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Considering the Archaeology of Early Northeast Africa: Interpretation & Methodology

Abstract

This paper investigates the problems and priorities in the archaeological research of early Northeast Africa (4,000 – 2,500 BC). The interpretation of the archaeological data is examined, highlighting the problems of the classification of the various cultural units and their interrelation. The use of modern remote sensing and Geographic Information Systems (GIS) in the location of sites is explored, as are advances in new excavation practices. The value of human remains in studying past societies is also considered. The last section of this paper expounds upon how research in the region can progress.

Introduction

This study owes much to the accomplishments of Lech Krzyżaniak, particularly his work relating to the early settlement at Minshat Abu Omar in the East Delta, his research on the prehistory of Egypt, and, most importantly, the proceedings of the Dymaczewo Conferences at Poznań, Poland. These Dymaczewo Conferences have resulted in so many important studies, which are essential for any research pertaining to the archaeology of Northeast Africa.

In honouring Prof. Krzyżaniak, the authors follow in his lead by considering some of the current problems within the archaeology of early Northeast Africa (Krzyżaniak 1980). The focus of this study is on the methodology used and the interpretation applied to archaeological data in Egypt and Nubia, with a geographic viewpoint on the Nile Delta and Valley up to the Fourth Cataract and a temporal viewpoint from 4000 BC to 2500 BC (Fig. 1).

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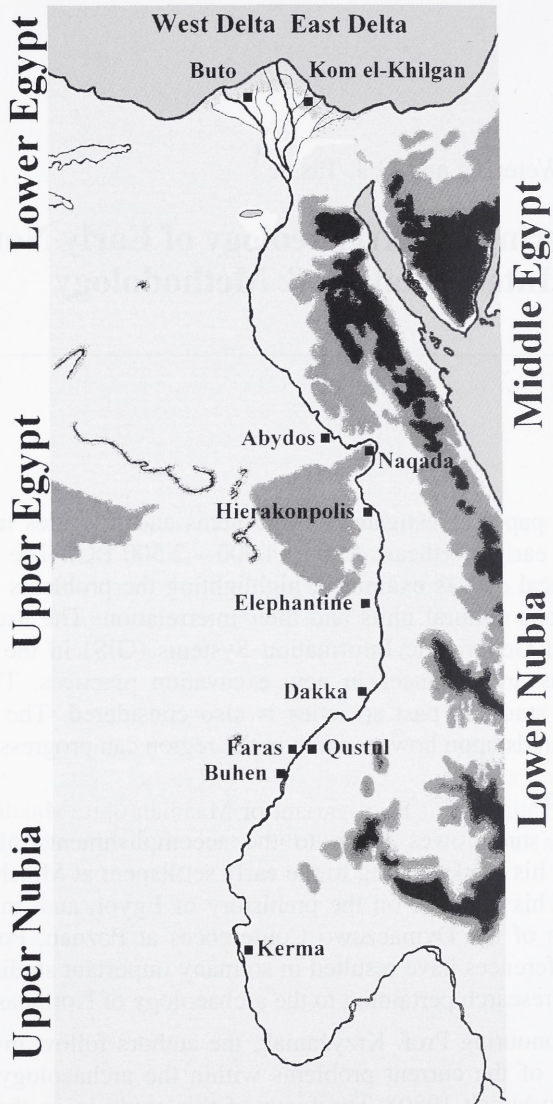


Fig. 1. Northeast Africa with sites mentioned in the text (Map based on Kemp 2006: 9).

Considering Archaeological Interpretation

Our knowledge about development in early Egypt and Nubia is primarily based on mortuary data as the majority of the known sites as well as the most

extensively investigated sites are cemeteries. The gathering and use of the available data, however, is beset with many problems which have significant implications for the way early Egypt and Nubia are interpreted. It would not be feasible to discuss all these problems, as such, here selected ones are discussed from both Egypt and Nubia, so to reflect Krzyżaniak's statement that it is essential for understanding the developments taking place in Egypt that they be compared to the early developments in Nubia (Krzyżaniak 1980: 25).

Cultural Terminology

In Egyptology, the material remains of a social entity like the Naqadian has been variously described using terms such as Naqada culture or Naqada Period or Naqada Phase. Unfortunately most of these terms are not mutual exclusive and sometimes confusing. Here the following terminology is used.

A cultural complex is a group of cultural units emanating from a defined region, such as the Lower Egyptian Cultural Complex, which comprises of the Omarian and the Maadian units and possible, if indeed a cultural unit, the Merimidian unit. Preference is given to synchronised terms Merimidian – Maadian – Naqadian, etc. in favour of generally used terms as Naqada and Maadi-Buto when describing the cultural unit. For Naqada because there is the probability of confusion, not only in relation to the actual site Naqada but also to the specific local site terminology used by the excavations in the Naqada area: late Naqada (Hassan 1999: 555). For Maadi-Buto, because this unit has the potential to be regionally driven and as such to let the name reflect regional type-sites might lead to, for example, Maadi – Buto – Tell el-Farkha unit. Identification of the unit as Maadian leaves open the possibility of adding regional variants: for example Maadian unit: Buto variant or Maadian unit: Maadi variant or Maadian unit: Farkha variant if it turns out that respectively the West Delta, the Memphite region, and the East Delta have regional variants of the same cultural unit.

