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Original Synthesis Article

Emergent Complexity and Political Economy of the Houlouf Polity in North Central Africa (1900 BCE-1800 CE)

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Abstract – Long-term socio-cultural change is a non-linear process involving demography, economy, culture, social organizations, symbols and ideas. It is generally marked by succession of social formations with different organizational requirements and "worldviews". The concept of emergent complexity used in this paper thus refers to the punctuated shift that led to the formation of social ranking and socio-political centralization. Five successive social formations of varying duration have been reconstructed in the *ca.* 4000 years long development of the Houlouf polity located the Cameroonian portion of the Chadian plain: 1) – small scattered pastoral-nomadic groups; 2) – autonomous mixed-farming communities; 3) – competing and rival peer-polities; 4) – ranked and centralized polity – Chiefdom in local political terms -; and finally, 5) – paramount chiefdom – Sultanate in local political lexicon-. This paper, anchored on high resolution paleoclimatological data and changes in regional settlement location and distribution, outlines the main steps of that evolutionary process. The dimensions investigated include settlement dynamics, political economy, the production and use of material culture, as well as their connected patterns of exchange from 1900 BCE to 1800 CE. A short review of research on trade in West African archaeology shows that the study of long-distance exchange tends to focus on characterization and provenience analyses of in-coming raw materials and goods. Important as it is such an approach does not provide access to the internal dynamics of the receiving societies. This paper examines the concomitant changes in site-location, flows, distribution, and consumption of long-distance traded items, patterns of craft specialization and production intensification, showing that they were part of interlocked feed-back loops. Evidence of intensification of local production geared to export is systematically documented in their chrono-cultural contexts for the first time. These deviating/amplifying feed-back loops triggered a dynamic that resulted in the emergence of five successive social formations in the Houlouf region *ca*. 4000 years evolutionary sequence.

***Keywords*:** Emergent complexity; Political economy; Long-distance trade; Chadic polity; Central Africa; Chadian plain; Houlouf.

Introduction

Today, Houlouf is a modest Kotoko village in Northern Cameroon. The still visible remains of its earthen-rampart combined with a moat that protected this ancient Chadic polity from surprise attacks is what is left from its past glory. Houlouf is mentioned by the Renaissance geographer Giovanni Lorenzo d'Anania as one of 16th century kingdom of North central Africain his *L'universale Fabrica del Mundo* (d'Anania 1582). Archaeological research conducted in the Houlouf region from 1980 to 1991 has unearthed its past brilliance and tracked the formation of this intriguing ancient Chadic chiefdom as the locals call it. This paper examines the formation of this Chadic chiefdom, and analyses the production, consumption, and exchange of material goods and commodities (Friedman and Rowlands 1977). These goods, through their acquisition and use, sustained the political economy of the social formations that emerged in this portion of the Chad basin during the last 4000 years.

Long term shifts in site-location and pattern of settlements generally result in the build-up of cultural landscapes showing how past societies "negotiated" unstable to meta-stable compromises with their environments. The same can be said about production and exchanges. The study of prehistoric exchange systems can be very revealing on the dynamics of past societies. It is however fraught with theoretical and methodological difficulties. Numbers of interesting suggestions have already been made in the literature (Holl 2020a, 2020b, Braudel 1962, Renfrew 1984, Torrence 1985). Exchange systems have been arranged after their increasing degrees of complexity, from direct access to central market-places via a cascading down-the-line mode in combination with the use of different transportation technologies and systems (Braudel 1962, Renfrew 1984: 119 - 124).

The transfer of durable goods over distance is relatively easy to document in the archaeological record. But does any recorded exotic item signal the existence of an exchange system? People moving from Area A to Area B generally carry part of their material wealth. Such wealth may include items of personal adornment in precious stones and metals as well as many other categories of material goods. If these items end up entering the archaeological record in Area B, they could very easily be interpreted as

evidence of long-distance trade between Area A and B. In practical archaeological terms, it is extremely difficult to achieve that degree of resolution and accuracy. Differences in sampling procedures and field techniques also make comparative analyses extremely difficult. This having been said, the data recorded so far from some of the sites excavated in West Africa provide enough evidence on the existence of long-distance exchange networks (Arkell 1936, Bedaux *et al.* 2001, Bernus and Gouletquer 1976, Bernus and Cressier 1991, Berthier 1997, Bocoum and McIntosh 2002, Levtzion and Hopkins 1981, Mauny 1961, Monod 1969). The Trans-Saharan trade networks connecting the Machrek and the Maghreb to West Africa urban centers are well documented (**Fig. 1**). What is however still missing is the understanding of the patterns of flow and use of goods within well delineated regional contexts as presented in this case study.

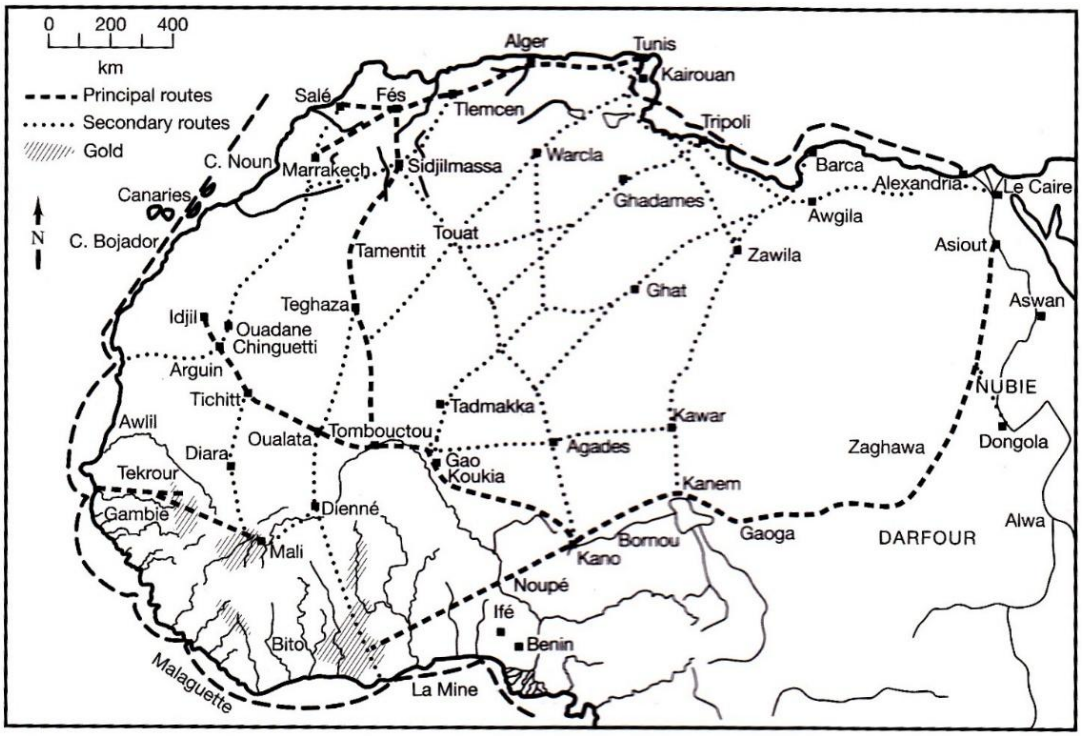

Fig. 1:
Trans-Saharan trade network in the last 2 millennia (Source: Mauny 1961).

Clearly, long distance trade in foodstuff, manufactured goods, and prestige items was a key player in the fabric of West African social systems (Devisse 1983, Fillipowiak 1979, Flight 1981, Garba 1993, Gaussen and Gaussen 1988, Grebenart 1985, 1993, Gronenborn 2001, Holl 1995, 2006, 2020b, Insoll 1996, 2000, 2003, Insoll and Shaw 1997, Insoll *et al.* 2004, Magnavita 2009). The focus of investigation is predominantly placed on the identification of raw materials and/or individual finds origins to trace long-distance connections (Magnavita *et al.* 2002, McIntosh 1998, McIntosh 1995, McIntosh and Bocoum 2000, McIntosh and McIntosh 1980, Monod 1969, Polet 1985, Rapp 1984, Robert-Chaleix 1989, Saison 1981; Shaw 1970, 1977; Sutton 1991, 2001; Thilmans and Ravise 1980). The work presented below aims to decipher the underlying regularities in the patterns to be observed, in terms of site location, exchange systems, and craft production, in order to understand the mechanisms involved and "gain insight into the economic and social processes at work in the society" (Renfrew 1984: 135; Seddon 1987) under investigation.

The Research Program

For most of the Holocene, the Chadian plain (**Fig. 2**) was at the bottom of the Mega-Lake Chad. The discovery of the Dufuna dug-out dated to ca 8500 BP (Breunig 1995) points to the existence of scattered groups of foragers using watercrafts to travel and take advantage of the lake's abundant aquatic resources. With significant fluctuations one way and the other, correlated with major climatic crises, Lake Chad steadily decreased in size and depth from the Late Holocene to the present. The study area was accordingly opened to speakers of Central Chadic languages at the beginning of the second millennium BCE (Connah 1981, Holl 2001).

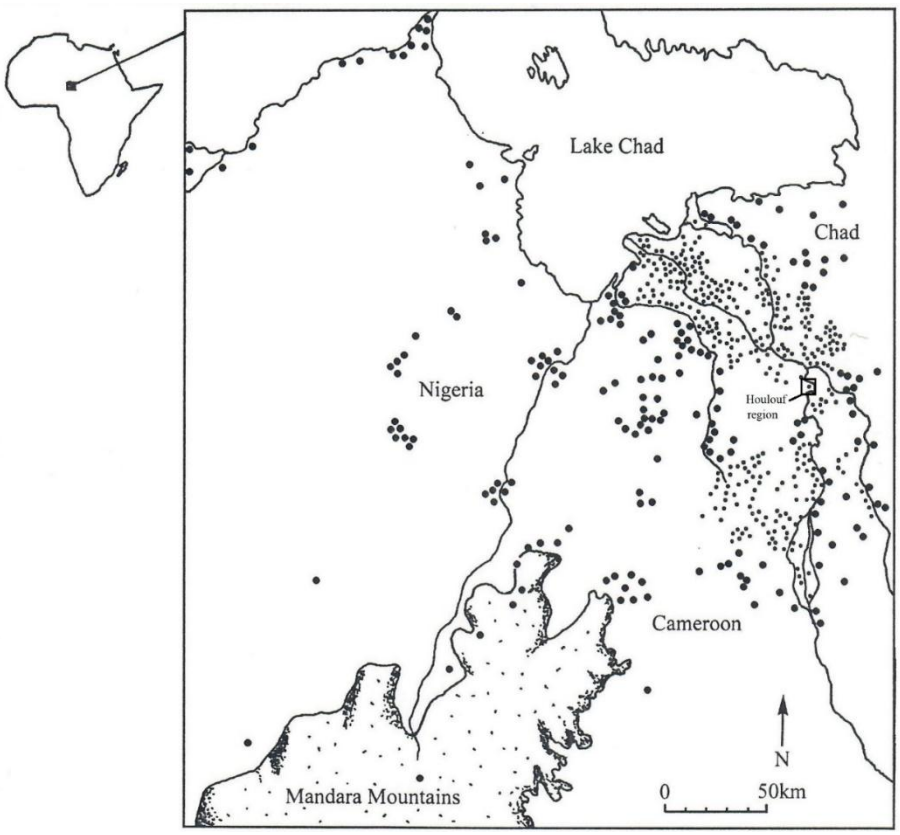

Fig. 2: Archaeological map of the Chadian plain and location of the Houlouf region.

The research project launched in the Houlouf region in 1980 aimed to reconstruct the regional settlement history and the emergence of central Chadic polities usually called ‘sultanate’ or ‘principalities’ (Lebeuf 1969). The ancient boundary of Houlouf principality was the Abani River that cuts through the study area from the southeast to the northwest. The portion in the northeast was part of the Kusseri sultanate and that from the east part of Kabe one (**Fig. 3**).

The delineated study area is remarkably flat, with elevation ranging from 290 to 296 m above sea level. It is made of a stretch of land permanently above the annual flood level and low-lying depression flooded each year. The former has an arbustive savanna with thorny shrubs and trees, predominantly *Acacia* sp. The latter is rich prime grazing lands for local cattle herders. Fourteen mound sites recorded within the Houlouf traditional land boundaries were tested.

