous terracota figurines representing cattle have also been collected. Cattle bones are predominant among faunal remains (41.4% of mammalian bones). In addition, goats bones (21.8%) were found as well as those from few wild mammals, gazelles, wild boar, and jackals (Smith 1975, 1980). Aquatic resources are represented by abundant remains of fish, with nil perch predominant, and mollusks. Plant macroremains of wild fruits, Celtis integrifolia, Grewia sp., and Acacia nilotica, and imprints of Pennisetum sp. (McIntosh and McIntosh 1983) are attested. According to Smith (1975), both mounds may have been settled according to seasonal variation in resources. The high frequency of cattle figurines, supported by the predominance of cattle and sheep/goat bones, provides strong evidence for the development of a pastoral-nomadic way of life and tradition.

Peculiar and intriguing archaeological sites were discovered in the southeast, north, and northeast of Gao. They consist of high concentrations of carnelian beads workshops clustered around the localities of In Begouen and Telataye (Gaussen and Gaussen 1988). The recorded material culture comprises pottery, carnelian at every stage of bead manufacture process, thousands of stone borers, ground axes, and other knapped flint tools. None of the workshop has been tested and the chronology of this specific component of the Tilemsi archaeological sequence is still obscure. Rock-art stations are concentrated in the northern part of the basin, along streambeds in the Adrar-n-Ifohga (Lhote and Tomasson 1967) and the Timetrine massif. Cemeteries with varying numbers of stone tumuli are located in the foothills on the western edge of the Adrar and the Timetrine massif. Thirty settlements have been mapped during a recent survey conducted in the latter area (Raimbault 1991: 138–140).

Very few settlements have been tested in the Tilemsi area. The chronology of the recorded archaeological sequence is still in need of further clarification. Judged from the overall similarities in material culture, the Tilemsi archaeological record has been partitioned into four regional variants, termed Facies A (Asselar), B (In Begouen), K (Karkarichinkat), and T (Telataye) (Gaussen and Gaussen 1988). If read from the background of sharply contrasted seasons which
may have characterized the Mid-Holocene climate, the Tilemsi basin was probably settled by Late Stone Age pastoral-nomadic groups. The landscape is dotted with intermittent habitation sites, special-purpose sites, burial grounds, and rock-art stations, which can be considered as different but complementary signposts of pastoral nomad social territories. Their home range may have comprised highlands, plateaus, and massifs such as the Adrar-n-Ifogha and the Timetrine massif in the north and northeast and the Niger river and its floodplain in the south, between them being the Tilemsi river valley oriented north-south, the extensive Asselar depression with brackish water sources, lagoons, and ponds in the west, and the rolling dunes regions of In Begouin and Telataye in the southeast. Intensive carnelian bead manufacture is a later development, ranging in time from the beginning of the first millennium A.D. to 1600 A.D. (Holl 1994, 1995a). Pastoral-nomadic groups were then involved in long-distance trade relationships with developing markets and urban centers from the Niger river and surrounding lands. Long-range pastoral nomadism with camels, involved in long-distance trans-Saharan trade, may have been developed during this later period.

The Dhar Tichitt, Southeastern Mauritania

The Dhar Tichitt region is located in southwestern Sahara in Mauretania, by 18° 20'/18° 27' N and 9° 05'/9° 30' W (Fig. 1). The study area, slightly more than 600 km² in extent, measures 44 km in length and 14 km in width. The physical landscape consists of a series of sandstone cliffs, oriented NW–SE, situated at elevation varying from 40 to 60 m above sandy flats and interdunal depressions with remains of former freshwater lakes (Munson 1971; Holl 1985a,b, 1986, 1989, 1993; Amblard and Pernès 1989). Several surveys and archaeological excavations have been carried since the beginning of this century. The archaeological record comprises massive settlement evidence with dry-stone masonry distributed among well defined villages of varying size, stone tumuli, rock engravings and paintings, and, finally, more or less extensive scatters of surface material.

With 46 recorded sites, the Dhar Tichitt prehistoric sequence spans approximately 2000 years, from ca. 4000 to 2000 B.P., with settlement divided into two major categories. Villages with dry-stone features, organized into walled compounds and ranging in size from 500 m² to 18 ha, are located above the sandstone cliff; surface sites with scatters of cultural material are found in the sandy flats and interdunal depressions, in general near former freshwater lakes. It is highly probable that many small surface scatters were wiped out by hydrologic agencies or hidden by drifting sand or even escaped observation. As suggested by palaeoclimatic research (Hugot 1977; Holl 1986: 26–29; Person et al. 1995), the Late Holocene climate was characterized by two sharply contrasted seasons: a longer dry season and a shorter rainy season with stormy rains. However, the climate appears to have been slightly wetter from ca. 3000 to 2500 B.P.

Dhar Tichitt Late Holocene people were semisedentary agro-pastoralists with broad-spectrum subsistence systems. They include hunting, fishing, wild fruits and grain collecting, agriculture of bulrush millet (Pennisetum sp.), and, finally, livestock herding of sheep/goats and cattle. Fishing is attested by remains of catfish and Nile perch bones. Three samples of faunal remains have been collected. The first came from controlled excavation of a compound dated to ca. 2500 B.P. (Gif 6083) and systematic surface sampling of the 12-ha settlement of Akhreijit, the second from a surface site (Site 46) located in the interdunal depression near a former fresh-water lake, and the third through judgemental sampling implemented dur-
ing a survey conducted by the Dhar Tichitt Prehistoric Mission in 1980 (Holl 1985a, 1986).