The Upper Egyptian Cultural Complex includes the Badarian and Naqadian cultural units, whereas the Lower Nubian Cultural Complex includes the Abkan, Nubian A and Nubian C cultural units (see below), and the Upper Nubian Cultural Complex includes the Kerma cultural unit. The grouping of the various cultural units into complexes indicates both regional developments and affinities.

A cultural unit² is a cultural assemblage, primarily defined by ceramic groupings, that recurs consistently over a restricted area and although it can

² The authors prefer cultural unit instead of culture as culture is defined as the set of ideas, beliefs, values, etc. passed from individual to individual (Darvill 2002) and these characteristics are singularly difficult to make visible in the archaeological record. Material Culture has for the same reason been rejected as this will quickly be abbreviated to Culture.

develop over time, is the material trait of a particular group of people. These cultural units include the Naqadian, Maadian and Nubian A units although it must be stressed that most of the cultural units mentioned above are defined almost completely on the typological development of ceramic mortuary data. There is the probability of regional diversity with a cultural unit.

A cultural phase is a distinct time period subdividing a cultural unit, such as early Maadian phase, middle Maadian phase and late Maadi phase for the Maadian unit and the Naqada I, Naqada II and Naqada III phases of the Naqadian unit, which in turn are further subdivided, such as Naqada IIC phase or Naqada IIIA phase.

In Egyptology, there is a tendency to equate a cultural unit or the material culture of people with the actual people which has led one researcher to state that 'the lack of analytical context is the reason why we sometimes find pots wandering through Egypt to "carry", "trade" or "battle" the Naqadian culture into the Delta and even beyond' (Guksch 1992: 9). Past people are indeed the perceived research subject, but actually it is the development of traditions these people had, as represented by residual vestiges or artefacts that are the realistic focus of any archaeological investigation (Shennan 2004: 12). Below, the cultural development is discussed, e.g. the movement or spread of cultural units as well as the merits of having such strictly defined units in both geographical and temporal terms.

This study will focus on the Maadian, Badarian, and Naqadian units in the formative period of Egyptian history and the partially contemporary Nubian A unit in Lower Nubia as well as the period after the perceived end of that unit at around 2900 BC. The material remains as identified at Merimde Beni Salame in the southern West Delta is above mentioned as Merimidian unit (Friedman 1994: 896), this might be seen as presumptive based on the amount of data. To date, two sites are known with this material remains: Merimde Beni Salame (West Delta) and Sodmein Cave (Eastern Desert, near the Wadi Hammamat), although it is only from the first that general information is available, at Sodmein cave pottery resembling that found at Merimde Beni Salame was found (Hendrickx & Vermeersch 2000). A possible third site with Merimidian 'unit' material might be Minshat Abu Omar / MAO where a programme of auguring around the extant tell provide information on early occupation layers with late Predynastic – Early Dynastic settlement layers (contemporary with the cemetery investigated on the extant tell) and a Neolithic settlement layer that seems to date to the same period as the material at Merimde Beni Salame although the non-diagnostic sherds of indefinable form did not provide much comparative information (Krzyżaniak 1992, 1993).

Until more information is available the Merimidian is identified as cultural unit but the possibility that Merimde Beni Salame represents an early peripheral development to events taking place in the (west) Delta proper, maybe even being an early phase of the Maadian unit, is kept open.

The Nubian A unit started its existence as 'A-Group' devised by Reisner in his classification of Nubian material (A-Group - B-Group - C-Group to X-Group), he discovered during the First Archaeological Survey of Nubia / ASN (Reisner 1910a, b). From the beginning, three issues have constrained the analysis of material of the Nubian A unit:

- a. it was very much defined from a northern perspective by Reisner who investigated sites with this material in the area between Aswan and the southern edge of the Dakka plain;
- b. the sites extensively investigated were mostly cemetery sites and these formed the main basis for defining the evolution of the materiality whereas the settlements were only cursorily described. Notwithstanding the enormous contributions Reisner made to Egyptology and archaeology in general, one can not escape the fact that he lived in times when objects were still valued from an art-historical perspective and as such his financial contributors wanted something in return, cemetery sites were more rewarding in this respect;
- c. Reisner viewed Nubia as generally inferior to Egypt in its cultural, social and political development and this is reflected in his interpretations, especially his terminology.

The division of Nubian cultures into "Groups" is an example of the third issue because either consciously or not, the "groups" classification projects an image of small (band-type), less-civilised entities that are not capable of aspirations to high civilisation. More than a 100 years of research into the Nubian A unit has shown that this Nubian society was certainly not inferior to early Egyptian society. As such, following Trigger (1965: 44), the "A-Group" identification will be abandoned in favour of the term Nubian A unit, which is divided into three main phases and these again are subdivided. Smith (1966) has argued convincingly against the B-Group defined by Reisner (1910a), this notwithstanding there are strong indications of continued occupation in Lower Egypt (contrary to O'Connor 1993a: 4-6; Fattovich 1999: 80) between the end of the Nubian A3 phase and the appearance of the Nubian C unit (defined by Reisner as C-Group). The cultural development of that period and the relation of the material remains in relation to the preceding and succeeding cultural units is still undefined and is discussed below.