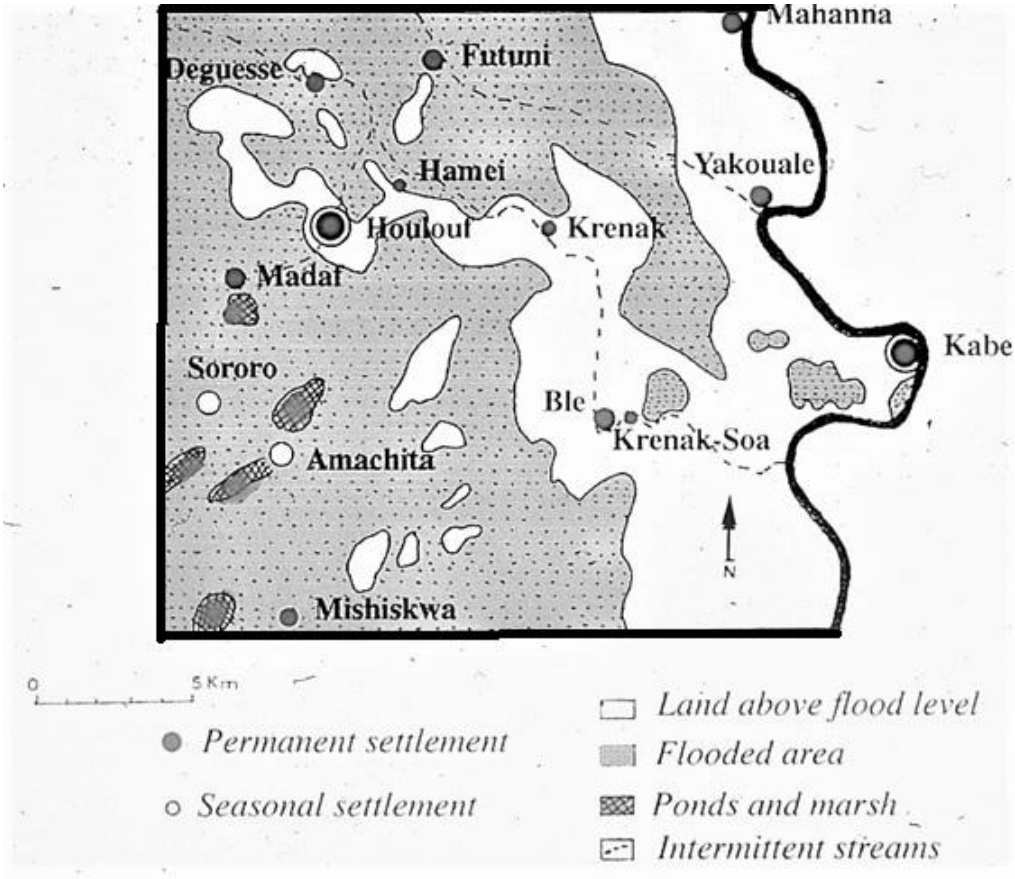

Fig. 3: Mound-sites distribution in the Houlouf region

The excavation strategy implemented was designed to provide high resolution culturally/behaviorally significant data (Holl 1988, 1994, 2002, 2020). A relatively large excavation unit (by local standards) measuring 96 to 110 m^2 was set in the north central part of the polity center of Houlouf. The other sites were tested with smaller probes, ranging in size from 9 m^2 (Madaf) to 18 m^2 (Deguesse). The identification of different depositional units contributing to the formation of the mounds was a particularly important research issue. The concept of "horizon" borrowed from soils sciences (Lamotte 1993, Brabant and Gavaud 1985) was adapted as "Occupation Horizon" (OH) to un-wrap the mound build-up process. The formation of a mound stratigraphic sequence is generated by a differential combination of several factors, both cultural and natural (Holl 1987, Schiffer 1987). The contexts of finds (a refuse pit, a burial, or a house floor) are therefore important in the reconstruction of the activities performed in an archaeological site.

The formation of Houlouf Polity

The occupation of the Houlouf region started around the beginning of the second millennium Before Common Era (BCE) (*ca*. 1900 BCE). It is sub-divided into five main phases based on major environmental shifts and settlements patterns ending around 1800 Common Era (CE). Each of these phases named after the latest founded settlement. Pottery size, shape and decoration are overtly local suggesting that each settlement had its own potters.

Deguesse Phase (1900 BCE – 0 CE)

Deguesse phase occupations are documented at Deguesse and Krenak (**Fig. 4**) in the northern part of the study area. These two sites are 9 km apart. The Deguesse phase levels were found at the bottom of the tested mounds, at 1.5 to 2 m below the present-day plain level. The deposits, in occupation horizon (OH) I (4-4.5 m) and OH II (3.5-4 m) at Deguesse and OH I (3.4 -3.7 m) at Krenak, made essentially of thick livestock dung accumulation, hearths, and living surfaces, were found above white sand. These white sand spots are evidence of ancient sand islands that were visited in the dry season by groups of herders when the lake shrunk in size all along this 3500-2500 BP lakeshore.

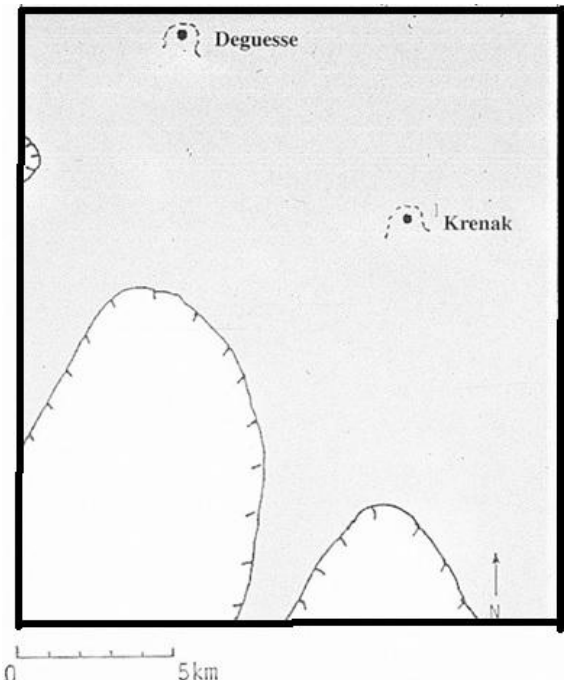

Fig. 4: Deguesse phase sites (1900 BCE- 0 CE)

These pastoral camps show that the pioneer settlers of the Houlouf region were mobile herders. Similar deposits dating to the same time range have been recorded at Amkoundjo and Mdaga in the ancient Chari delta (Lebeuf 1969, 1981; Lebeuf *et al.* 1980), Sou Blame Radjil, Daima, and Kursakata along the southeast-northwest ancient lake/lagoon shoreline (Connah 1981, Rapp 1984), Bama Road site further south on the Bama ridge, the Holocene Mega-Chad shoreline, Shilma in the Firki plain (Connah 1981), and Gajiganna (Breunig *et al.* 1993) at the western end of the Chad lagoonal complex in Nigeria.

The Krenak Phase (0-500 CE)

Krenak phase is divided into sub-phase A (0-250 CE) and B (250-500 CE). The landscape consisted of a wide and extended delta of the Logone River which was then flowing south-north and feeding a shallow lake/lagoon with fluctuating seasonal levels and shoreline. Krenak phase A deposits are documented at three almost equidistant sites in the northern half of the study area, at Deguesse (Occupation Horizon (OH) III and IV), Krenak (OH II) and Houlouf (OH I) (**Fig. 5**). Livestock dung deposit is still predominant at Krenak while collapsed and decayed building material suggestive of settled way of life is recorded at Deguesse and Houlouf.

The number of settlements doubled, from 3 to 6 during Krenak phase B. Regional occupation expanded south with all three sites, Ble Mound A, B, and D, clustered in a deltaic environment (**Fig. 5**). At the end of Krenak phase, around 500 CE, the regional landscape was dotted with six mound sites with 0.20 to 3.30 m thick cultural deposits distributed into four settlements. The settlements are located at distances varying from 5 km (Krenak to Ble Mound Complex) to 10 km (Houlouf to Ble Mound Complex). The site-catchment of each village theoretically covered a 2.5-5 km radius. This pattern suggests the development during this period of autonomous self-sustaining village communities, practicing agriculture and livestock husbandry, with wide access to abundant aquatic resources.

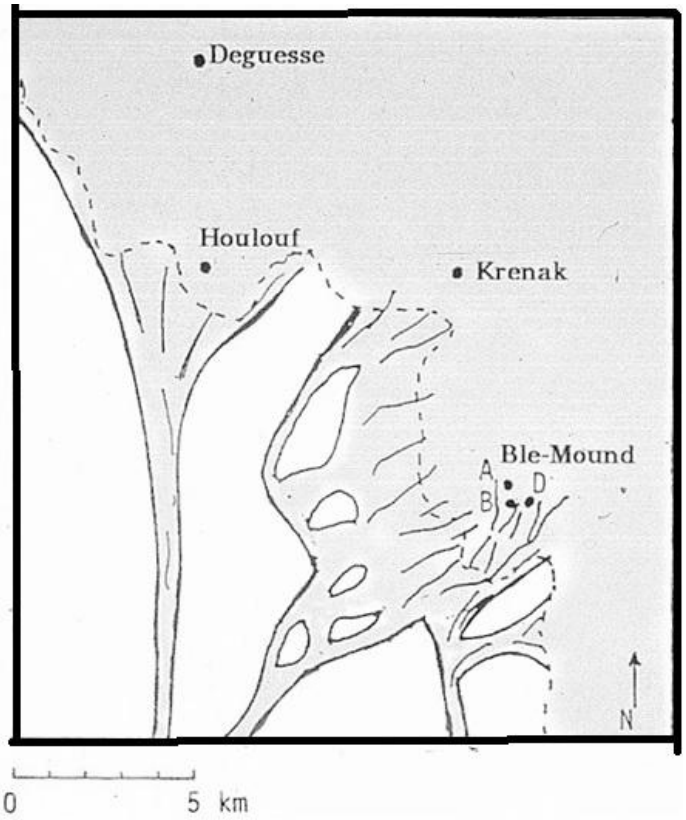

Fig. 5: Krenak Phase villages (0-500 CE)

Mishiskwa Phase (500-1000 CE)

Human settlement was extended to the clayey generally flooded hinterland depression, with 10 settlements during sub-phase A (500-750 CE) and 11 during sub-phase B (750-1000 CE). The climate was drier. The regional environment was characterized by a decreased lake/lagoon level, shifting toward a series of ponds and marshland. The ancient Logone River delta was progressively silted, with its braided channels silted at the end of Mishiskwa phase. The regional settlement systems were organized into two different patterns (**Fig. 6**).

One is a tight cluster of five sites with Blé-Mound complex and Krenak-Sao located in the ancient Logone-River delta in the southeast. The other in the northwest is also made of five sites, spread out and located at distance ranging from 3 (Houlouf to Hamei) to 5 km (Deguesse to Hamei, Hamei to Krenak) with Houlouf in a relatively central position. Mishiskwa, the new settlement was relatively isolated in the south. The recorded settlement

patterns point to the formation of two sub-regional entities. The regional socio-political organization appears to have shifted from a network of autonomous self-sustaining villages to competing small polities.

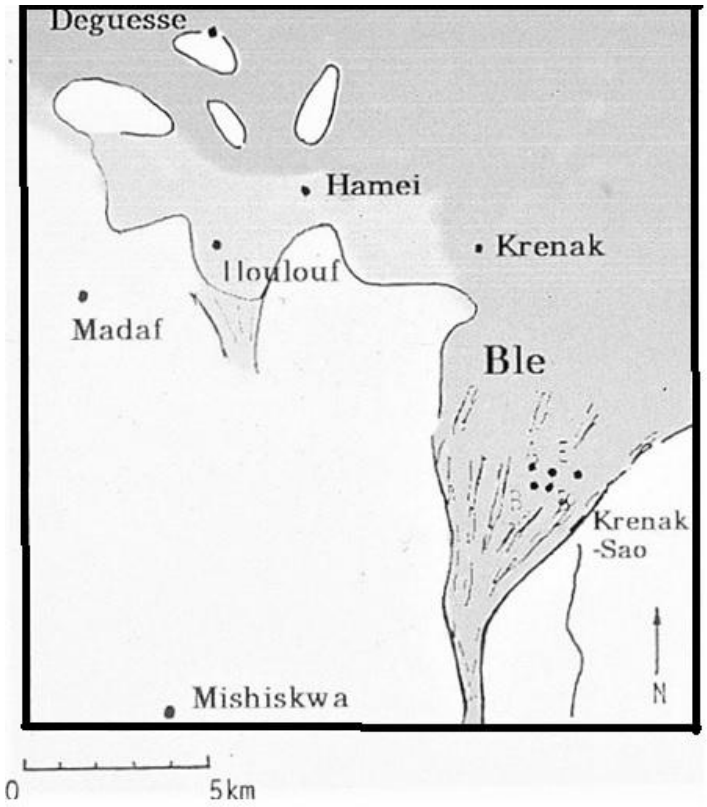

Fig. 6: Mishiskwa Phase villages (500-1000 CE)

Ble Phase (1000-1400 CE)

The patterns of settlement recorded during Mishikwa phase persist during Ble phase with however tighter clustering and sharper boundary between the Blé-Mound complex in the southeast and the Houlouf cluster in the northwest (**Fig. 7**). Mishiskwa appears to have remained an autonomous self-sustaining village relatively isolated in the south. There is a sustained trend toward drier climate, with Lake Chad levels fluctuating around 285 m above sea level. The ancient Logone-River delta was entirely silted. The river shifted its course to the northeast toward the larger Chari River system, creating a series of smaller intermittent river courses flowing in the southeast-northwest direction. The Abani river

with its 30 m wide channel at Krenak-Sao, and the Malingwa river, 18 to 20 m wide at Houlouf probably dug their bed in the earlier part of Ble sub-phase A (1000-1200 CE).