Seventeen taxa have been identified in the Akhreijit village samples, Nile perch (3 vertebrae), 14 of wild mammals and 2 of livestock. Wild mammals are distributed into 80 gazelles (39.02%), 39 bovids (19.02%), 10 oryx (4.8%), 9 addax (4.3%), 5 eland (2.43%), 3 (1.46%) each of Tragelaphus sp. and Gazella dama, 2 each (0.97%) of Hippotragus equinus, Mellivora capensis, and Kobus sp., and finally, 1 (0.48%) each of Equus sp., Panthera leo, Cricetomys sp., and Genetta genetta. Domestic animals are represented by 34 (16.58%) cattle and 12 (5.85%) sheep/goat bones. Site 46 sample comprises 16 identified taxa; one fragment of Crocodylus niloticus carapace, 145 burned ostrich eggshell fragments, and five large Nile perch vertebrae measuring 26 to 32 mm in length and 25 to 32 mm in diameter have been collected. Wild mammals are distributed into 21 (35%) Bovidae sp., 12 (20%) Gazella dorcas, 6 (10%) H. equinus, 5 (8.33%) Oryx algazel, 3 (5%) Addax nasomaculatus, 2 (3.33%) Tragelaphus sp., and 1 (1.66%) each for Equus sp., Taurotragus derbianus, G. dama, and finally, Hippopotamus amphibius. Three domestic species are attested: 4 (6.66%) for cattle, 1 (1.66%) for sheep/goat, and 2 (3.33%) for camel. The camel bones singled out by their white patina, are clearly intrusive. The third sample is patently characterized by its loose chronological resolution. Sixteen taxa have been determined; domestic mammals are represented by 27 (32.14%) cattle and 9 (10.71%) sheep/goat bones. Eleven wild mammals are distributed into 13 (15.47%) Bovidae sp., 6 (7.14%) H. amphibius, 5 (5.95%) each for O. algazel and G. dorcas, 4 (4.76%) each for T. derbianus, G. dama, and H. equinus, 2 (2.38%) A. nasomaculatus, and, finally, 1 (1.19%) each for Equus sp., Acinonyx jubatus, M. capensis and Ceratotherium simum (white rhinoceros). In addition, two jawbones and two dorsal spines of catfish as well as a tens of connected vertebrae of Python mollure were collected.

The proportion of domestic animals varies from 22.43% (Akhreijit village) to 8.32% (Site 46) to 8.82% (third sample). Cattle bones are always predominant with proportions varying from 32.14% (third sample) to 16.5% (Akhreijit village) to 6.66% (Site 46). This predominance of cattle is independently supported by higher frequencies of representations in rock engravings (Amblard and Vernet 1984; Beyries and Boeda 1981). Some of the scenery depicts small cattle herds in line followed by a shepherd. In addition, large cattle enclosures have been found on the periphery of three walled settlements, at Akhreijit, Chebka, and El Khimiya. Among all the studied samples, 8.28% of the determined cattle bones belong to young animals; kill-of pattern does not necessary reflect herd management strategies. However, read in conjunction with frequent depictions of cows with overemphasized udders, milking adult animals may have been one of the predominant targets of cattle-herding, putting aside the important but unsubstantiated social value of livestock herds.

The Dhar Tichitt settlement system comprised permanent sedentary villages, characterized by heavy investment in the construction of habitation features, situated above the sandstone cliff on the shore of intermittent streams, and intermittent dry season camps, without built facilities and set in the sandy lowland and interdunal depressions. The home range was a narrow one, not exceeding 20 km if judged by the regional distribution of settlement recorded in the study area. Seasonal moves to dry season camping areas may have concerned a minute fraction of the population of each village only, de facto special-purpose task-groups. Repeated occupation of the same places has generated extensive surface scatters of
cultural material, as is the case for the site of Goungou, tested by Munson (1971). The long-term dynamics of the Dhar Tichitt settlement systems is beyond the scope of this paper; suffice it to specify that through time, settlements coalesced into four subregional clusters organized around large 4 to 18 ha central villages, Akhreijit, El Khimiya, Chebka, and finally, Tijot (Holl 1993). It can nonetheless be considered that the area was inhabited by semi-nomadic peasant–herder communities, practicing short-range seasonal moves from permanent villages to intermittent dry-season camps and vice-versa.