Chronological Considerations

Since its inception by Petrie (1899; 1901b), the relative chronology for Predynastic and Early Dynastic Egypt has been refined and revised (Needler 1984; Kaiser 1957; Hendrickx 1996; 1999) and the inherent problems have been discussed at length (Hendrickx 1996: 36-43). Two issues relevant to cultural development are highlighted here: regionalism and the predominance of ceramic mortuary data.

The construction of the relative chronology (Petrie framework and Kaiser revision) tends to obscure the regional differences between cemeteries in Upper Egypt, as well as differences between cemeteries in Upper, Middle and Lower Egypt. According to Friedman (1994: 51), the acceptance of one local sequence of burial practises (at el-Zawayda, Naqada region) to be representative for burial practises from Lower Egypt to Lower Nubia without any investigation of other local sequences is a major flaw in the chronology devised by Petrie. Even within Upper Egyptian cemeteries there is to a certain degree regional diversity, for instance the White-cross-lined ware of the Naqada I phase (Friedman 1994: 12, 54). The ceramic mortuary material is in general very homogeneous with only vague hints pointing at regionalism in ceramic traditions, whereas the ceramic settlement material has much clearer indications of such traditions up until the late Predynastic Period: Naqada IIB-C phase (Friedman 1994: 9-10). The lack, however, of a chronological framework to identify and date settlement context seriously limits the integration and interpretation of settlement information, and has led to a one-sided perspective on social, political, and economic developments from cemetery information instead of a balanced perspective from both settlement and cemetery data (Friedman 1994: 3, 6).

Here the most recent revision, the so-called Hendrickx revision (1989; 1996; 1999), which is based on the local sequences of several Upper Egyptian cemeteries, is used as it rectifies problems apparent in the Kaiser revision. However, it is still a chronological scheme designed to date mortuary contexts, not settlement contexts. To accurately date ceramics and lithics within a settlement context, the current chronological scheme (also see Hassan et al., this volume) has to be augmented:

- a. with detailed lithic chronological data (Holmes 1989; Schmidt 1992; 1996; in prep.) as it is methodologically unsound to date lithic development based on ceramic data (Friedman 1994: 13) and,
- b. to complement mortuary data, with detailed ceramic data with chronological markers from settlement contexts (Friedman 1994).

The chronology of (lower) Nubia is based on comparative dating of Egyptian material in Nubian contexts and, by extension, suffers the same problems. Here too, the focus is on mortuary data.

Badarian Material in Upper Egyptian Settlements

The most enigmatic issue relating to Upper Egypt is the appearance in large amounts of pottery that is classified as Badarian in near-contemporary settlement contexts. As indicated by Friedman (1994: 48) hardly any settlement that contains Naqada IA phase pottery does not also include a Badarian component, either rippled pottery or Brunton's Smooth Brown ware. By examining the area between modern el-Ballas and Armant, which is relatively well-known through many limited excavations and two extensive surveys that have covered the majority of the region, this issue can be addressed. Here as elsewhere, the time-honoured practice of naming sites to the nearest modern village/town has been applied and this, as elsewhere, has resulted in a confusing situation.

The sites located on the east bank of the Badari region were randomly grouped according to nearest modern town by Brunton (1927; 1937; 1948; Brunton & Caton-Thompson 1928) to facilitate publication. These groupings are still in use (Hendrickx & van den Brink 2002: 353-357, 374-376, figs 23.3, 23.9) and this has led to statements, like *at Armant and Matmar (in the latter site ...* by Castillos (2005: 24) implying that Matmar is an actual site with a specific function (either settlement or cemetery) where a development can be analysed. Nothing has ever been found at Matmar which is located in the floodplain and the sites which are grouped under Matmar are located on the edge of the low desert and consist of 5 settlements and 11 cemeteries. These sites should be grouped as communities consisting of settlement and cemetery (or several if it can be attested that a community abandoned a certain site, settlement or cemetery, and continued occupation nearby at another site) and the development of these communities should be analysed not a random grouping of sites that have no link between them.

All sites of the Naqada area are usually grouped under Naqada and Ballas (Hendrickx & van den Brink 2002: 360, 377-378, fig. 23.4, 23.10), whereas few of these sites are actually located near to either of these modern towns. The same holds true for the Armant area, where several sites are grouped under Armant (Hendrickx & van den Brink 2002), whereas Armant is about 6 km from the low desert strip where most sites are situated (it is even possible that in early times the River Nile flowed between Armant and the low desert). This has led to confusing statements by researchers (e.g. Wilkinson 1999: 352) and a misrepresentation of the settlement / cemetery patterns in the Naqada and Tarif regions of Upper Egypt. Fig. 2 shows the settlement and cemetery sites of these regions, some being re-named so as to avoid grouping sites under a single name that is not associated with that site. At several sites in the Naqada and Tarif regions Badarian material has been found:

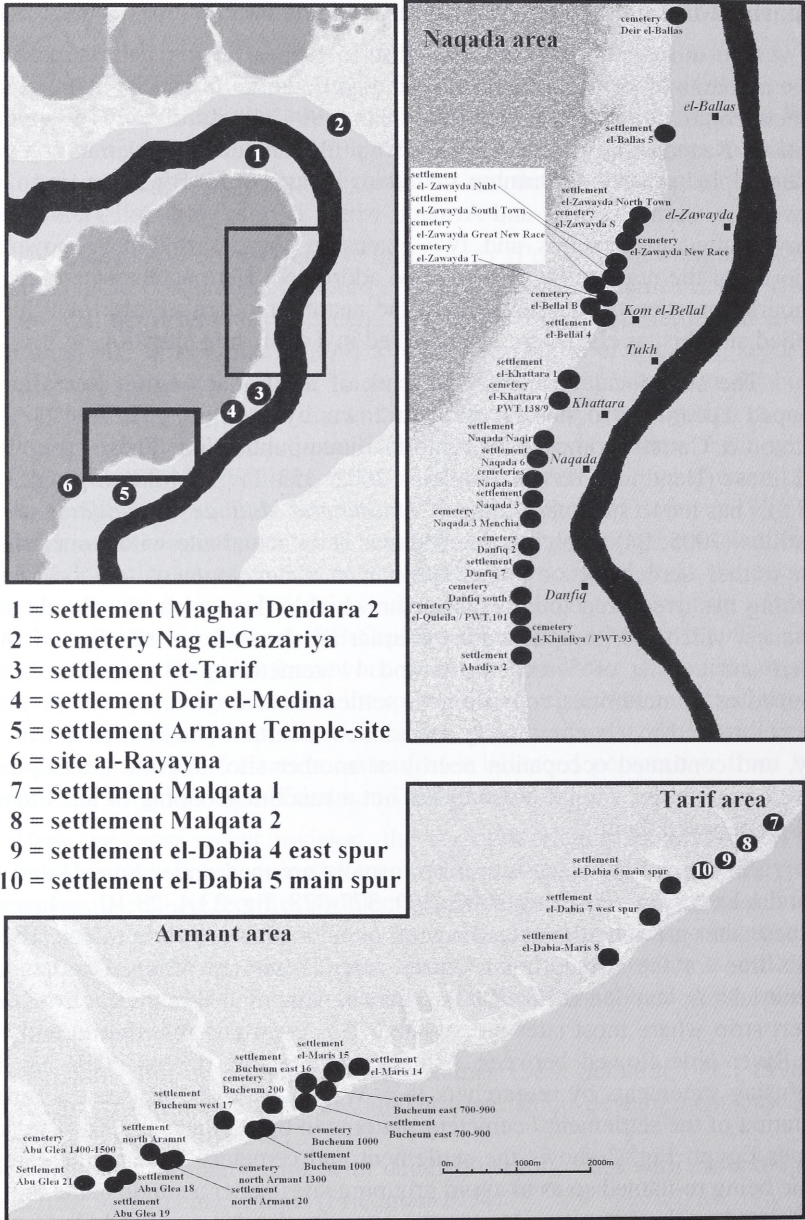


Fig. 2. Sites of the Naqada – Tarif regions in Upper Egypt (Map based on Kemp 2006: 9).

- Sites with only Badarian material: Maghar Dendera 2 and possible Armant Bucheum East 700-900 although the paucity of information on these sites prevents explicit definition.
- Sites with large amounts of Naqadian material and some Badarian material: Nag el-Gaziriya; Ballas 5; Kom Bellal 4; Khattara 1; Naqada 6; Naqada 3; Danfiq 7; et-Tarif; Armant Bucheum 1000; and Abu Glea 21.
- Undefined site with Badarian material: Wadi al-Rayana.

If it is assumed that the Badarian unit preceded the Naqadian unit in Upper Egypt (Ginter & Kozlowski 1996: 134), an explanation is needed for the situation where the Badarian unit is dominant in Upper Egypt but almost no sites, especially cemetery sites, of that period have been found. If this was the case, an occupation pattern of different sized settlements and cemeteries can be expected. Settlements can be obscured by modern buildings or buried in the floodplain but the state of research in Upper Egypt would mean that if Badarian cemeteries existed in this area, some would have been found. To date, no cemetery site can be definitively identified as belonging to the Badarian unit.

The information from the cemetery at Nag el-Gaziriya is somewhat sketchy as it was excavated by the Egyptian Antiquities Service but remained unpublished except for a short description by Kaiser (1961: 20). The cemetery had both Badarian and Naqada IA phase ceramic material (Kaiser 1961: 20-21; Friedman 1994: 357; Hendricks & van den Brink 2002: 360); however, the relation between both ceramic assemblages is unclear. Either the cemetery belongs to the Naqadian unit and the Badarian material was placed in certain graves as non-local fancy objects imported from Middle Egypt or the cemetery is unique as the only known Badarian one in Upper Egypt. Based on the available information no conclusive statement can be made but possibly the publication of the nearby cemetery of Nag el-Hai might provide some insight into the frequency, if any, of Badarian objects in a Naqadian cemetery in the (northern) Naqada region. At present the unpublished field documentation of the Nag el-Hai excavations is being studied by F.A. Hassan, G. Tassie & J. van Wetering, in preparation for publication.