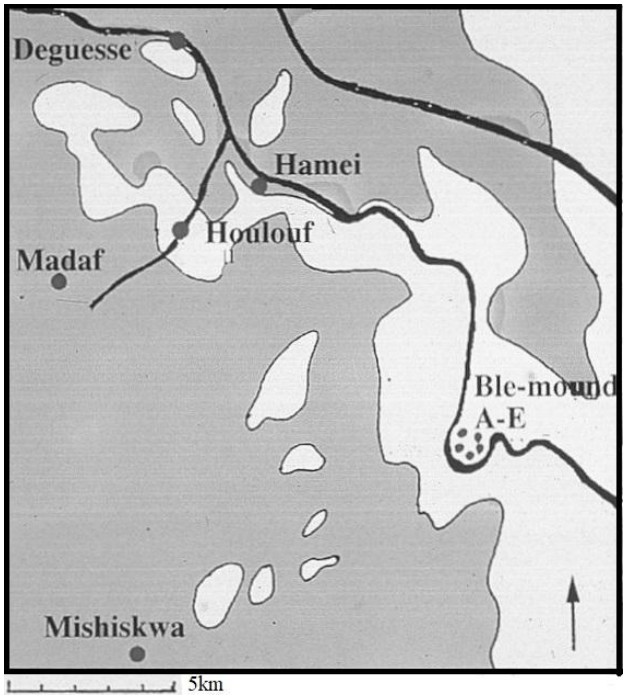

Fig. 7: Ble Phase settlements (1000-1400 CE)

The landscape consisted of seasonally flooded and rich marshlands, with a few meandering river courses. Houlouf earthen rampart was built during the Ble phase and it reached its maximum extend of 15.9 ha. The Blé-Mound complex was clearly the center of a rival and competing polity. At the end of Ble phase, the study area witnessed an interesting range of socio-political formations: An autonomous and self-sustaining village community at Mishiskwa in the south; a tightly clustered five mounds polity at Blé-Mound complex in the southeast; and finally, a territorial polity centered on the earthen-walled settlement of Houlouf, with the outlying sites located at 3 to 5 km.

Houlouf Phase (1400-1800 CE)

During the Houlouf phase, the number of settlements decreased sharply from 9 to 3 in Houlouf sub-phase A (1400-1600 CE) and 7 in sub-phase B (1600-1800 CE). Settlement shifted toward the *Yaere*, the clayey hinterland depression (**Fig. 8**), with Houlouf as the

center of the principality of the same name. Deguesse, Hamei, Houlouf, Madaf, and Mishiskwa were permanent settlements, while Amachita and Sororo were special purpose sites.

The environmental context was very different at the beginning of Houlouf phase for up to half a century, from 1400 to 1450 CE. The Lake Chad completely dried out during the "Small Ice Age" turning into distinct shallow bodies of standing water (Maley 1981, 1993, Schneider 1994). The return to more humid conditions around 1600 CE, triggered the shift of the Logone River course to its present-day south-north direction. The Abani and the Malingwa rivers became seasonal streams draining the seasonal overflow of the Logone-River and the flooded marshland. The modern landscape of the study area was formed during the early part of Houlouf phase. It consisted of a stretch of land oriented southeast-northwest, made of sand and silt deposits permanently above the annual flood level, colonized by an arbustive savanna with thorny trees. The clayey depression of the hinterland, a relatively large portion of the study area with its high-quality grazing land and a relatively high water-table, was subject to seasonal flooding. Houlouf was then the political center of this Chadic polity with an impressive and particularly rich elite cemetery and a ruler palace (Holl 2001: 184). This polity was conquered by the Lagwan kingdom at the end of the Houlouf phase, and integrated it's the northern borderland.

The settlement history of the Houlouf region started at the beginning of the second millennium BCE with mobile herders-foragers groups that used to settle on the Lake Chad sand islands during the dry seasons. The deposits dating from this period, found at 1.5 to 2 m below the present-day level, are difficult to find, making any estimate of site density unrealistic. This having been said, this Deguesse phase subsistence-settlement strategy was robust enough to last for two millennia, from ca 1900 BCE to 0 CE. Mobile herders-foragers coexisted with settled autonomous and self-sustaining village communities during the Krenak phase (0-500 CE), suggesting a slow but steady population growth. Settlement expanded all over the study area during the Mishiskwa phase (500-1000 CE), along with the formation of three distinct kinds of settlement organizations: an isolated autonomous and self-sustaining village community in the south; a tightly clustered multi-mound complex polity in the southeast; and a small territorial polity in the north. The peer-polity rivalry that started to take shape during the Mishiskwa phase peaked during the Ble phase

(1000-1400 CE), resulting in the rise to primacy of the Houlouf polity which lasted for the whole Houlouf phase (1400-1800 CE) (**Fig. 10**). The Houlouf polity was finally conquered by the expanding Lagwan kingdom and turned into the northern border 'district' up to the German colonial conquest at the beginning of the 20th century.

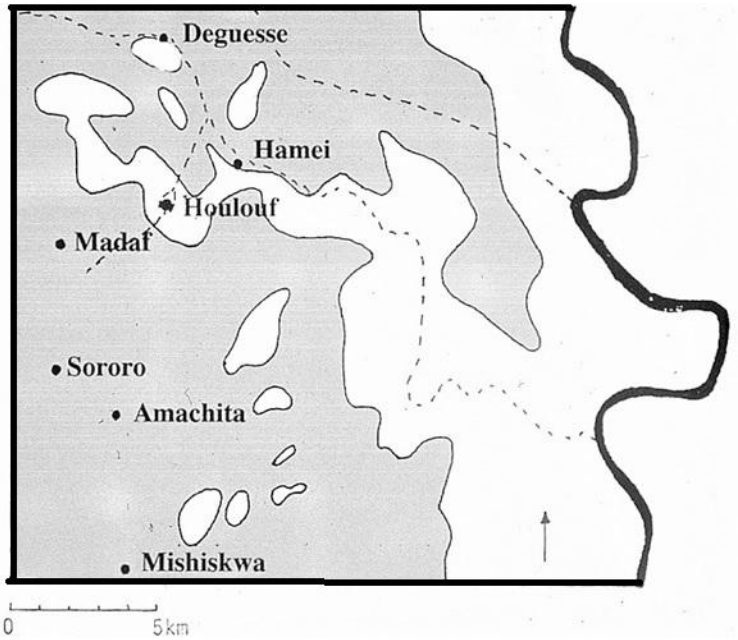

Fig. 8: Houlouf Phase settlements (1400-1800 CE)

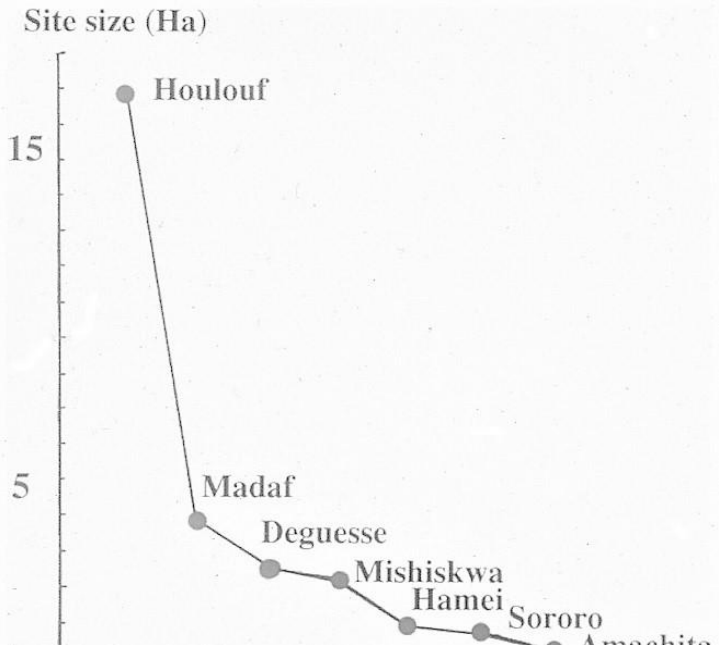

Fig. 9: Rank-Size hierarchy of Houlouf phase settlements.

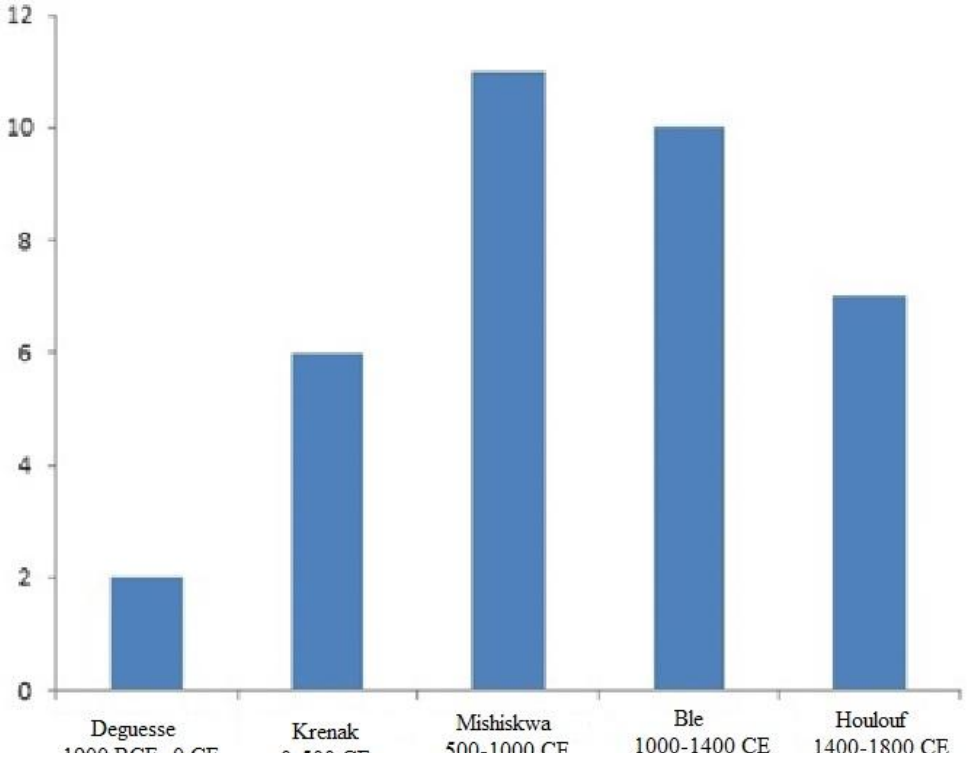

Fig. 10: Frequency distribution of settlements per phase

Craft activities and Patterns of Production

Craft activities and patterns of production can be arranged along a continuum from small scale and highly discontinuous at one end to intensive full-time specialized craftwork at the other. With the archaeological record at hand, obtained from relatively small excavation probes, it is particularly challenging to set a clear-cut threshold between small scale domestic craft and intensive production geared toward regional and long-distance exchange networks. The frequency and bulk of the recorded production features can nonetheless be used as a proxy, pointing in one direction or the other.

Production activities represented in the archaeological record of the study area include pottery making (vessels and head-rests), salt production, intensive fishing, and fish-smoking, iron and alloyed copper metallurgy, and finally cloth-dyeing. It goes without saying that they are not evenly represented in all the tested settlements and all the

documented phases. The sequence to be documented will nonetheless open a window on the social and economic dynamics of the Houlouf polity.

In the Pioneer Deguesse and Krenak Phases

Evidence for production and craft activities are very limited in the pioneer Deguesse (1900 BCE-0 CE) and Krenak phase A (0-250 CE) settlements. A few, generally thin sherds decorated with twisted roulette impression were recorded from Deguesse phase (1900 BCE-0) deposits. Four to nine vessels shapes are represented in Krenak phase A settlements shifting to 1 to 6 in Krenak phase B. Several ceramic traditions have been documented from Krenak phase A (0-250 CE) onwards. It is as if each of the settled autonomous and self-sustaining village had its own potters.

Pottery-making is the basic craft represented in the Houlouf region archaeological record. Good quality clay is ubiquitous in the study area. Paddle and anvil as well as coiling were the main manufacturing techniques. Smaller vessels in the size range of bowls and miniature pots were tempered with grass and straw and the larger pots and storage containers with sand and grog. Pottery-making was very likely a seasonal activity and the mounted vessels were fired in bonfires.

Beside pottery-making, data pertaining to a new production activity are found in Krenak phase B settlements, a forge installation at Houlouf (OH II). Iron artifacts and slag were recovered from Krenak phase B settlements onward. The recorded iron artifacts include spears, knives, daggers, rings, an axe and a hoe-blade. The ore used to produce the recorded iron tool was sedimentary in origins. Bilama Harfi, the headman of Alaya, blacksmith and former iron smelter, provided a few samples of bog-iron collected at Fangada in the *Yaéré*, the hinterland depression. He explained how his father obtained iron blooms. Blocks of bog-iron were collected from different places at the peak of the dry season, when the land was scorched dry. They were carried in baskets to the village where charcoal was already stored. The bog-iron blocks were broken into small pieces but never crushed into powder. Alternating layers, ideally of equal thickness, of charcoal and iron ore were put in the furnace with a crucible made of clay and horse dung at its bottom. Smelting operations would last a whole day for a relatively small iron bloom. At the end of the smelting, the base of the furnace was widened and the crucible broken to collect the bloom.

For Bilama Harfi (pers. comm.), the *Yaéré* bog-iron ore was of an excellent quality, and good smelters could produce iron blooms with very few slag by-products (Holl 2002).

The forge installations from Houlouf (OH II) consist of two superimposed and partially exposed blacksmith's workshops (Holl 2002: 148). They appear to have been part of a circular hut or more likely a shelter measuring 5-6 m in maximum diameter. The earlier workshop installation is made of a small elongated forge furnace with an attached circular bellow's base. The later workshop had an elaborate forge installation with a complex ventilation system consisting of three circular bellows bases connected to a single large tuyere leading to the furnace. A few small iron slags were found on both workshop floors.

During the Mishiskwa Phase

A broader range of production activities is represented in Mishiskwa phase (500-1000 CE) settlements, including pottery firing, fish processing and smoking, cloth dyeing and ironworking. The number of recorded vessels shapes varies from 1 to 4 in phase A (AD 500-750) to 2 to 18 in phase B (750-1000 CE). The recorded vessel shapes, with simple hole-mouth jars, globular to hemispheric pots, large jugs and bowls, were geared towards food and liquid storage, cooking, and food consumption, all on a domestic scale. A pottery firing area was recorded at Houlouf (OH III). It is a highly fire-hardened circular feature, 2 m in diameter, 0.20 to 0.30 m thick and bright pink-red in color. It has the same characteristics as present-day pots firing areas observed in different part of the village during fieldwork. The feature includes a small pit, 0.25 m in diameter and 0.25 m in depth, containing bones of a complete immature sheep/goat, deposited as an offering.