SELECTED SPECIES, PASTORALISMS, AND TERRITORIALITY

There is a differential distribution of domestic species, depending on areas and judged from the available faunal record. Cattle and sheep/goat bones are found in virtually all the reviewed regional sequences, with the notable exception of the Taoudenni basin. This feature recorded in the Erg In Sakane, Hassi el Abiod, and Erg Jmeya does not seem to result from a bias in field observation. If this is the case, the herding system devised by the Taoudenni basin Mid-Holocene herder–collectors appears to have been based exclusively on cattle husbandry. The record from the Asselar depression in the Tilemsi basin is poorly investigated; cattle bones were recorded, but the absence of sheep/goat bones does not seem to be significant. In all the remaining cases, in Western Sahara, Adrar Bous, Aïr, Central Tilemsi, Dhar Tichitt, and the Eghazer basin which will be presented later as a case study, livestock remains comprise cattle and sheep/goat bones in varying proportions, sometime complemented by the presence of domestic shepherd dogs (Paris 1984). Where available, frequency distribution of cattle and sheep/goat bones always present a predominance of the former over the latter. As suggested by rock engravings and the few available morphometric data (Holl 1986: 93–94; Smith 1992b: 42), West African prehistoric cattle belong to the small-size, short horn, humpless breed (Smith 1986, 1992a,b; Grigson 1991; Clutton-Brock 1993).

Two types of livestock herding systems can be reconstructed if the available faunal remains are considered in relation to settlement features, regional distribution of sites, and inferred climatic patterns. The first type comprises long-range pastoral-nomadic herder–collectors with more or less shallow settlement records distributed over territories extended over more than 100 km. Such systems are found in the Taoudenni, Tilemsi, Western Sahara, and Eghazer basin. The social landscape is dotted with stone-tumuli cemeteries, rock-art stations, and seasonal camps, de facto territorial markers. The second type consists of a single case, that of the Dhar Tichitt sequence characterized as semi-nomadic agro-pastoralists. In this case, the practice of agriculture associated with genuine village life is associated with livestock husbandry. The territorial range is narrow, less than 20 km, with probably specialized groups of herders moving from one water place to another during dry seasons. Rock-art stations and stone-tumuli burials are dispersed throughout the landscape without any remarkable concentrations.

Territoriality in prehistoric pastoral context is a difficult issue. Societies and traditions waxed and waned; and the fluidity of pastoralist social systems precludes any attempt at the reconstruction of long-term bounded spatial units. More probably, pastoralist territoriality involved changing flexible networks of places comprising grazing lands, groves of fruit trees and wild grain, water-places, settlement areas, burial places, and symbolically charged localities (Casimir 1992). "Territorial functioning refers to an interlocked system of
sentiments, cognitions, and behaviors that are highly place specific, socially and culturally determined and maintaining, and that represent a class of person–place transactions concerned with issues of setting management, maintenance, legibility, and expression” (Taylor (1988: 6) in Casimir 1992: 19). In some cases, the Saharan archaeological record provides glimpses on prehistoric pastoralists territoriality. This is the case for the extensive and widespread distribution of megalithic burials, dispersed or clustered in cemeteries with numerous stone tumuli (Camps and Camps 1964; Lihoreau 1993; Savary 1966; Paris 1984, 1990), the regional distribution of rock paintings in the Tassili-n-Ajjer for example (Lhote 1976a; Holl 1989, 1995b), and rock engravings along the Wadi Djerat (Lhote 1976b). Three examples will be briefly reviewed here.

In their study of Djebel Mazela cemetery at Bou Nouara in eastern Algeria, the largest megalithic cemetery in northern Africa extended over 400 ha and comprised 3000 to 4000 burials. Camps and Camps (1964: 87) have shown that the megalithic builders were peasants and sheep herders. The clay material used to manufacture the vessels found in some of the tested burials is distributed into three groups of distinct origins. The cemetery is interpreted as “a high place used to materialize the unity of widely scattered tribal segments” (Camps and Camps 1964: 87).

Another relevant example is provided by the cemetery of Iwelen studied by Paris (1990). It is located on the southern slope of Wadi Greboun in the Air mountain range, on the shore of an intermittent river, and comprises 64 burials distributed into five monument types. All the burials have been excavated and range in date from ca. 5000 B.P. (5020 ± 250 B.P.) to ca. 900 B.P. (1160 ± 90 B.P.). Copper artifacts found in some tombs attest to a strong connection with the Eghazer basin. A habitation site associated with series of rock paintings and engravings were also found at the same locality. The long-term use of large cemeteries was certainly connected to some concept of territoriality.

A third case, that of the Fadnoun on the northern side of the Tassili-n-Ajjer, presents an interesting pattern of distribution of megalithic burials (Savary 1966). The surveyed area, situated at 25° 28'/26° 22' latitude N and 7°54'/8° 54' longitude E, with elevation above sea level (asl) ranging from 600 m asl in the north to 1600 m in the south, measures 4250 km². The plateau landscape is tormented with deeply incised south–north river valleys. These valleys (Wadi Djerat, Imirhou, Ad, Tadjeradjeri, Ouret, Tiflamine, etc.) with remnant water sources and sometimes wide flat bottoms, were probably used as transhumance corridors by prehistoric pastoralists who painted the artworks found in the Tassili-n-Ajjer, in places generally situated at more than 1400 m asl. As is the case for Wadi Djerat (Lhote 1976b), thousands of rock engravings are found along the wadi valleys. According to Savary (1966) analysis based on low-altitude air photographs, there are no cemeteries; megalithic burials are dispersed almost evenly throughout the landscape, with a preferential concentration in the southern half of the surveyed area, where 306 clearly visible monuments of a total of 428 have been recorded. The average density is approximately 1 monument per 10 km², varying from 1 per 8.54 km² in the south to 1 per 13.5 km² in the north. The Fadnoun case suggests that prehistoric pastoralist groups roaming in the area between the Outer and the Inner Tassili may have been constituted in average of relatively small size units, without specific large burial grounds.