Therefore, despite the presence of settlements belonging to the Badarian unit (Maghar Dendera 2, and possible Armant Bucheum East Settlement 700-900/1800) these facts seem to argue against assuming that the cultural units succeeded each other, whereby the Badarian unit is earlier in both Middle and Upper Egypt and it is replaced by the Naqadian unit (see also Holmes 1989: 176-188; *inter alia* Friedman 1994).

If it is assumed that the Badarian unit in Middle Egypt was regionally distinct and partially contemporary with the regionally distinct Naqadian unit in

Upper Egypt, which by the end of the Naqada I phase replaced the Badarian unit in Middle Egypt (inter alia Holmes 1989; Friedman 1994), an explanation has to be sought for the amount of Badarian material in Upper Egypt (seemingly as import goods). If the settlement at north Hammamiya is indeed typical, the change-over from the Badarian to Naqadian unit in the Badari region took place during the Naqada IC-IIA phase (Friedman 1994: 353-354). Large amounts of Badarian material have been recovered from Naqadian settlements: at Armant Bucheum Settlement 1000 the lowest level seems to have ca. 30% Badarian material (Mond & Myers 1937: 169-171; Friedman 1994: 358). To identify this material as belonging to a non-local cultural unit and thus in some way transported to the settlement from elsewhere is problematic. Unfortunately the state of publication prevents detailed description, but it seems Badarian material was found in contexts that seem to post-date the Naqada I phase in the Naqada region.

The Polish mission working between Luxor and Armant encountered the problem of dating settlements with a chronology based on mortuary data, and as a result the statements about Abu Glea settlement 21 and other settlement sites investigated (Fig. 2) are somewhat non-specific. Settlement sites 17/83 (Armant Bucheum west), 18/83 and 19/83 (Abu Glea east), 20/83 (north Armant), and 21/83 (Abu Glea) are contemporary to each other and 5140-5030 years BP or end of the Fourth millennium BCE (Ginter et al. 1985: 31, 41). This seems to imply late pre-Dynastic Period with a time range of 3500 to 3300 BC. This is confirmed by Ginter et al. (1996: 171) who state that the early phase of the Naqadian unit, thus Naqada I phase, is represented at cemetery 1400-1500 (at north Armant) but not represented at the settlements dated to the Naqadian unit, seemingly implying that those settlements are dated to the Naqada II phase. However, this again is contradicted by the excavators (Ginter et al 1985: 40; Ginter & Kozłowski 1996: 98), and by Hendrickx & van den Brink (2002: 379) who all point at Naqada I phase occupation at settlement 21/83 (at Abu Glea) and settlement 1000 (at Armant Bucheum)³. If this is confirmed it argues against assuming that the Badarian unit did not exist in Upper Egypt as a distinct unit.

If the current cultural classification into distinct units cannot explain the presence of Badarian material at Upper Egyptian sites; one has to allow for the possibility that the classification is wrong. With the information currently available, definitive statements cannot be made but maybe the material identified as Badarian is not at all Badarian but local material which is not included in the typologies that define the cultural units. Another possibility might be connected with the different functionality of sites in the Nile Valley. If it is correct to

³ As noted by R. Friedman (1994: 58 - note 8), it is unfortunate that the exact point of their excavated material within the "Naqadian" is left vague by the excavators.

assume that socio-politically important settlements were located on the narrow west bank and the hinterland of these settlements was located on the wider east bank (Fig. 3), it could be argued that the material remains of these functionally different settlements also show differences. The east bank hinterland would have had small agricultural villages / hamlets as well as larger villages / towns that functioned as market places, river-side villages would have provided transport for goods to the west bank where besides the large political centre / large town, several smaller agricultural villages / hamlets were situated along the edge of the low desert. If this assumption is correct, it might be that the material remains now identified as distinct regional units, Badarian and Naqadian, are instead part of the same materiality with differential cultural *fehlt*??? displayed in certain settlement and cemetery contexts. It should be noted that all the Badarian unit sites in the Badari region are located on the east bank, to date no exclusively Badarian site has been found on the west bank in this region and that most of the Naqadian unit: Naqada I phase sites were investigated prior to the discovery and definition of the Badarian unit by Brunton in the 1920s (Fig. 3).

Any explanation of the issue, however, should take the situation between the Badari region and the Naqada region into account as, significantly, based on the information currently available no Badarian material has been found in this area of Upper Egypt and this contrasts greatly with the amount of Badarian material found in the area south of Dendera.