Fish processing and smoking features were found in Mishiskwa phase A (500-750 CE) deposits at Houlouf (OH III), Blé-Mound A (OH III), and Krenak-Sao (OH I). The fish processing feature from Houlouf (OH-III) is a small fish fermentation pit, circular in shape, measuring 0.50 m in diameter and 0.5 m in depth, with its wall lined with well smoothed unfired clay to enhance its impermeability. Fish are cleaned and put in fermentation pit for one to two days prior to their consumption or preservation through sun-drying or smoking. Such an operation gives a "highly appreciated taste" to fish flesh (Blache 1964, Blache and Milton 1962: 35). The installations from Blé-Mound A (OH-III) and Krenak-Sao (OH I), are fish-smoking "ovens". Blé-Mound A features are circular in shape, measuring 0.60-0.80

m in diameter, 0.50-0.30 m in depth, with the original height unknown. Krenak-Sao installation is elongated horseshoe shaped, 1 m long and 0.60 m wide. There at least two distinct fish-smoking techniques represented by the record at hand, one used in circular "ovens" and the other in 20 elongated installations. According to recent observations made among fishermen of the Logone River drainage (Blache 1964, Blache and Miton 1962, Laure 1974), small fish are directly sundried. Large ones are cleaned and cut into fist-sized pieces. A dry reed is inserted in each piece, put to dry in the sun for few hours (Laure 1974: 12). They are then put in circular smoking pits where an intense and fast burning fire is lit for a while. They are dehydrated, partially cooked, and the exterior protected by a thick carbonized crust. The smoked and dehydrated fish pieces are afterward left to dry in the sun for 4 to 7 days. A gentle slow burning fire geared to make smoke is lit in the elongated horse-shoe shaped installation. A wood rack is laid on top of the feature. Large fish are cut into pieces and laid on the rack. Two or three reed mats are laid above the fish pieces and the smoking proceeds for 6 days. According to Blache and Milton (1962: 36) the final product is tasty and of good quality. It is assumed that from Krenak phase B (250-500 CE) on, sun-drying was a common preservation method used in parallel with more elaborate labor-intensive smoking techniques.

Indirect evidence of weaving, spindle whorls, have been recorded at all the tested sites with the exception of Deguesse and Amachita. Positive evidence for cloth dyeing was recorded only once at Blé-Mound A (OH IV). It consists of a crushed large hole-mouth jar lying next to a hardened crust of purple indigo tint. A very active cloth industry was documented in the study are in the 19th century. The Lagwan kingdom, which conquered and annexed the Houlouf polity, was famous for its cloth industry, specifically; the fabric for a large prestige garment tinted a shining black color, called *tobe* and highly appreciated in Bornu (Denham *et al.* 1828, Barth 1965, Nachtigal 1980, Reyna 1991). One hundred such *tobe* and 10 young slaves were the Lagwan kingdom annual tribute to the Sultan of Bornu. Denham *et al.* (1828) mapped extensive cotton fields in the study area in the beginning of the 19th century, along their itinerary from Kukawa, then the capital city of Bornu kingdom to Logone-Birni. Some thirty years later Barth (1965) reported an intensive weaving industry at Logone-Birni, with numerous workshops producing for exports to the Baguirmi, Bornu, and Hawsa states, some employing up to 10 individuals.

As far as iron metallurgy is concerned, two forge furnaces were recorded in Mishiskwa phase settlements. One, partially exposed at Blé-Mound B (OH III) is circular in shape and measures 1.6 m in diameter. The other, at Houlouf (OH IV), measures 0.75 m in diameter. It was filled with a thick ash deposit and large fragments of fired clay walls. A large spongy iron slag 0.200 kg in weight was found at its bottom as well as a small plain bowl – "a medicine pot" buried under the furnace wall on the northwest side (Holl 2001: 154). A secondary burial containing the cranium of a 6-9 years child and an iron arm ring with two spiral ends was set against the southeast flank of the furnace. The iron arm ring was immediately recognized by all the workmen as belonging to an uncircumcised boy.

In the Ble Phase

The range and diversity of production activities peaked during Ble phase (1000-1400 CE). They include pottery-making, fish processing and smoking, iron-working, and salt making. Potting activities expanded considerably with the number of represented vessels shapes shifted from 1 to 17 in phase A (1000-1200 CE) to 3 to 50 in phase B (1200-1400 CE). The production of terracotta figurines, both anthropomorphic and zoomorphic, as well as clay headrest took roots at Blé-Mound complex.

Fish-processing and smoking operations are documented at four out of five sites of the Blé-Mound complex. It is the case at Blé-Mound A (OH VIII, X, and XI) in 1 to 3 features, Blé Mound C (OH VIII) in 3 features, and Blé-Mound D (OH VIII) in 5 features. Blé-Mound E (OH II to V) appears to have been entirely devoted to the processing of fish for oil production. A large number of juglets found in the excavation probe may have been destined to be used as oil containers. More than 900 fish-smoking "ovens" were recorded after surface inspection of all the five mounds of the settlement complex suggesting a local specialization by the time of the site's destruction. One of the five fish-smoking features – feature 4 - excavated as a surface sample at Blé-Mound D deserves to be mentioned here. It measures 0.80 m in diameter and 0.45 in depth. The ashy layer at its bottom contained a secondary burial with the skull of a 5 to 7 years old child, based on tooth eruption, 3 carnelian beads 3 hammer stones in syenite, and one clay figurine representing a bull. The

remains are not burnt, indicating that were deposited after the "de-commissioning" of the fish-smoking feature. The association between a child cranium/skull and a production feature is repeated in this case too.

Iron-working installations were recorded at Mishiskwa (OH III) and Houlouf (OH VI). The Mishiskwa workshop was made up of a pink-red fire-hardened surface, 0.20 m thick and 3-4 m in diameter overlying two child pot burials. The furnace measuring 1.2 m in diameter with its mouth opening north contained a freshly made and unused crucible of sun-dried clay, 0.40 m in diameter. The furnace base was preserved to a height of 0.25 m and its wall was 0.10 to 0.15 m thick. Bellows installations part of an elaborate venting system was located in the north flank. They consist of two circulars 0.20 to 0.30 m in diameter and 0.10 m deep pits for bellows *stricto-sensu,* and two complementary elongated 0.45 m long, 0.10 m wide, and 5 cm deep excavations, very likely tuyeres negatives. The child pot burials were found under the workshop installations inserted in the fire-hardened layer, on opposite sides, one in the north and the other in the south, but at the same distance from the furnace. The southern burial was made of three pots and the northern one of two. Both children were of the same age, 6 to 9 years old based on tooth eruption and their bones show clear traces of being affected by the high temperatures generated by the furnace. The association between metal working installations and children remains is clearly intentional in this case. The furnace was designed for multiple smelts and to handle the peculiarities of the local bog-iron ore. A few iron slags were retrieved in the deposit.

The blacksmith workshop from Houlouf (OH VI) includes four distinct features. There is a set of two forge furnaces, 0.50 m in diameter and 0.30 deep made with recycled truncated large clay containers, each containing a few spongy iron slag and one syenite hammer stone. Two 0.20 m thick, 1.2 m long and 0.60 – 0.50 m wide fire-hardened surface were exposed in the southeast and south flank of the forge furnaces. As suggested by the Mishiskwa workshop, these surfaces may have been part of the same more extensive blacksmith shelter's surface.

Evidence for salt making was recorded in the same occupation horizon VI at Houlouf (Holl 2002: 159) spread over 60 m^2 in the southern half of the 110 m^2 excavation unit. It consists of a thick fire-hardened circular surface 3.5 m in exposed diameter, with an elongated hearth-like 0.80 by 0.75 m feature. Eight very large jars area arranged into two

sets: one set of three along an east-west axis in the north, and the other of five along a northeast-southwest axis in the south. The material used for salt production is divided into no less than eight large jars, all of them poorly preserved as if broken purposely and their sherds spread all over the workshop. The retrieved pottery material is made of ten truncated jars used as supporting devices for brine filtering, ten filtering pots of diverse sizes and shapes, and 62 hole-mouth pots used to boil the brine to obtain salt cones (**Fig. 11**), and approximately 30 effigy juglets – with representations of human faces – probably used as containers for powder salt "trademarked" by Houlouf salt-maker(s). Two piles of coarse stone artifacts – grinders, grindstones, hammer stones – were found in the salt production area. The spatial distribution of the recorded salt production material presents a puzzling mixture of evidence. Thousands of sherds are spread out all over the installations, mixed with broken but restorable vessels, and complete but scattered pots and 24 juglets. Such a chaotic scatter, inconsistent with effective production operations suggests that Houlouf salt production installations were target of a destruction raid or violent attack. This suggestion is supported by the case of a child, 6 to 9 years old based on tooth eruption, found dead in large jar in the same occupation horizon. According to ethno historical sources collected among the elders of Houlouf during fieldwork, in ancient times, children were usually hidden in large clay containers during enemy's raids and sudden attacks. The child adorned with two alloyed copper rings was probably hidden in that way in that 0.90 m high, 0.60 m maximum diameter, and 0.45 m mouth diameter heavy clay container. The skull was found in an upside-down position overlaid by rib bones, vertebrae, and limb bones.

Salt can be obtained from plants such as *Salvadora persica* and *Capparis aphylla* present in the Chadian plain, brackish seasonal ponds, and salted sediments (Barth 1965, Carmouze 1970, 1976, Letouzey 1985, Lovejoy 1986). The brine, whatever its origins, has to be filtered, and boiled to obtain salt. Brine boiling is a particularly delicate operation. To achieve total and homogeneous crystallization of salt brine boiling must take place in a certain sequence requiring sophisticated *know-how* and in-depth mastery of the entire process (Lovejoy 1986). In general, the brine is boiled for approximately 24 hours at constant low temperatures to avoid untimely crystallization. Salt-makers use long sticks to homogenize the solution during the process, adding small quantities of brine from time to time to keep the molds full, to prevent carbonates and sulfates from precipitating before the

sodium chloride. Molds or pots sizes have to be similar to maintain coordination of boiling operations. Theoretically, the number of vessels boiled simultaneously is limited by the supervising capacity of each salt-maker. This means that higher production output cannot simply be achieved by increasing the number of pots put to boil in a production sequence, but only through the multiplication of boiling operations.

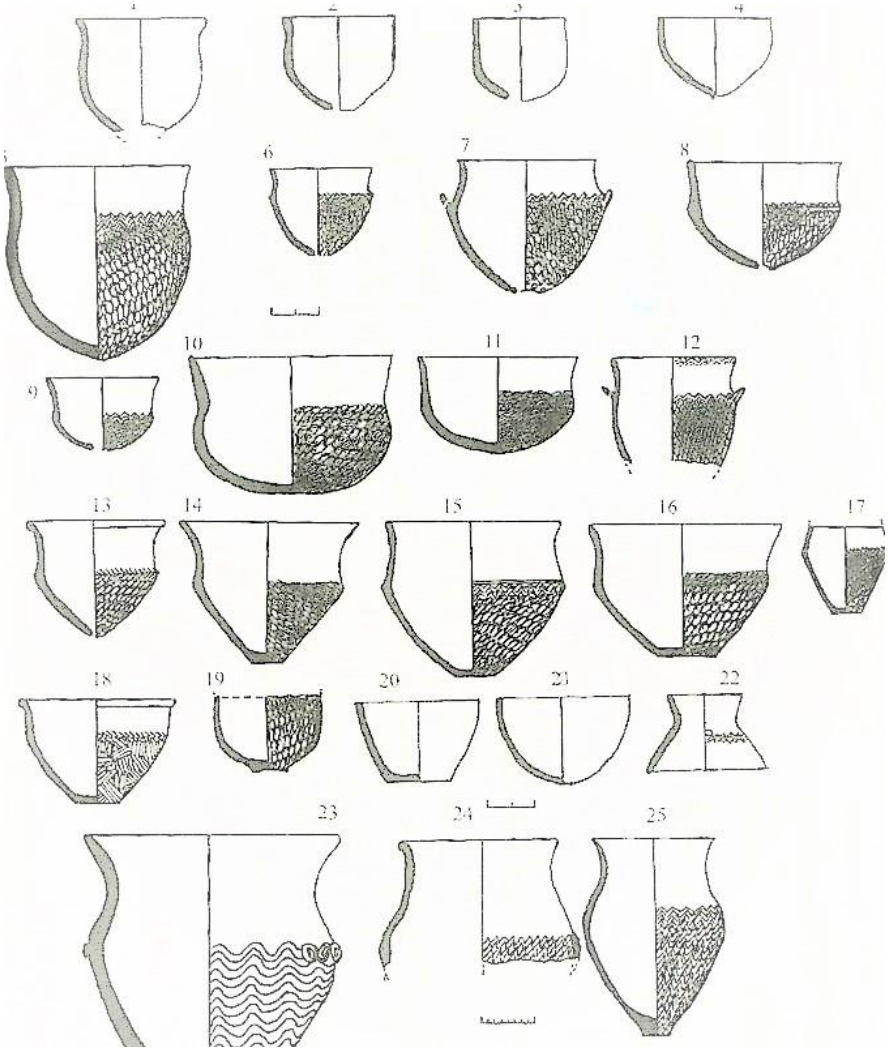

Fig. 11: Sample of vessel shapes represented in the Ble phase salt production area at Houlouf

During the Houlouf Phase

All production activities recorded so far are sustained during the Houlouf phase (1400-1800 CE) when the city of Houlouf achieved regional primacy. Pottery making, weaving, metallurgy, fish processing and smoking, as well as salt making are still represented, but in significantly lower intensity for some, if judged by the quantity and quality of the recorded data. The number of vessels shapes shifted from 8 to 73 in phase A (1400-1600 CE) and fell back to 2 to 21 in phase B (1600-1800 CE). Fish processing and smoking shifted to the hinterland depression of the *Yaéré* at Amachita and Sororo where catfish was the only fish species represented in the archaeological record. Fish fermentation pits were found at Amachita, one in OH I and five in OH II. They are bell-shaped in general, 1.1 to 1.3 m deep, and 1.1 to 1.4 m in diameter, lined with finely smoothed clay. These features appear to have been part of larger fish processing complexes that may have included smoking installations as well as fermentation pits. Smoking features were uncovered at Amachita (OH III) and Sororo OH I and II. They are circular in shape measuring 0.60 to 1 m in diameter, 0.20 m deep, and filled with ash. Both specimens from Sororo OH I and II contained a “medicine” pot in a small pit dug at the bottom of the feature.