As far as monumental burials are concerned, two different strategies are represented in the cases reviewed here. At Iwelen and Djebel Mazela there are large
long-term cemeteries, probable gathering “high-places” for usually dispersed tribesmen. In the Fadnoun, tribe segments, probably at the level of clans, adopted a strategy consisting of shifting burial places for the deceased without any noticeable preferential pattern of location and clustering. Rock engravings, rock paintings, megalithic burials, and occupation sites thus appear as meaningful archaeological signposts of prehistoric pastoral nomad territories.

PASTORAL-NOMADS TERRITORIES: THE EGHAZER BASIN

Situated between 16°/18° 10' latitude N and 6°/9° longitude, the In Gall–Tegiddan–Tesemt region, here termed the Eghazer basin, is located between the Air mountain range in the East, the Tigidit cliff in the South and the Azawagh valley in the West. It is watered by numerous seasonal streams, among which the Eghazer is the most important (Poncet 1983). The area surveyed by the Programme Archéologique d’urgence (Poncet 1983; Bernus et al. 1984; Paris 1984; Grébénart 1985) extends over a surface of about 51,000 km². This study area can be divided into four morphological units: in the central position, there is an extensive clayey depression watered by the Eghazer river. The Air mountain range, located in the East with numerous rock-engraving stations (Lhote et al. 1987), is bordered on its western side by foothills with elevation varying from 400 to 600 m asl. In the south, the Tigidit cliff stretches 200 km east–west.

The Air mountain range has been poorly surveyed; it has, however, been observed that there are numerous valleys, more or less deep with sand and silty sand at their bottom. “The vegetation is characterized by narrow strips of grass and trees at valleys bottoms, where southern species (Acacia albida etc.), willingly visited by pastoralists can be found” (Poncet 1983: 26). The foothills zone comprises the Tadarast plateau with series of deeply cut valleys for water courses originating from the Air mountain. During the rainy seasons, both areas are dotted with important ponds, some of them deep enough to last for entire dry seasons. As such, they are optimal dry season camping areas for nomadic pastoralist groups (Poncet 1983: 23). The Eghazer basin is composed of two subunits: the clayey zone along the Eghazer river drainage stricto sensu, surrounded on its northern and western periphery by sandy formations and areas of drifting sand, along the Sekkiret valley. In the south, the sandstone cliff of Tigidit, with boulders and sometime tormented landscape with isolated hilltops, sets the southern limit of the Eghazer basin.

Past climatic history of the region is as yet poorly understood. If we rely on research carried out on sediment cores from Segguedine in the Ténéré (Pomel et al. 1991), preliminary palaeoclimatic work conducted by Durand and Paris (1986) at Chin Tafidet, and the general reconstitution of Saharan Holocene palaeoclimatic sequences (Williams and Faure 1980), it appears that the Late Holocene (ca. 5000 to 2000 B.P.) climate was characterized by a neat trend toward aridity, with noticeable local variations: the climatic pattern may have been that of contrasted seasons of unequal duration, with a longer dry season and a shorter wet season with stormy monsoonal rains. Under these circumstances, the capacity of sediments to retain water may have played a crucial role in the timing of plant growth and regional distribution of water and pasture.

The Eghazer Basin: Resources Potentials

For pastoral–nomadic societies, the optimal socio-economic strategy may have involved the development of site-location strategies comprising seasonal moves from one part of the landscape to
another. Water resources are divided into two categories: fresh and saline. In fact there is a gradation from exclusively fresh to highly brackish springs and ponds. The former are generally found in the Aır and the foothills zone and the latter at major saline sources at such places as Gélelé and Azelik wan Birni in the central part of the Eghazer basin. The nature of the sedimentary matrix also determines two major zones: an extensive zone with a sand matrix in the northern and western periphery of the basin, surrounding a central clayey one.

In rainy seasons, saline water ponds, considered important for the health of livestock, are found almost everywhere in the clayey area; a dense and strong annual vegetation grows almost everywhere after rains, thus constituting rich grazing lands. The flooded areas of the Eghazer wan Agadez and its tributaries provide optimal conditions for the growth of annual species such as *Sorghum aethiopium*, which constitute first order grazing lands. (Poncet 1983: 24)

High quality pastures from the clayey areas, which seem to be confined to lands situated below the 400 m asl contour line, do not last very long; the growth season is longer in areas with sand matrix where the dispersion and lower quality of grazing lands are compensated by longer duration, which in some contexts encompasses the whole dry seasons. It is therefore not surprising that areas of salines sources are famous for their influence on the health of livestock and are thus visited every year by pastoral-nomadic folks (Bernus 1981) during their annual *cure salée*. According to Schulz (1991), in the clayey depression of the Eghazer basin, in years with moderate rainfall, the average output of a harvest of wild grain of *Sorghum aethiopium* and *Panicum laetum* may have amounted to 250 kg/ha, with an effective quantity of grain varying from 130 to 150 kg/ha. Considering the productive capacities of such an environmental context, it can be inferred that the Eghazer river drainage basin may have been a crucial area for the reproduction and maintenance of actual Late Holocene pastoral-nomadic societies, from ca. 4500 to 2000 B.P.