Whatever is inferred, to present a solution to this issue is presently beyond our capability. The lack of solid information concerning the excavations conducted in the Naqada and Tarif regions hampers any such solution; especially the west bank sites in the Naqada region seem singularly struck by this. The excavations of Petrie and Quibell are published to the standards of their time and the excavations carried out by Hays, Hassan and Barocas are only published in preliminary reports or reports not widely accessible (Petrie & Quibell 1896; Hays 1976; 1978; 1984; Hays & Hassan n.d.; Hassan 1981; 1984; 1988; 1999; 2001, n.d.; Hassan et al. 1980; Hassan & Matson 1989; Hassan, Hays & Gallagher n.d.; Banks & Hassan n.d.; Barocas 1989; Barocas et al. 1982, 1989; Fattovich n.d.; Di Maria 2001). The excavations in the Armant region are relatively well published, although it is unfortunate that Mond & Myers n.d. is not easily available as it might clear up some of the ambiguity surrounding the settlements, especially Armant Bucheum East Settlement 700-900 / 1800, in the Armant area with Badarian material (Friedman 1994: 365, note 22), as well as possibly shed some light on the Badarian presence within Armant Bucheum Settlement 1000 and the Badarian ceramic material found at al-Rayayna. Wadi al-Rayayna, located east of modern Ezbet al-Rayayna (in the same wadi as tombs 1213 and 1214), consists of an unspecified number of sherds of the Badarian unit, discovered in

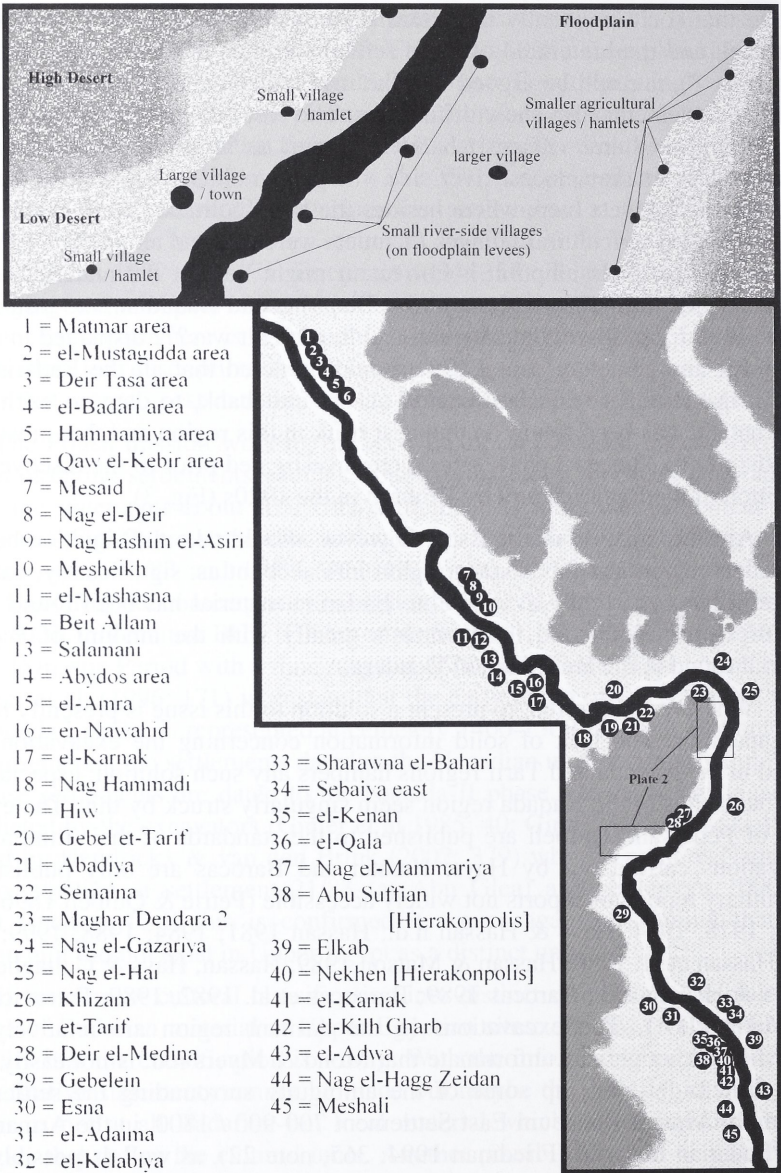


Fig. 3. Hypothetical reconstruction of Nile Valley floodplain with map of Upper Egypt showing sites dated to the Badarian unit and the Naqadian unit: Naqada I phase (Map based on Kemp 2006: 9).

an *ex situ* context in a wadi-bed (Mond & Myers 1937: 8, pl. II; Friedman 1994: 365 - note 22).

As it seems highly unlikely that any of these sites can be re-excavated or in any way re-investigated in the field, the only way open for a better understanding of the Badarian presence in the Armant area is to research the unpublished documentation (including Mond & Myers n.d.) and ceramic material that seems to be kept at Manchester Museum and other places (Mond & Myers 1937: 188-189).

Settlement Analysis in Egyptian and Nubian Archaeology

Many publications on the subject of early Egyptian state formation begin with a statement along the lines that many settlements have been excavated in Lower Egypt whereas mainly cemeteries were investigated in Upper Egypt, then the study usually focuses on mortuary analysis. The statement seems to presuppose that in Upper Egypt hardly any settlements have been excavated while settlements in Lower Egypt are well-known, as well as implying that settlement analysis within Egyptian archaeology is not yet feasible.