The salt production installations from Houlouf (OH VII) are concentrated in the southeast corner of the excavated probe, on approximately 24 m^2. They include a small portion of a fire-hardened surface, a small pit filled with ash, a brine filtering set crushed *in situ* with a large plain conical base basin container for the brine to be filtered, a supporting device made from the truncated upper part of a large jar, with inside a plain large hemispheric bowl geared to contain the filtered brine. There is also a series of five large jars in upside down position arranged along a northeast-southwest axis, possibly brine storage facilities, and three juglets, two plain and one effigy specimen.

Two complete animal figurines representing a baby and an adult hippopotamus were found set against the brine filtering installation on its east flank. The baby was standing on the west side along the adult specimen belly, its head at the udders level, in a suckling posture. The adult facing the opposite direction is represented with its head turned upwards and its mouth wide open. Symbolic and ritual implications are clearly involved but difficult to decipher.

Metal working installations from Houlouf (OH VII) are located in the northeast corner of the excavated unit. The uncovered blacksmith workshop found next to an "elite" cemetery includes three features. The furnace base filled with large sherds measures 0.80 m in diameter. Its wall, 5 cm thick on the average was preserved up to a height of 10 cm. The forge hearth was built against a crescent-shaped wall 0.20 thick and 1.10 m long. It is circular and measures 0.60 m in maximum diameter, with the tuyeres made of recycled large jug necks still in place in the east. A "medicine pot", a small elongated vessel was found buried in the northern side of the hearth. And finally, a horseshoe-shaped hearth, 0.50 m by 0.40 m by 0.20 m deep, with a 0.15 m thick wall. A few iron and copper slags, 280 g, were collected in the deposit indicating that imported copper or worn-out objects in alloyed copper were recycled by local blacksmiths. All the copper artifacts recorded in the study area were made with the lost wax technique (**Fig. 12**). This suggestion is supported by metallographic analyses carried out on a sample of 19 artifacts collected from the Houlouf VII cemetery (Holl 2002: 246, table 43).

Beside copper (Cu), tin (Sn), lead (Pb), and zinc (Zn) are the three main components with proportions higher than 1% found in all the studied artifacts. The copper (Cu) component varies from 61.2% to 89.45%. The variability recorded in metal components fits no pattern either in specific types of artifacts, or the archaeological context of the find. All the studied artifacts are tertiary alloys, Cu-Zn-Sn-Pb and Cu-Pb-Sn-Zn as major combinations, with in some cases a surprising amount of Iron (Fe) and Arsenic (As). According to Bourhis (pers. comm. 1990) who made the analyses, the recurrent presence of iron is due to the use of standard iron-working installations, with the variability of metal components combinations resulting from systematic recycling. He further specifies that "considered from the side of their heterogeneous composition, it is probable that Houlouf objects were obtained through re-casting of worn-out items from diverse origins". In a case like this one metallographic analysis are of little help in provenience studies but point instead to the skills of local craft people.

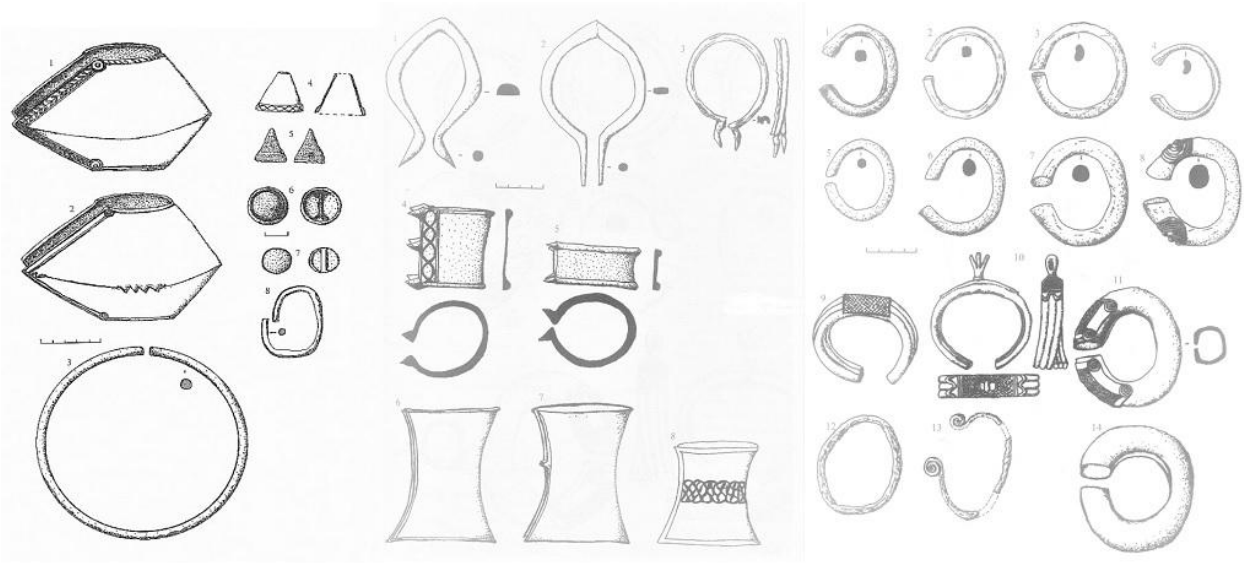

Fig. 12: Sample of copper/alloyed copper artifacts: 1-2: Arm-bands [archers]; 3: torque; 4: bell; 5: cones; 6-7: buttons; 8: Belt buckle; Spurs and leg-guards; arm and ankle rings

Relying exclusively of the archaeological record at hand, the patterns of diversification, intensification, and specialization of the production of goods is strictly synchronized with all the other social, economic, and political indicators discussed so far in this paper. Pottery-making is present right from the first stages of settlement in the study area. Pottery-making, iron-working, and fish processing and smoking took roots in Krenak phase autonomous self-sustaining villages. Weaving and cloth dyeing, greater diversification of pottery production were added during the Mishiskwa phase which witnessed the formation of two competing polities. Special rites were performed in a number of production features, an offering of sheep/goat meat in the Houlouf (OH III) pottery firing area, a ‘medecine pot” and a child cranium under Houlouf (OH IV) forge furnace. The pace of craft diversification and intensification peaked in the Ble phase with the heightened rivalry between Houlouf and Blé-Mound Complex polities. Children remains are found associated with iron-working features at Mishiskwa (OH III) and a fish smoking “oven” at Blé Mound D. The production of clay head-rest and terracotta figurines is well documented in the Blé-Mound complex as well as intensive fish processing and smoking activities. Intensive salt making activities with especially made “packaging” containers took place at Houlouf (OH VI). With the rise to regional primacy, all the major

productive activities are still present, but at a lesser intensity in the case of salt production. The ritual protection of some production features is documented by the "medicine pot" of Sororo (OH I and II) fish-smoking pit, and the Houlouf (OH VII) forge furnace, as well as the mother and baby hippopotamus figurines from Houlouf (OH VII) brine filtering installations.

Some of the goods manufactured in the Houlouf region such as salt, sundried and smoked fish, clay head-rests, and dyed cloths were the out-going commodities, part of a dynamic regional economy unveiled in the 19th century historical record (Barth 1965, Denham *et al.* 1828, Lovejoy 1986, Nachtigal 1980).

Patterns of Exchange

The socio-political transformations that presided over the emergence of the Houlouf polity outlined above were sustained, at least partly, by flows of goods obtained from faraway lands. The Chadian plain is essentially a sedimentary basin without rock outcrops. All the lithic material to be found in the sites is therefore from exotic origins (Connah 1981, Connah1996, 1997; Connah and Freeth 1989, Garba 1993, Holl 1995, 2020a, 2020b; Marliac 1991). The coarse stone used for heavy duty daily life activities came from 150 km in the northeast at Hadjer el Hamis and 200 km in the southwest, from the Mora-Waza-Mandara area. Luxury goods – prestige items – like alloyed copper artifacts, carnelian, agate, and glass beads were obtained from the northwest through long-distance trade networks connected to the Trans-Saharan trade. It is the general influx, distribution and 'consumption' of these exotic goods that will be discussed in this part of the paper to assess their implication in the formation of the Houlouf polity.

The pioneer Deguesse phase settlements did not reveal any presence of long-distance material. The study area thus seems to have entered the realm of long-distance exchange network during the Krenak phase in the first half of the first millennium CE.

A small amount of exotic goods was found in Krenak phase (0-500 CE) deposits, in three of the six documented settlements (Table **1**). All three procurement zones are represented with different frequencies and combinations from site to site. Raw material from the southwest, syenite and quartzite, is attested in virtually the same quantity at Houlouf (OH

II) and Blé-Mound D (OH I) with a single specimen at Krenak (OH V-VI). Rhyolite from Hadjer el Hamis in the northeast is found at Houlouf and Blé-Mound D, one specimen in each case. And finally, northwest goods, one carnelian bead and four alloyed copper buttons are found at Houlouf only. All these artifacts were collected in the archaeological deposits, on house floors and courtyards without specific installation. The four alloyed copper buttons probably sewn on a garment seem to have been lost in the domestic space. The quantity and diversity of long-distance items increased during the Mishiskwa phase (500-1000 CE) shifting from 21 specimens in five raw materials to 121 in nine (Table **2**, **Fig. 13**).

Table **1**: Distribution of long-distance trade goods in Krenak Phase (0-500 CE) settlements

Provenience Zone	SW		NE		NW			
Raw material	S	Q	M	G	R	C	CA	Total
Deguesse III – VII	-	-	-	-	-	-	-	
Krenak V – VI	1	-	-	-	-	-	-	1
Houlouf II	5	1	-	-	1	1	4	12
Ble-Mound A I	-	-	-	-	-	-	-	-
Ble-Mound B I	-	-	-	-	-	-	-	-
Ble D I	7	-	-	-	1	-	-	8
Total	13	1	-	-	2	1	4	21

Key: CA = Copper artifacts; C = Carnelian; G = Granite; M = Microdiorite;
Q = Quartzite; R = Rhyolite; S = Syenite; SW = Southwest; NE = Northeast; NW = Northwest

They were recorded at seven settlements out of a total of 11. Coarse stone material from the southwest procurement zone is largely predominant with 88 specimens. It is followed by 12 materials obtained from the northwest trade connection (27 specimens) and the northeast Hajer el Hamis procurement area (11 rhyolite artifacts). A 30 grams oval-shaped pendent in amazonite, 5 cm long, 4.5 cm wide, and 1.2 cm in maximum thickness was found at Blé-Mound A (OH II). The nearest known source of amazonite, a light blue-green semi-precious stone, is in the Tibesti mountain range, at more than 1,000 km north of the study area. A small piece of red ochre was found at Houlouf (OH III) as well as evidence of red ochre in Houlouf OH III and IV burials. The provenience of the red ochre is not known precisely but was very likely from the southwest procurement zone.