Beyond sedimentary matrixes with their distribution into complementary sandy and clayey zones, the presence of saline sources and the growth patterns of vegetation, which were, without any doubt, crucial for pastoral-nomadic societies, copper ore has also been exploited in the study area. The exact dating of the beginning of this technological innovation is still a matter of scientific debate. According to Grébénart (1985), a Copper I sequence started around ca. 2000 B.C., while for Killick et al. (1988), it is not older than ca. 1000 B.C. Whatever the case, “copper mineralization and even native copper are found in contact zones between the Agadez sandstone and the clayey formation of the Eghazer, or more specifically, in the faulted contact zones” (Poncet 1983: 16). If considered as a scarce and strategic resource, attempts to control a copper zone may have been implemented by actual social systems. “A direct correlation between the presence of copper and some of these tumulus will therefore not be surprising” (Bernus and Gouletquer 1976: 26).

If considered from the perspective of a whole package of resources, comprising soils, pastures, grain, salt, water, and copper, we will expect site location strategies to be geared toward timely and optimal exploitation of the Eghazer basin resources potentials. Such an exploitation may have included flexible strategies with seasonal moves from one resource area to another, with attempts to single out key zones with territorial markers such as stone tumuli and burial grounds. Following these flexible strategies, some areas and localities may have been settled for short periods of stay, while other may have been reoccupied more or less regularly, during the same season each year.
Archaeological data available today are probably a palimpsest of these different settlement strategies and their relatively loose resolution does not allow a detailed reconstitution of the dynamics of the past flexible socioeconomic landscape. The taxonomic typochronological approach, with its emphasis on Saharan and Sahelian Neolithic, Copper I and Copper II, and Early and Late Iron Age (Grébénart 1985), quickly turns into a handicap. With most of the sites consisting of relatively shallow surface scatters, several patterns of the recorded archaeological evidence cross-cut the boundaries of the inferred chronological units based on the Stone–Copper–Iron model. Our capacity to study meaningful socioeconomic change is severely hampered. Copper metallurgy is contemporaneous with the so-called Saharan and Sahelian Neolithic; vessels attributed to the Saharan neolithic are found in Sahelian neolithic contexts as well as in Copper I and II sites; Copper technology occurred in a Late Stone Age context with similar and long lasting stone knapping and potting traditions. Pottery from sites with evidence of iron metallurgy is different but copper production is still present. The Eghazer basin record provides an exciting spectrum of archaeological data, ranging in date from ca. 4500 to 2000 B.P., and related to technological innovation and use of metal items, livestock herding strategies, spatial distribution and location of habitation sites, megalithic burials, and cemeteries.

Distribution of Settlements and Nature of Sites

Surveys have resulted in the recording of several hundreds archaeological sites. With the exception of the Air mountain range, which has not been surveyed in detail, evidence for human settlements has been found in three other morphographic units: the foothills, the Tigidit cliff, and the extensive depression of the Eghazer drainage basin. The chronological resolution of our data base is far from satisfactory; few sites have been tested and dated, and many others are dated from their associated cultural remains found on the surface. Four categories of settlements will be considered in this discussion: Late Stone Age sites, localities with evidence of copper production, settlements with evidence of iron metallurgy, and cemeteries. Only few of them have been tested in varying degrees; it is the case for 13 Late Stone Age localities, 10 with evidence of copper metallurgy, 9 with remains of iron production, and 30 with megalithic burials. Most habitation sites are a palimpsest of multiple episodes of occupation, congruent with the dynamics of pastoral–nomadic societies; the time range under consideration spans over 2000 years, from ca. 4500 to 2500 B.P. Megalithic burials and cemeteries are lumped in the category of “preislamic” monuments, their chronological sequence ranging from ca. 4000 to 1000 B.P.

Among the 148 recorded Late Stone Age settlements, 64 are located in the Eghazer depression, 10 in the foothills zone, and 74 along the Tigidit cliff (Fig. 2; Table 1). The highest concentrations are found in the northern southwest sandy zone, while 12 sites are located within the area of annual cure salée. Two of the tested Late Stone Age sites are located in the Eghazer depression: Chin Tafidet in the western sandy zone and Anyokan in the central clayey area. Tuluk 211, a stone axe workshop, is situated in the foothills zone, while 8 others are found along the Tigidit cliff. The surface extent of the tested settlements varies from a maximum of 28.20 ha at Shin Wasararan on the cliff plateau, to a minimum of 0.12 ha at Afunfun 176, 179 and Tamat. No preserved dwelling features have been recorded (Grébénart 1985; Paris 1984).