The first part of this implication is misleading as only a few settlement sites in Lower Egypt have been extensively investigated. Settlement information from Tell Ibrahim Awad and el-Tell el-Iswid South is derived from small-scale excavations within the settled area, which although providing interesting stratigraphical information, do not provide an insight into the horizontal development of the settlement. At Tell Ibrahim Awad, the temple area of the settlement has been extensively investigated, and although this has provided valuable diachronic information on temple structures and development, it has not provided synchronic information on how the temple related to the settlement. The early archaeological methods used to excavate settlements, as well as the way they have been published has made analysis of settlements, like Maadi very difficult. The recent excavations at Buto and Tell el-Farkha are now providing necessary insights into the diachronic and synchronic developments of settlements as well as detailed stratigraphic information and settlement assemblages.

At several settlement sites in Upper Egypt, excavations are on-going and are providing detailed information, such as Hierakonpolis (Nekhen), Adaïma and Elephantine Island. At a number of these settlement sites, large areas are being exposed and studied. There are many older excavations, which provide a measure of information, re-evaluation of those sites (based on published and if available unpublished documentation) is rewarding and essential. Surveys in both Upper and Lower Egypt have provided information on settlement patterns in particular regions; although the surveys in Lower Egypt have mainly been concentrated in the northern East Delta (see also below).

While the second part of the aforementioned statement is partially true, advances in excavation methodology (Tassie in press b, Tassie in press c, Tassie & Owens in press) make the controlled excavation of early settlements, not only feasible, but essential. Exemplary settlement excavations are currently being conducted at Buto (Hartung et al. 2003), Hierakonpolis (Friedman et al. 1999; 2002), and Tell el-Farkha (Chlodnicki 2004), to name a few. For, any solid socio-political analysis of early Egyptian society needs to incorporate both settlement and cemetery data to reflect all facets of that society.

Most of the current settlement information comes from sites located on the edge of the floodplain or low desert, hardly any settlement information is available for the floodplain itself. The majority of the known settlement sites are quite small and do not display much complexity, only a few large settlement sites with distinct complexity are known to be located at the edge of the low desert. At Hierakonpolis, it can be assumed that the large wadi fan of the Wadi Abu Suffian, jutting out into the floodplain, provided an ideal location for large-scale settlement. At el-Zawayda South Town, the settlement is located on a spur, but it cannot be excluded that part of the settlement was indeed in front of the spur in the floodplain. Both the temple sites at Koptos (Petrie 1896) and Armant (Mond & Myers 1940: 29-30, pls. I, III, XLVI) point at possible large settlement sites in the floodplain. As such, it has to be recognised that there is a strong possibility that most of the known settlement sites are peripheral, either small-scale permanent settlements or seasonal encampments, whereas, the large and more complex settlement sites were situated within the floodplain, either on old levees or other elevated locations (Friedman 1994: 21, 33). It is impossible to investigate the whole floodplain, although drill-coring projects, maybe with limited excavations, should be attempted in Upper Egypt to provide comparative information of floodplain settlement patterning (see below).

The lack of detailed settlement data concerning; diachronic and synchronic development, stratigraphic sequences, and settlement assemblages, especially ceramic, are restricting our ability to assess settlement data. The available information needs to be integrated and a framework defined to not only add new detailed data, which is now coming from both Upper and Lower Egypt, but this new information to function as comparative material to better assess older settlement excavations and their published record (Friedman 1994: 6).

As is the case in Egypt, settlement analysis in Nubia is problematic because compared to the many known cemeteries between the First Cataract area and the Second Cataract area, only 64 settlements have been found (Rampersad 2000: 89). A look at the map with settlements (Rampersad 2000: fig. 1) clearly shows that many settlement sites are missing, despite the extensive surveys carried out within the area now flooded. Many early settlement sites have not

been located or were missed and as such settlement sites are severely underrepresented within the archaeological landscape (Trigger 1965: 54). According to Nordström (1996: 17), the situation in Lower Nubia before the Nubian Rescue Campaign of the 1960s was that 'only a small fraction of the finds originated from settlements, i.e. house structures or camp-sites.' He states that 'thorough attempts were made during the campaign of the 1960s to search for coexisting habitation remains in order to rectify this bias' and that the campaign resulted in a 'considerable increase in A-Group cemeteries'. However, this bias still exists as there were few missions that purposely searched for Nubian A settlements and indeed when found, extensively excavated that settlement. Despite the known paucity of settlement information, few of the settlement sites found within the Joint Scandinavian Expedition concession (Nordström 1972) were completely excavated (area ranges from 10 m² to 12,000 m²), most were partially excavated (area between 5% and 15%, more rarely 20% to 40%) although surface collection of artefacts always took place. The fact that no settlement site of each type (large open space – small camp-site – rock shelter – hill habitation, e.g. between boulders) was completely excavated, makes analysing the sampled habitation sites very difficult. To compound the difficulty of analysing Nubian A settlements, almost all the settlement sites, with few exceptions, are only published in preliminary reports (Rampersad 2000; Gatto 2003).