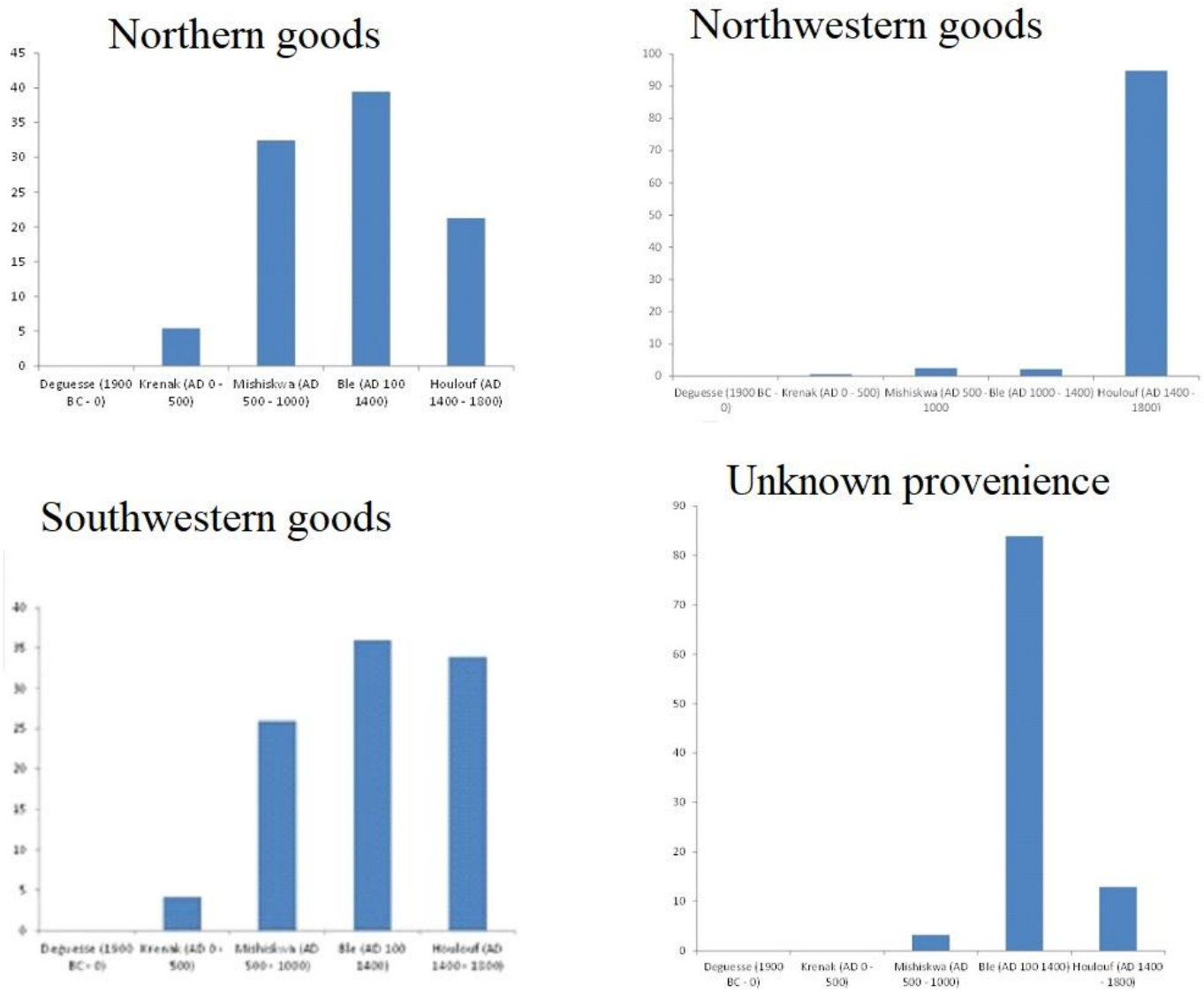

Fig. 13: Frequency distribution of imported goods per provenience zones.

The inter-site distribution of goods is strongly skewed in favor of Houlouf (OH III-IV). It pooled 104 out of a total of 121 long-distance trade items. The coarse stone material used for the manufacture of daily life heavy duty tools used for food preparation and crafts' activities is found in living spaces and throughout the cultural deposits. Luxury or prestige goods were found exclusively in burial contexts at Houlouf but in the living space at Blé-Mound A. Houlouf and Blé-Mound complex emerge as leading participants to long-distance trade networks. All the remaining settlements present a single class of raw

material, syenite from the southwest procurement zone, with frequency ranging from 1 to 3 (Table 2).

Table 2: Distribution of long-distance trade goods in Mishiskwa Phase (AD 500 – 1000) settlements

Provenience Zone	SW				NE		NW		
Raw material	S	Q	M	G	R	C	CA	Others	Total
Deguesse VIII	-	-	-	-	-	-	-	-	-
Krenak VI – VII	-	-	-	-	-	-	-	-	-
Houlouf III – IV	58	3	4	1	11	25	1	1 red ochre	104
Ble A II – IV	12	-	-	-	-	1	-	-	13
Ble B II – IV	-	-	-	-	-	-	-	1 pendent amazonite	1
Ble D II – IV	-	-	-	-	-	-	-	-	-
Ble E I	2	-	-	-	-	-	-	-	2
Hamei I – III	2	-	-	-	-	-	-	-	2
Madaf I – III	2	-	-	-	-	-	-	-	2
Mishiskwa I – II 3	-	-	-	-	-	-	-		3
Krenak-Sao I – IV	1	-	-	-	-	-	-	-	1
Total	80	3	4	1	11	26	1	2	121

Key: CA = Copper artifacts; C = Carnelian; G = Granite; M = Microdiorite; Q = Quartzite; R = Rhyolite; S = Syenite; SW = Southwest; NE = Northeast; NW = Northwest

Long-distance trade items were recorded in 7 out of 10 settlements during Ble phase (1000-1400 CE). There is a general increase in the quantity and diversity of goods and represented raw material which shifted respectively to 168 items in 10 distinct materials (table 3). Items from the southwest procurement zone are predominant with 104 out of a total of 168. The northwest trade connection comes next with 23 specimens followed by the northeast with 10 rhyolite artifacts. The provenience of 1 agathe bead, 1 piece of red ochre, four lip-plug in calcite, and 22 cowry shells *(Cypraea moneta*) is unknown. It is however very likely that the agathe bead and the cowry shells were obtained through connections to the trans-saharan trade as show by the concealed merchandises of Mac den Ijâfen (Monod 1969) dated to the same time span. As suggested previously, the southwest procurement zone is the most likely origin of the red ochre. The regional distribution of goods is strongly skewed in favor of the Blé-Mound complex which monopolized all but 7 items (Table 3). All the prestige goods, 1 agathe and 10 carnelian beads, 13 alloyed copper cones, 4 calcite

lip-plugs, and 20 cowry shells were recovered in burial contexts. Coarse stone material, syenite, microdiorite, granite, and rhyolite were used for heavy duty tools like grinders, grindstones, pounders, hammer-stones. Hundreds of small spherical syenite balls, not included in the tabulations, were found on all the mounds of Ble settlement complex. They were probably used as missiles for slingshot during the raids that destroyed the settlement at the end of Ble phase B (ca. 1300-1400).

The amount of long-distance trade goods recorded in Houlouf phase (1400-1800 CE) levels rose dramatically from 168 in the previous Ble phase to 1,138 (table 4) with 9 raw material categories represented. Goods from the northwest trade network with 1,014 specimens, including alloyed copper artifacts and carnelian and glass beads, were largely predominant. They are found exclusively at Houlouf (OH VII-VIII) in burial contexts to be discussed later. Coarse stone came predominantly from the southwest with a small amount of rhyolite artifacts from the northeast. The regional distribution is strongly skewed in favor of Houlouf that monopolized all the prestige goods and 75 out of a total of 123 coarse stone artifacts (table 4). Small villages and hamlets from the Houlouf polity, Hamei (OH V), Madaf (OH VI), and Mishiskwa (OH VI) had 10 to 19 coarse stone artifacts, representing 2 to 4 rocks variants. The seasonal settlements of Amachita (OH I-III) and Sororo (OH I-II) had 3 to 5 coarse stone artifacts, all from the southwest procurement zone.

Table 3: Distribution of long-distance trade goods in Ble Phase (1000-1400 CE) settlements

Provenience Zone	SW				NE	NW		Unknown		
Raw material	S	Q	M	G	R	C	CA	Cal	Others	Total
Deguesse	-	-	-	-	-	-	-	-	-	-
Houlouf V – VI	-	-	-	-	-	-	-	-	-	-
Ble A V – XV	50	-	3	2	7	4	-	-	1 agathe bead	67
Ble B V – XIII	5	-	-	1	-	-	-	-	-	6
Ble C I – VIII	10	-	1	-	4	3	13	4	20 cowries 1 red ochre	56
Ble D V – VIII	14	-	-	-	2	-	-	-	-	16
Ble E II – V	10	-	1	1	1	3	-	-	-	16
Hamei IV	4	-	1	-	1	-	-	-	-	6
Madaf IV – V	-	-	-	-	-	-	-	-	-	-
Mishiskwa III – V	1	-	-	-	-	-	-	-	-	1
Total	97	-	6	4	15	10	13	4	22	168

Key: Cal = Calcite; CA = Copper artifacts; C = Carnelian; G = Granite; M = Microdiorite; Q = Quartzite; R = Rhyolite; S = Syenite; SW = Southwest; NE = Northeast; NW = Northwest

Table 4: Distribution of long-distance trade goods in Houlouf Phase (1400-1800 CE) settlements

Provenience Zone	SW			NE		NW		Unknown		
Raw material	S	Q	M	G	R	C	CA	Gl	Others	Total
Deguesse	-	-	-	-	-	-	-	-	-	-
Houlouf VII – VIII	55	3	13	-	4	940	71	3	1 red ochre	1,090
Hamei V	9	-	-	-	1	-	-	-	-	
Madaf VI	12	-	4	1	2	-	-	-	-	19
Mishiskwa VI	6	-	4	-	1	-	-	-	-	11
Amachita I – III	-	-	2	1	-	-	-	-	-	3
Sororo I – II	5	-	-	-	-	-	-	-	-	5
Total	87	3	23	2	8	940	71	3	1	1,138

Key: CA = Copper artifacts; C = Carnelian; G = Granite; Gl = Glass; M = Microdiorite; Q = Quartzite; R = Rhyolite; S = Syenite; SW = Southwest; NE = Northeast; NW = Northwest

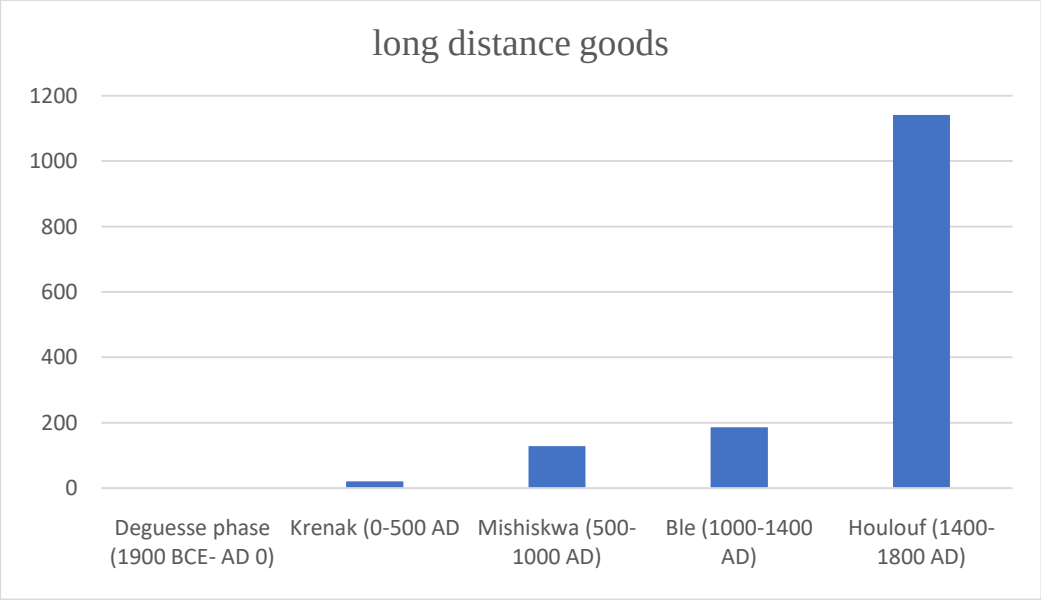

Fig. 14: Aggregated in-coming flows of long-distance trade goods in Houlouf polity.

In general, there is a sustained increase in the flow of long-distance trade items in the study area, shifting from 21 to 1,141 (Table 5, **Fig. 12**). The regional distribution and flows of goods present interesting variations. Houlouf and Blé-Mound complex pooled all the goods from all three provenience areas in the Krenak phase (0-500 CE), frequency ranging respectively from 12 to 8, with southwest goods largely predominant. Houlouf took

the lead, in terms of total amount as well as diversity of goods during the Mishiskwa phase (500-1000 CE). It dwarfed all the other six settlements that had 1 to 13 specimens of long-distance trade items. Blé-Mound complex took the leading position during the Ble phase (1000-1400 CE) with 161 items representing 10 categories of raw materials from all three provenance zones (**Fig. 12**). The other settlements, Hamei (OH IV) and Mishiskwa (OH III-V) had 1 to 6 coarse stone artifacts predominantly from the southwest with a single specimen from the northeast. The leading position shifted back to Houlouf during the Houlouf phase (1400-1800 CE) after the abandonment of Blé-Mound complex at the end of Ble phase. The Houlouf polity and its central settlement monopolized all the prestige goods during this period (**Fig. 13** and **14**).

Clearly, there were two distinct spheres of exchange in place. One, articulated on the southwest and northeast zones, dealt with the procurement and transfer of coarse stone material used for the manufacture of heavy-duty tools for daily life and crafts activities. The other, linked to the northwest trade and by and large connected to the trans-Saharan exchange network, focused on prestige goods used for display of status. The operations of the exchange systems that scattered all the long-distance items reviewed so far are not known; a number of plausible and realistic models can nonetheless be suggested to make sense of the archaeological record at hand.

Table **5**: Long-term flows of long-distance trade items

Phase	Number of Settlements	Northwest goods	Southwest goods	Northern goods	Unknown provenience	Total
Deguesse (1900 BCE-0 CE)	2	-	-	-	-	-
Krenak (0-500)	6	5	14	2	-	21
Mishiskwa (500-1000)	11	27	88	12	1	128
Ble (1000-1400)	10	23	122	15	26	186
Houlouf (1400-1800)	7	1,014	115	8	4	1,141
Total	2 – 11	1,069	339	37	31	1,476

The transportation systems used to carry the goods in and out of the study area may have comprised watercraft, animal caravans, and human carriers. Dug-outs may have been used during the rainy seasons. It was and it is still possible to travel all over the Chadian plain at the peak of the flood season, as far south as the Waza National Parc 250 km away.

Animal caravans and human carriers were used during dry seasons. The peaks of the rainy and dry seasons, with their "flat" demand in labor, were the optimal periods for long distance expeditions and trade activities.