At Chin Tafidet, dated to ca. 4500–3400
B.P., 18 complete skeletons of cattle, 3 of sheep/goats, and 2 of shepherd dogs have been recorded (Paris 1984, 1992). The presence of cut marks on cervical vertebrae suggest that these animals, 4 to 8 years old, were sacrificed and buried in association with humans. Of the 75 recorded human burials, 12 have been excavated. The dead were buried without grave goods in clusters of tombs comprisin-

TABLE 1
Distribution of Archaeological Sites According to Morphographic Units

<table>
<thead>
<tr>
<th>Morphographic units</th>
<th>Depression of the Eghazer</th>
<th>Foothills of the Air</th>
<th>Tigidit cliff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nb</td>
<td>%</td>
<td>Nb</td>
</tr>
<tr>
<td>Néolithic sites</td>
<td>64</td>
<td>43,24</td>
<td>10</td>
</tr>
<tr>
<td>Sites with copper</td>
<td>15</td>
<td>57,69</td>
<td>3</td>
</tr>
<tr>
<td>Sites with iron</td>
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<tr>
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<td>2</td>
</tr>
<tr>
<td>Megalithic cemeteries</td>
<td>48</td>
<td>46,60</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>136</td>
<td>44,01</td>
<td>47</td>
</tr>
</tbody>
</table>
ing humans and cattle. Four such clusters have been identified (Paris 1992). It is worth noting the fact that shepherd dogs and sheep/goats burials are not associated with human burials. A similar feature of patterned association between human and cattle burials has been recorded at Ikawaten in the north, but the collected material is not yet published in detail. From these mortuary data, it can be inferred that small groups of pastoral nomads used to bury their dead in one of their major dry season camping areas, a burial program emphasizing strong relationships between humans and cattle.

In the southeastern part of the study area, Afunfun 161 and 177 are dated to ca. 3000 B.P. Respectively, 4 burials of 16 and 5 of 25 have been excavated. In the former site, two of the excavated burials have grave goods, consisting of pottery, while one of the deceased has been buried with an infant sheep. In the latter, from both surface inspection and excavation, ceramic wares are attested in 18 burials with one of the deceased buried with an infant sheep. In general the population of grave goods is more diversified, comprising ceramic wares, polished stone axes, stone arm-rings, and landsnail shells. The material part of Afunfun burial program suggests an emphasis on sheep/goat husbandry.

Chin Tafidet, Ikawaten, and Afunfun 161 and 177 are extensive settlements. They appear to have been focal points of at least two variants of pastoral–nomadic systems actually present in the Eghazer basin: the western variant, comprising two subvariants (Chin Tafidet and Ikawaten), with an emphasis on cattle husbandry, and the eastern variant, with sheep and goats as predominant livestock. It is highly probable that these pastoral–nomadic groups may have moved in the central part of the basin during the rainy seasons for the annual cure salée and the harvest of wild grain of *S. aethiopicum* and *Panicum laetum*. According to Schulz (1991), in years with an average amount of rainfall, the productivity of natural fields of wild grain was important enough for people to live without agriculture.

Compared to the number of Late Stone Age settlements, that of sites with evidence of copper metallurgy suggests a drastic decrease in the density of occupation (Fig. 2; Table 1). This observation is certainly an artifact of the adopted typochronological framework. The recorded material evidence and radiocarbon dates, however, suggest that copper metallurgy is but one facet of the actual socioeconomic systems. As far as spatial distribution of sites is concerned, 15 of the recorded sites are located in the central part of the Eghazer depression, within the area of the annual cure salée, with the highest concentration in the copper ore zone along the Guélélé–Azelik–Sekkiret anticlinal, while 3 are found in the foothills, and 8 along the Tigidit cliff. It can be inferred that during their annual sojourn in the depression, the procurement and processing of copper ore was imbedded in a larger activity package, comprising livestock herding and harvesting of wild grain. Settlements with evidence of copper metallurgy are dated from ca. 4000 to 1300 B.P. Among the tested sites, four are located in the Eghazer depression, two in the foothills zone, and four along the Tigidit cliff. Their surface extent varies from 20 to 0.03 ha (Tables 1 and 2). Evidence of copper production is attested by series of furnaces, slag heaps, and worn-out and lost copper artifacts. The major copper smelting sites have been found at Afunfun 162 and 175, Eres-n-Enadan, and Aghtau zu in the southeast and Azelik, Sekkiret valley, and Ikawaten in the northwest, while minor centers of production have been recorded in the foothills zone at Tuluk and Tyeral.

Settlements with evidence of iron metallurgy appear to be confined to the south
of the study area, with 17 of a total of 19 sites located along the Tigidit cliff (Fig. 2; Table 1). It is highly improbable that the central part of the Eghazer drainage was not visited during this period. This skewed distribution has therefore to be linked with the natural distribution of iron ore. The 9 tested localities with early evidence of iron metallurgy, dated from ca. 2600 to 2100 B.P. and are located along the Tigidit cliff, most of them on the plateau (Fig. 2; Table 1). Their surface extent varies from 3 to 0.6 ha; settlements are now genuine small villages of sedentary or semisedentary communities. Among the tested sites, remains of iron smelting fur-
naces have been found at Ekne wan Ataram, In Taylalen II 15, and Teguef n’Agar. In general, the total density and diversity of archaeological remains is higher. Series of pits without any connection with iron production have been recorded at In Taylalen II 15, Shin Ajeyn, and Teguef n’Agar (Grébénart 1985: 263–330); the diameters of the excavated pits vary from 1.40 to 1.00 m, with depths varying from 0.20 to 0.70 m. Due to the loose sedimentary matrix in which these pits were dug, it is highly probable that they were originally deeper and have collapsed after abandonment. Considered in this perspective, these pits may have been used as storage features distributed among different domestic units of actual settlers, even if positive plant macroremains have not been recorded. The settlements of this period may correspond to a relative decline of the previous pastoral–nomadic socioeconomic systems, with a shift toward a bulkier and long-lasting mixed-farming sedentary communities.