As far as the trade in coarse stone is concerned, numerous quarries and lithic workshop have been recorded along the Mandara-Mora-Waza Mountain range and inselbergs in Cameroon and Nigeria, as well as around the Hajjer el Hamis inselberg in Chad Republic (Connah 1981, Connah and Freeth 1989, Holl 1988, 1995, 2001, Marliac 1991). Both procurement zones are located respectively at 200 km crow flight southwest and 150 km northeast. Direct procurement by people from the study area cannot be totally ruled out. It is however highly improbable as it required precise geographic knowledge of the location of exploitable outcrops and skills to quarry rocks that are not part of plain dwellers cultural landscape. A "least cost" strategy for the acquisition of coarse stone material may have consisted in a two-way exchange system with local groups (Holl 1995), with exchange partners convening periodically, during the rainy seasons with their fleets of dug-outs and/or in the dry seasons with their animal caravans or humans carriers. Foodstuff, grain, fresh or smoked fish and cloths could have been exchanged for coarse stone in bulk or already shaped into artifacts.

The "prestige goods" exchange through which alloyed copper, cowry shells, carnelian and glass beads were obtained was connected via Bornu markets to the Trans-Saharan trade. The carnelian beads may have been from West African and Asian origins. The 16 alloyed copper artifacts analyzed by Bourhis (in Holl 2001: 246) were made by local blacksmiths, from recycled, presumably worn-out objects from diverse origins. Copper ingots could be obtained from Bornu market-places where they were used as currency from the 14th to the beginning of the 19th century (Ibn Battuta in Levtzion and Hopkins 1980, Denham *et al*. 1828, Barth 1965, Nachtigal 1980). From Ble phase A (1000 -1200 CE) onward copper ingots could have been imported in two ways. First, they could be obtained easily in Bornu market-places where they were used as currency in exchange for goods sold by merchants and entrepreneurs from the study area. Denham *et al.* (1828) reported a high demand for copper/alloyed copper at Angornu, the largest market-place of the 19th century Bornu kingdom in 1820. They also referred to a significant presence of Kotoko [speakers of Central Chadic languages] merchants from Makari, Gulfeil, Kusseri,

Kala, and Logone-Birni. “All these merchandises were paid for in slaves or *tobes* [long prestigious robe made of shining black fabric], but these bring money and were readily sold” (Denham *et al.* 1828: 235). Second, merchant caravans cruising the study area used copper ingots for payment in a context where they had no cash value. The crossing of cultural boundaries requires translations, here, a re-interpretation of symbols of wealth (Bradley 1985). Consequently, in the study area, the material capital accumulated in foreign currency consisting of copper and alloyed copper ingots was converted into a higher symbolic capital, instrumental in the emergence and consolidation of regional elites (Holl 1988, 1994, 1995, 2001, 2020b).

Translating Material into Symbolic Capital: Consumption and Use of Prestige Goods

The goods imported in the Houlouf polity through long-distance trade networks can be partitionned into two broad categories: utilitarian goods on the one hand, essentially coarse stone material used to make daily life domestic gears, such as grinder/grinding stones, hammerstones, pounders, etc. And prestige goods, on the other hand, translated from material into symbolic capital and used to assert and display social status (**Fig. 15**).

The sample of copper/alloyed copper artifacts collected from the Central site of Houlouf amounts to 105 specimens (Table **6**). Five specimens were collected from the Mishiskwa phase (ca. 500-1000 CE) deposit, shifted to 30 in Ble phase (1000-1400 CE) levels, and finally peaked at 70 in the Houlouf phase (1400-1800 CE).

Ble phase Copper/alloyed copper artifacts were collected from 9 burials but their distribution is strongly skewed in favor of burials 75 and 81 which contained 18 items out of 30. Spurs are clearly used for the handling of horses and leg-guards protect the legs and ankles of horse-ridders against ennemies swords in cavalry engagements. Accordingly, the items of horsemanship point to the emergence and existence of a corps of elite warriors at the Houlouf earthen-walled city during the Ble phase (**Fig. 16**).

Fig. 15: Ble Phase Female and male assortment of personal adornment items, a horse-rider burial from Houlouf, and an alloyed copper 16th century figurine.

Social differentiation and trends toward stronger social ranking were amplifyed during the Houlouf phase (1400-1800 CE). Houlouf, protected by a strong earthen rampart became the un-rivalled primate center of the polity, witnessed the installation of a restricted access elite cemetery (**Figs. 16** and **17**), indicated by a dense cluster of large vessels used as grave-markers, arranged around a central monument (**Fig. 16**), with tightly regulated burial protocol (**Fig. 18**). The highly choreographed mortuary program mobilized a large amount of copper/alloyed copper artefacts, carnelian beads and other exotic raw materials. The cemetery is divided in four burial-clusters with 4 to 8 burials each, arranged around the central effigy-jar. A detailed analysis of the main aspects of the Houlouf phase cemetery will allow for a better grasp of the social use of copper/alloyed copper artefacts and other exotic goods.

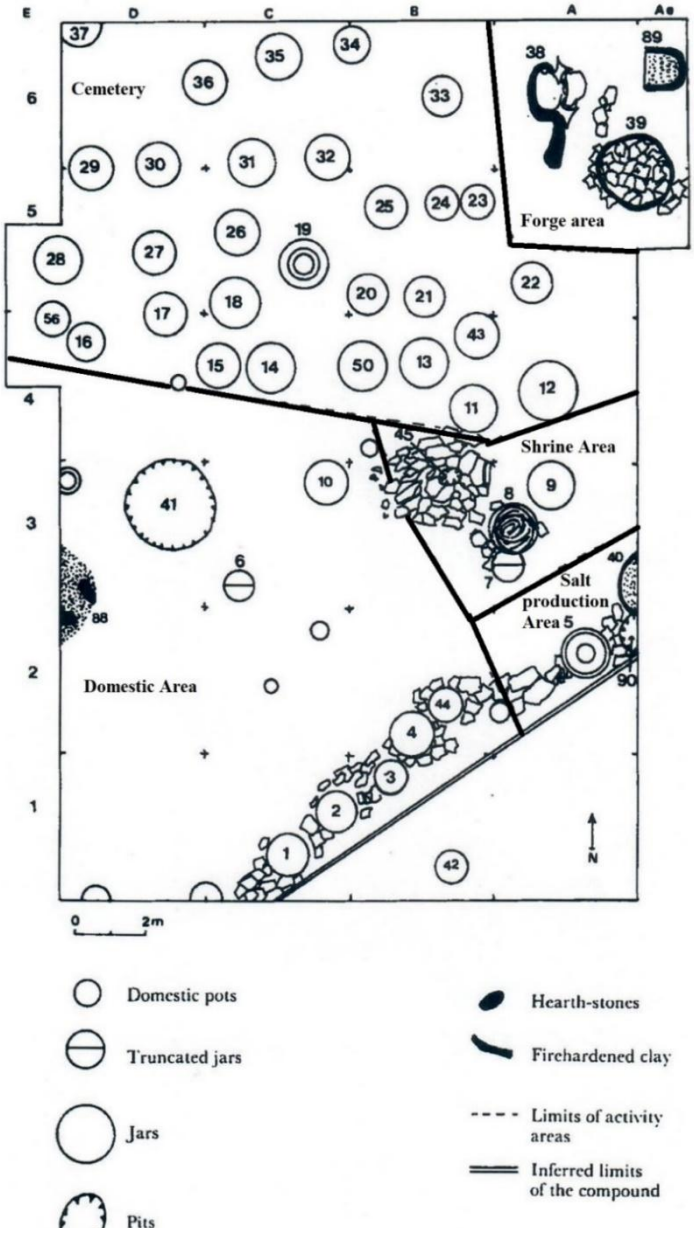

Fig. 16: Houlouf Phase level VII with a restricted access cemetery in the northern half of the Probe.

The Houlouf phase Elite cemetery (1500-1600 CE)

The Houlouf phase cemetery, dated to 1500-1600 CE, is relatively densely packed with 25 burials in less than 40 square meters in the north half of the Houlouf excavation probe (**Fig. 17**).

Fig. 17: Partial view of Houlouf phase elite cemetery.

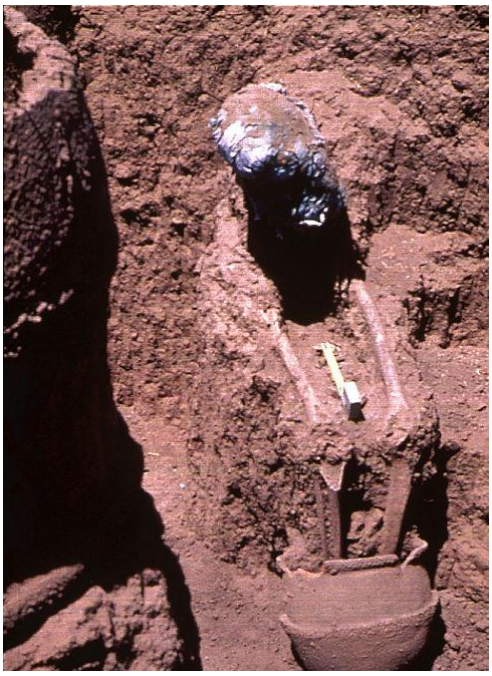

Fig. 18: The deceased are buried in sitting position, facing southwest, with feet in a large pot

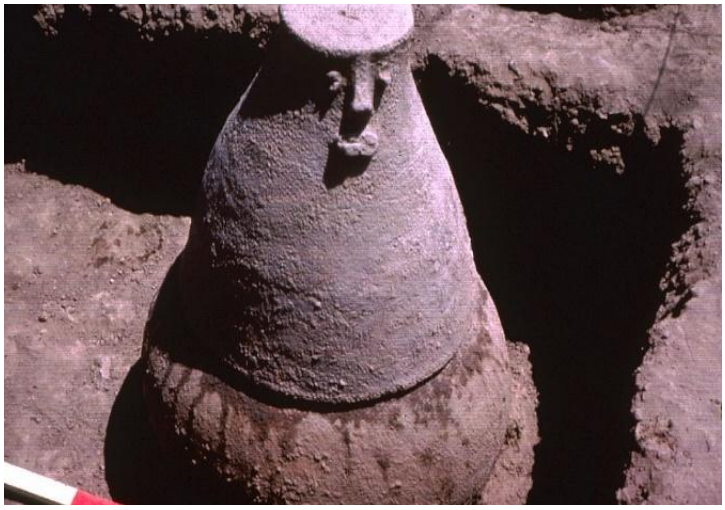

Fig. 19: The Effigy-Jar central monument of Houlouf elite cemetery, facing southwest.

The burials are marked by 1 to 3 super-imposed large clay vessels, without direct contact with the skeletons, and as such explicitly used as “burial-markers”. All the deceased are buried in sitting position, facing southwest as the effigy-jar central monument (**Figs. 18** and **19**), with feet in a large pot. The Cemetery is organized in four burial-clusters located in the SE, SW, NE and NW (**Fig. 20**).

The SE cluster includes 8 burials. The burial facilities are made of 1 to 3 large vessels grave-markers and 1 to 2 pots for feet with one exception (burial 20). Burial inclusions, *de facto* grave-goods consist of 1 to 12 copper/alloyed copper artefacts per burial with one exception (Burial 22) (Table **6**), 5 to 174 carnelian beads, 1 to 3 coarse stone artefacts, and finally, 2 cases of terracotta figurines.

The SW cluster is made of 7 burials, with 1 to 2 large vessels tomb-markers and 1-3 Pots. 1 to 3 copper/alloyed copper artefacts were recorded from 4 burials, 1 to 58 carnelian beads, 1 glass bead, 2 cases of terracotta figurines, as well as 1 to 3 coarse stone artefacts (Table **6**).

There are six burials in the NW cluster, with single large vessel tomb-marker and 1 pot for feet in 4 occurrences. 1 to 7 copper/alloyed copper artefacts were collected from 4 burials, along with 3 to 42 carnelian beads, 1 terracotta figurine, and 3 coarse stone artefacts (Table **6**)

Finally, the NE cluster, the smallest, consists of 4 burials, each with one large vessel grave-marker and 1 feet-pot. 3 to 7 copper/alloyed copper artefacts as well as 8 to 134

carnelian beads, and 1 to 2 coarse stone artefacts have been recorded in 2 of the burials (Table 6).

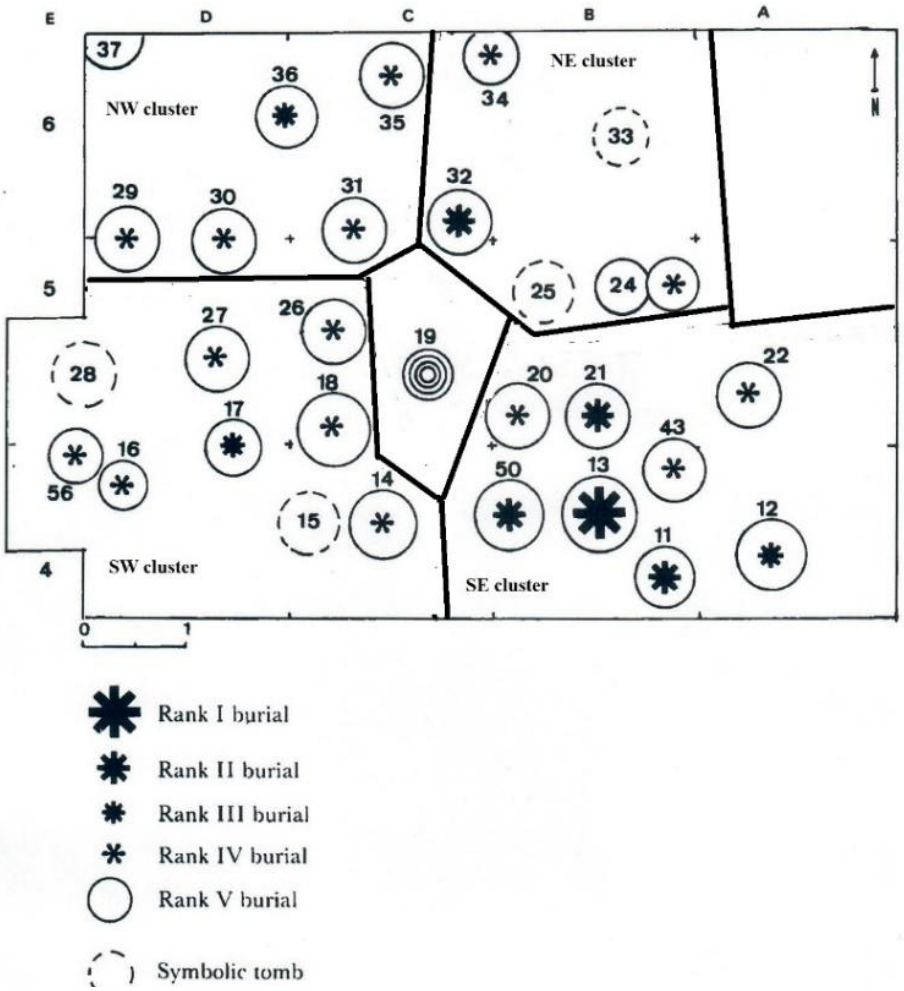

Fig. 20: Organization of the Houlouf phase cemetery with burials ranking.

The differential distribution of grave-goods points to the existence of outstanding individuals cumulating distinct symbols of power and prestige. Beside personal adornment artefacts represented by copper arm-rings and rings, carnelian, glass, and clay beads (Table 6), some peculiar objets such as arm-bands, leg-guards, and spurs point to prestigious warriors and horsemen status. Arm-bands found in Burial 11 and 20 are used to protect the wrist from the return vibration of the bow string. They are accordingly archers' equipment. They are particularly cumbersome, weighing 0.650 and 0.750 kg, made of two bent and

welded copper/alloyed copper sheets. Leg-guards, also made with bent copper/alloyed copper sheets were used to protect horse-ridders legs and ankles from ennemys' sword hits.

Table **6**: Distribution of burial facilities and grave-goods

Feature Number	Tomb marker	Feet pot	Copper artefacts	Carnelian beads	Clay beads	Coarse stone
SE cluster						
Burial 11	3	1	12	115	-	-
Burial 12	3	1	5	42	-	-
Burial 13	2	1	9	174	1	-
Burial 20	1	-	1	11	-	3
Burial 21	1	1	4	136	-	1
Burial 22	1	1	-	7	1	3
Burial 43	2	2	1	5	-	1
Burial 50	1	1	9	126	-	-
Total	14	8	41	616	2	8
SW cluster						
Burial 14	2	-	-	4	-	1
Burial 16	2	3	3	3	-	-
Burial 17	2	1	2	58	1	3
Burial 18	2	1	-	18	-	-
Burial 26	1	1	1	15	1	-
Burial 27	1	1	2	10	-	2
Burial 56	1	1	-	1	-	-
Total	11	8	8	106	2	6
NW cluster						
Burial 29	1	-	-	-	-	1
Burial 30	1	1	7	5	-	1
Burial 31	1	1	1	-	-	-
Burial 35	1	1	-	3	-	1
Burial 36	1	1	4	42	1	-
Burial 37	1	-	-	-	-	-
Total	6	4	12	50	1	3
NE cluster						
Burial 23	1	1	-	-	-	1
Burial 24	1	1	-	-	-	-
Burial 32	1	1	7	134	-	-
Burial 34	1	1	3	8	-	2
Total	4	4	10	142	-	2

They are found in 5 burials (Burial 11, 13, 27, 34, and 50) and weigh 0.640 to 0.310 kg. And finally spurs, designed for horse-ridding, are found in burial 12, 17, and 21.

High-ranking individuals, from Rank I and II, are found in 2 of the 4 identified clusters, with the highest concentration in the SE cluster (**Fig. 8**). The latter includes Burial 13, the top-ranked individual with 174 carnelian beads, 2 leg-guards, and 7 arm-rings; Rank II Burial 11, 21, and 50, with respectively 115 carnelian beads, 4 arm-rings, 2 rings, 2 leg-guards, 1 arm-band, and 2 copper/alloyed copper garment tokens for the first, 136 carnelian beads, 1 arm-ring, 1 ring, and 1 coarse rock for the second; and finally, 126 carnelian beads, 7 arm-rings, and 2 leg-guards for the third.

In contrast to the distribution of carnelian beads, the distribution of copper/alloyed copper artefacts is limited to 16 burials out of 29. They are predominantly made of personal adornment items, 32 arm-rings, 18 rings, and 2 garments tokens found in 14 burials. The Warriors and horse-ridders status symbols are restricted to 9 individuals: Rank I individual 13, Rank II individuals 11, 21, 32, and 50, Rank III individuals 12 and 17, and finally Rank IV individuals 20, 27, and 34. Imported prestige goods were clearly used in strategies of social distinction.

Discussion: Genesis of Houlouf Polity

Changing settlement patterns, craft specialization, and socio-political transformation interacted to produce time-specific world-views, supporting more or less stable social formations. Folk perception and assessment of different kinds of constraints and opportunities are the predominant forces driving social change. Five successive social formations were identified in the Houlouf region 4000-years-long archaeological sequence.

The earliest one is practically unknown. Archaeological evidence from the Deguesse phase is too elusive to allow any convincing characterization. Two settlements, Deguesse I-II and Krenak I with thick dung deposits were situated in a lacustrine environment and inhabited, likely on a seasonal basis, by groups of mobile herders-collectors. These camps located on sand islands may have been visited intermittently by

pastoral nomadic communities during that almost 2000-year-long period. From where, with what frequency, and for how long, remain unknown.

In Krenak phase A (0-250 CE), Deguesse, Krenak, and Houlouf, three almost equidistant small villages or hamlets confined to the northwestern part of the study area were inhabited by sedentary mixed farming communities. They were part of the second social formation, that of autonomous self-sustaining, iron-using peasant communities, loosely connected to long distance trade networks. Actual sociopolitical systems may have comprised equal household heads under the non-constraining leadership of a *primus inter-pares*. Settlement expanded further southeast with the foundation of three new villages at Blé-Mound A, B, and D in Krenak phase B (250-500 CE), this time with the beginning of village-clustering.

The process of site clustering was amplified in Mishiskwa phase A and B (500-1000 CE), leading to the emergence of the third bi-polar social formation. Each pole was comprised of five settlements: Blé-Mound A, B, D, E and Krenak-Sao in the southeast, Deguesse, Houlouf, Krenak, Madaf, and Hamei in the northwest, with Mishiskwa as dis-embedded autonomous village in the south. Settlement sizes are unknown. It can however be hypothesized that the actual settlement hierarchy may have consisted of a relatively large central village, Houlouf in the northwest and Blé-Mound A in the southeast, surrounded by smaller villages and hamlets. The sociopolitical systems consisted of new higher-level decision-making units above the hamlet-village levels to cope with regional and sub-regional issues. The same social formation persisted in the Blé phase in a context of exacerbated rivalry between competing settlement clusters. Stronger sociopolitical pressure toward tighter and more centralized systems as well as fiercer competition for access to long-distance trade networks generated a reorganization of settlements around dominant sites. Krenak and Krenak-Sao were abandoned. A new settlement was founded at Blé-Mound C. Similarities, in pottery shapes and decoration, seem to indicate that Mishiskwa, previously an autonomous village was inserted in the Houlouf sphere of influence. There are signs of the development of warrior identity as well as evidence of warfare. Houlouf was raided during Blé phase B and probably retaliated with the sack of Blé-Mound complex. The amplification and broadening of craft specialization, sustained intensification of production, and increased exchange flows are clearly visible. Houlouf

ruling groups were able to launch massive labor mobilization for the construction of the city defense which included a moat and an earthen rampart as well as the ruler's palace complex. With the demise of Blé-Mound complex, Houlouf rose to regional primacy at the end of Blé phase, around *ca*. 1400 CE.

The fourth social formation, the Houlouf polity, emerged in the Houlouf phase A (1400-1600 CE). The number of settlements dropped first from ten to three, all confined to the northwest of the study area and arranged along a north-south axis of Deguesse-Houlouf-Amachita. The number of settlements then increased from three to seven in Houlouf phase B (1600-1800 CE). Previously abandoned settlements like Madaf, Hamei, and Mishiskwa were inhabited anew. A new fishing site was founded at Sororo. The new settlement system characterized by a three-tiered site-hierarchy was now focused on the *Yaéré*, the hinterland depression. The sociopolitical system comprised a ruler, probably represented by the effigy jar at the center of the Houlouf elite cemetery, guaranteeing the unity of the land. Diversified elite comprising prestigious groups of warrior-horsemen, archers, administrators, and ritual specialists, organized into presumably competing factions/descent groups, jockeying for power and prestige, succeeded in monopolizing access to long-distance traded luxury goods (Holl 1988, 1994, 2002). A sizeable number of craft specialists developed, including masons, carpenters, potters, blacksmiths, weavers, merchants, salt producers, boat builders, etc.. The maintenance of the city gates, earthen rampart, and ruler's palace were probably based on a kind of periodic *corvée* labor prestation.

How was the politico-administrative apparatus financed remains unknown but it can be guessed that different taxation systems may have been developed. Arab pastoralists who entered the Land of Houlouf in the 16th century had to pay an annual tribute. Merchants caravans and dug-out fishing crews and/or patrons, probably had to pay fees for safety and permission to exert their commercial activities. According to ethnohistorical records, city officials, depending on their rank, had shares of grain harvests, honey, any butchered animal, hunted game, and products of fishing parties. They were also granted labor crews to work on their estates. Three important sociopolitical offices, constituting the apex of the local political systems were already in place in the Houlouf phase (Denham *et al.* 1828, Barth 1965, Nachtigal 1980, Lebeuf 1969). This political triad consisted of the ruling chief

(*Mra* or *Miarre* in the Lagwan language, translated as *Sultan* in Arabic). Under him were the equally ranked chief of land (*Galadima* at Houlouf today) and the Chief-Sacrificator. The former was charged with matters of subsistence and land allocation, granting permits for fishing, hunting, honey gathering, and wild plant and mineral resource exploitation. The latter dealt with a broad range of ritual performance including circumcision, rites of passage, and religious celebrations as well as propitiatory rites (at the beginning of the excavation at Houlouf, the person who then filled the office sacrificed a mature white ram and spilled its blood on the spot to be excavated). These offices are hereditary and pass from one generation to next, through primogeniture along the male line. Even though seriously impacted by successive wide-scale political and administrative changes, particularly from the Colonial period to the present-day modern Cameroon, this part of the ancient Houlouf polity organization was still alive in the 1980s. It did however collapsed with the death of the more than 80-year-old Sultan Hassana in 1988.

In Houlouf phase B, at an unknown date between1600 and 1700 CE, the Houlouf polity was conquered by the expanding Lagwan kingdom (A.M.D. Lebeuf 1969), shifting to the 5th social formation. This kingdom belonged to the widespread African tradition of "sacred and secluded kingship". The king is invisible to his subjects, and lives secluded in his palace. In his weekly public audience day, he is hidden behind a reed curtain and addresses his audience through a spokesman. The enthronement ritual required the prince to live in total seclusion for 40 days. During this time, his human body will metamorphose into the incarnation of the eternal unity of the kingdom. He dies as human to be reborn as king.

According to ethnohistorical records confirmed by ethnographic research (Lebeuf 1969, Holl 1988), the sociopolitical organization of the formerly independent Houlouf polity was not altered following its annexation in the Lagwan kingdom. Due to its well acknowledged socio-political precedence, the "Land of Houlouf" was granted a special status based on almost total autonomy. Their rulers only had to visit their paramount for homage once a year, during the "Annual festival day", bringing a lump of local soil to be included in the sediment used to repair Logone-Birni earthen-wall.

Conclusion

The Houlouf regional archaeological project was successful in tracing long term socio-political change along major Late Holocene climate change. The receding Lake Chad opened new opportunities for the expansion of speakers of Central Chadic languages settlements. The reconstructed archaeological landscape features 4000 years of cultural development. The emergence and evolution of the Chadic polity of Houlouf were shaped by the succession of five social formations. The initial one and the longest of the cultural sequence so far was comprised of scattered mobile herders-collectors, or pastoral-nomadic communities, taking advantages of seasonality to camp on sandy island during the low water season. The second starting from the very beginning of the Common Era to the second half of the first millennium CE consisted of equidistant autonomous self-sustaining mixed farming villages with loose connection to long distance trade networks. The third marked by regional rivalry and competing peer-polities from the end of the 1st to the middle of the 2nd Millennium CE features craft specialization, production intensification, and sustained integration in long distance trade networks. And finally, the fourth social formation, that of the centralized chiefdom, the Houlouf polity, emerged around 1400 CE and lasted up to its conquest by Logone-Birni in 1800 CE. Prestige goods obtained from long-distance exchange networks connected to the trans-Saharan trade played an important role in the emergence and consolidation of local elites. The out-going counter-parts to these incoming goods were very likely sundried and smoked fish, salt, clay head-rests, and dyed cloths. The intensification and diversification of local production systems that may have been under the control of the local elite appear to have been directly connected to the accelerated in-flow of long-distance traded items from both the “utilitarian” coarse stone material and “prestige goods” spheres of exchanges.

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