Preislamic burial grounds are almost evenly distributed in the study area; 48 are located in the depression of the Eghazer, 32 in the foothills zone, and 33 along the Tigidit cliff (Table 1). Of a total of 103, 39 are found in the central area of the annual cure salée. It is as if megalithic burial grounds were used as territorial markers to emphasize claims for exclusive control of strategic resources from the Eghazer drainage basin. Very few (30) megalithic burials have been tested; one of them from the large cemetery of Asaquru, is, however, dated as early as 3400 B.P. (Table 3).

In general, if we combine all categories of sites, 136 are located in the Eghazer depression and along the Tigidit cliff, while 47 have been recorded in the foothills zone (Table 1; Fig. 2). The most remarkable feature as far as the regional distribution of settlement is concerned, is the contrast and reversal of the density of habitation relative to burial sites in the Eghazer depression. Burial sites with megalithic tombs are highly visible, long lasting, and even permanent; as such they were probably used as signposts geared to signal the appropriation of territories. Symbols of power were probably crucial within this new social juncture; they may have generated a peculiar kind of social demands which, in turn, may have enhanced and sustained the invention or adoption of metal production.

Due to the strict contemporaneity between “Saharan” and “Sahelian Neolithic” on the one hand and both taxonomic units and localities with evidence of copper metallurgy (i.e. Copper I and II) on the other, added to the impossibility to
differentiate archaeological artifacts belonging to each dwelling episode in the recorded surface sites certainly visited several times for centuries and even millennia, the Late Holocene occupation sequence of the Eghazer basin can be divided into two major periods. Period I (ca. 4500 to 2500 B.P.) was characterized by the presence of pastoral–nomadic societies divided into two major variants: one focused on cattle husbandry and the other on sheep and goats. Social differentiation and territorial strategies singled out by stone-tumuli cemeteries have generated and sustained the development of craft specialization geared to produce highly valued goods in copper. Period II follows and lasted from ca. 2600 B.P. to 2000–1500 B.P. It is characterized by the adoption of iron metallurgy, with a shift of settlement toward the south, with bulkier probably more permanent dwelling units with storage features. This period coincided with the decline of ancient pastoral–nomadic lifestyle, ending with the arrival of new settlers (Early Tuareg) from the north possessing camels.

Cemeteries and Social Territories

Burial evidence can be divided into three major categories: isolated tombs within habitation sites as is the case at Efey Washaran 151 and 183, Jibo 136, and Shin Wasasaran; clusters of tombs as attested at Chin Tafidet, Afunfun 161, and Afunfun 177 (Paris 1984); and hundreds of stone tumuli, some of them isolated, but more often situated in small burial grounds or within large cemeteries extending over several hectares. In this part of our discussion, we will focus on burial grounds with stone tumuli.

Several hundred burials in megalithic monuments have been recorded; they are distributed in varying concentrations into 116 localities. Excavations have been carried out at 10 localities, with the number of tested burials varying from 8 at Shi Mumenin to 1 at Afunfun 8, Azelik, Tezzigart, and Tin Tegeis. Five of the tested sites, Asaquru, Azelik, Shin Wasadan, Tegaza, and Tin Tegeis, are located in the Eghazer depression; 3, Agadez, Imosaden, and Tezzigart, are in the foothills zone; and 2, Afunfun 8 and Shi Mumenin, along the Tigidit cliff (Table 3). Uncovered archaeological data are not always reported with the needed accuracy. From the available information, it appears that surface extent of cemeteries varies from 22.5 to 0.35 ha, and the number of burials varies from 4 to 177 (Poncet 1983; Paris 1984). Types of megalithic monuments are extremely diversified, within as well as between sites. Stone circles, quadrangular constructions, long rectilinear tumuli, and...
crescent-shaped, tronconic, disc-shaped monuments have been recorded. Stone circles located in the foothills zone are considered to be early Berber burials, and quadrangular constructions from the western part of the Tigidit cliff dated to the first millennium A.D. (Paris 1984) are not taken into account in this work.

The recurrent use of the same area to bury the deceased of a community is in itself an important social fact. In this regard, the number of burials, their bulk, the total extent of the cemetery, and the location of tombs relative to each other are highly meaningful. Considered from this research perspective, even the location of burial grounds relative to each other all over the landscape can be linked to the dynamics of social systems and conceptualized as social strategies geared to the long-term buildup of a social landscape. The process may have been discontinuous in some areas and continuous in others, according to the vagaries of climatic hazards, social interaction, and a combination of both.

Recorded cemeteries can be ranked according to their size and number of mega-

<table>
<thead>
<tr>
<th>Locality</th>
<th>Copper artifacts</th>
<th>Iron artifacts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weapons</td>
<td>Jewels</td>
<td>Others</td>
</tr>
<tr>
<td>Sites with copper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afunfun 162</td>
<td>3</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Afunfun 175</td>
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<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Aghtauzu 178</td>
<td>–</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>Azelik</td>
<td>–</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>Eres n Enadan</td>
<td>–</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Ikawaten 185</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Tuluk</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Tyeral</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sites with iron</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Chin Oraghren 105</td>
<td>–</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Efey Washaran 151 (tomb)</td>
<td>–</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td>Efey Washaran 183 (tomb)</td>
<td>–</td>
<td>3</td>
<td>–</td>
</tr>
<tr>
<td>Ekne wan Ataram</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>In Taylalen II 15</td>
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<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Jibo 136 (tomb)</td>
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<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Mio 169</td>
<td>–</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>Tamat 157</td>
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<td>–</td>
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</tr>
<tr>
<td>Teguef n’Agar</td>
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</tr>
<tr>
<td>Shin Ajeyn</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Shin Wasaran (tombs)</td>
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<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Megalithic burials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asaquru Mon. D</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Afunfun 8</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Tegaza Mon. 4</td>
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<td>6</td>
</tr>
<tr>
<td>Mon. 5</td>
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<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Tezzigart Mon. 2</td>
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<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Mon. 3</td>
<td>–</td>
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<td>1</td>
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</tbody>
</table>

Note. Mon., monument.
lithic burials. Five of them, Anyokan, Asawas, Tuluk, Shin Wasadan, and Asaquru, are large cemeteries with more than 100 monuments each. One of the tested burial from Asaquru is dated to ca. 3350 B.P., and another one, Monument D, contained one iron spearhead and one copper and two iron jewels. At Shin Wasadan, one tested burial is dated to ca. 2450 B.P. If considered as nodal points of the political landscape, these large cemeteries located on the border zone of the *cure salée* area seem to control almost equivalent territorial units, with the Eghazer river as a boundary line (Fig. 2).

Cemeteries with 20 to 100 monuments are unevenly distributed among inferred territorial units, their frequency in each varying from 4 to 12 (Table 5). They were probably burial grounds for lower segments of actual pastoral–nomadic societies. Smaller cemeteries, with 5 to 19 and 1 to 4 monuments may have been used for the inhumation of smaller clan members, extended families, or households units. In order to build a large megalithic monument, mobilization of a labor force is crucial; the status of a deceased is therefore indirectly indicated by the material characteristics of his or her burial. The deceased were also potential "consumers" of prestige items produced by crafts specialists. If considered from the perspective of the dynamics of pastoral–nomadic societies, it can be said that at the climax of its Late Holocene occupation, the Eghazer basin may have been part of the territorial range of five tribal units, each comprising varying number of segments (clans, extended families, and domestic units). Depending on actual circumstances, fission/ dispersal or fusion/aggregation, conflicts and competition, as well as cooperation and solidarity, may have generated concentration and/or dispersal of prehistoric pastoral–nomadic folk. In such a context, metal producers had provided their kinsmen with emblems of prestige and power.

**CONCLUDING REMARKS**

Livestock husbandry was adopted following a general ecological crisis in West Africa. The direction of expansion is clearly a north/northeast–south/southwest one. Cattle and sheep/goats seem to have been part of the same package, with variation from area to another. Agro-pastoral mixed farming societies develop in the south along the shifting Sahara–Sahel boundaries, in the Dhar Tichitt in Mauretania, the southwestern part of the Chadian plain in Nigeria.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Southwestern group</th>
<th>Southeastern group</th>
<th>Eastern group</th>
<th>Northern group</th>
<th>Western group</th>
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</thead>
<tbody>
<tr>
<td>I (&gt;100)</td>
<td>Anyokan (AG 31)</td>
<td>Asawas (TTA 44)</td>
<td>Tuluk (TTA 16)</td>
<td>Shin Wasadan (TTS 48)</td>
<td>Asaquru (IG 2)</td>
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<tr>
<td>II (20-100)</td>
<td>4 (AG 30, IG 21, 23, 32)</td>
<td>12 (AG 32, 33, 34, 39, 62, 73, 75, 106, 108, 109, 117)</td>
<td>12 (TTA 25, 26, 28, 32, 33, 35, 40, 41, 42, 47, 51, 52)</td>
<td>8 (TTA 4, 7, 9, 15, TTS 9, 10, 11, 31)</td>
<td>6 (TTS 3, 38, 49, 53, 74, 88)</td>
</tr>
<tr>
<td>III (5-19)</td>
<td>1 (IG 27)</td>
<td>2 (AG 35, 53)</td>
<td>—</td>
<td>3 (TTS 2, 80, 82)</td>
<td>4 (TTS 75, 83, 92, 93)</td>
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<tr>
<td>IV (1-4)</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>5</td>
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</tr>
<tr>
<td>Total</td>
<td>16</td>
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</tbody>
</table>
and possibly, in the central part of the Tilemsi valley in Mali. Further north, in Western Sahara, Taoudenni basin, upper Tilemsi, Eghazer basin, as well as the Air and the Ténéré, Late Stone Age prehistoric herder–collectors adopted a properly pastoral–nomadic lifestyle. In general, the landscape was dotted with isolated or clustered burials, rock-art stations, and intermittent habitation sites, de facto territorial markers, in ever changing social territories.

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