Sites in the Northern East Delta

In the last thirty years an enormous amount of new information concerning settlement and cemetery sites has become available from the Nile Delta (Fig. 4) as well as, on a general level, regional settlement patterns concerning the Predynastic and Early Dynastic Periods (e.g. van den Brink 1993). Most of these new sites were located during several surveys conducted in the Northeastern Delta region (see below). This is also the region where most of the current evaluation and excavation work is concentrated in response to the Supreme Council of Antiquities (SCA) appeal and mandate. With the exceptions of Buto, Sais, and Kom el-Hisn almost all known sites outside of the Northeastern Delta were discovered and investigated many years ago. As such, there is a disparity in the information from the Delta, with the majority of data coming from the Northeast Delta. In this region projects have recently commenced at Kom Khilgan (Midant-Reynes et al. 2004), Tell el-Ma'sala (Rampersad 2003), and Tell el-Ginn (Watrin 2003). These projects will certainly add valuable information concerning the region however, the problems of focussing on one particular area of the Delta should not be overlooked. Most importantly the current focus on the Northeastern Delta should not lead to a situation where the regional situation of this part of the Delta is transposed on to the entire Delta due to lack of information regarding other regions. Although attention is at present

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|------------------------------|------------------------|---------------------------------|---------------------|
| 1 = Tell el-Dab'a / el-Qanan | 15 = Tell Gandiya | 18 = Titul Moh. Abu Hassan | 21 = Tell el-Khasna |
| 2 = Mendes / Tell el-Rub'a | 16 = Tell Gherier | 19 = Tell Abu Dawud | 22 = Tell Fag'ī |
| 3 = Tell el-Zragy | 17 = Gezira es-Sangaha | 20 = Ezbet el-Tell / Kufur Nigm | |
| 4 = Gezira el-Faras | | | |
| 5 = Tell es-Samara | | | |
| 6 = Minshat Ezzat | | | |
| 7 = Tell Gezira el-Faras | | | |
| 8 = Tell el-Ain | | | |
| 9 = Tell Abu Shi'eisa | | | |
| 10 = Kom el-Khilgan | | | |
| 11 = Tell el-Farkha | | | |
| 12 = Kom Om Sir | | | |
| 13 = Umm el-Zaiyat | | | |
| 14 = Tell el-Diba | | | |

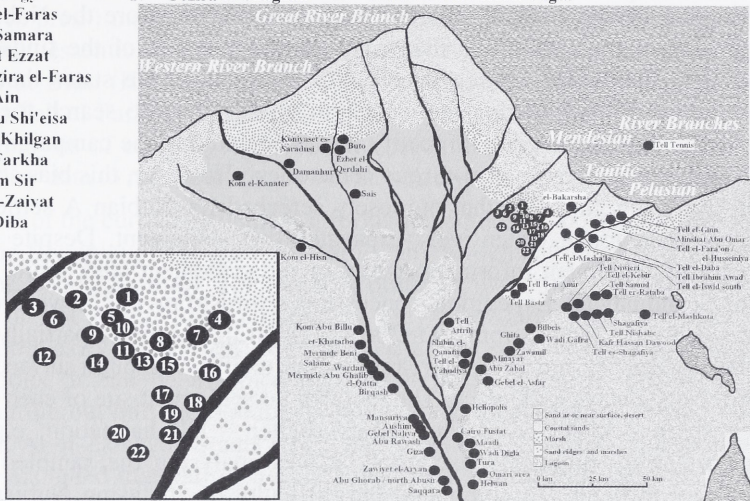


Fig. 4. Sites of Lower Egypt (see www.e-c-h-o.org/khd for detailed description) showing the clustering of investigated sites in the northern East Delta (Map based on Kemp 2006: 9; Butzer 2002: 88).

focused on the Delta it needs to be stressed that the problems of the Delta, where many sites are in danger of destruction, particularly from urban and agricultural expansion, are also present in the Valley where modern development is quickly encroaching into the low desert. As such, by definition, almost all archaeological fieldwork in the Nile Delta and Valley is rescue archaeology. Although a number of regional surveys are on-going, hardly any new ones are specifically aimed at investigating early supra-regional settlement patterns in any part of the Nile Delta. This is especially disheartening as compared to the 1980s when the extensive surveys in the northern East Delta took place (see below) and several tell sites were visible and accessible, today few actual tells are still visible in the modern landscape, many having been levelled for use as agricultural land or covered by modern occupation.

In the late 1990's the site of Minshat Ezzat was 'discovered' because part of the gezira was removed by a local farmer and the site of Kafr Hassan Dawood was identified in the 1980s due to a planned land reclamation project. In 2005, a survey took place in the Minufiyeh province, south of Tanta which showed that hardly any large tells were still extant in the areas investigated (in order to select

a survey area, survey director Dr. Joanne Rowland and both authors drove around the area south of Mansoura in 2004).

Middle Egypt, Buffer Zone or Not!

From an archaeological point of view the early development of Middle Egypt is Terra Incognita, as only a few sites are known in the area south of the Faiyum region and north of the Badari region (Fig. 5). This has led to confusing statements about this area; according to Brewer (2005: 106) Middle Egypt was a buffer zone between the Maadian unit in Lower Egypt and the Naqadian unit in Upper Egypt. Several sites have indeed been found in this area (Hendrickx & van den Brink 2002: 352-353, 373) but hardly anything is known about these sites as most have only been surveyed (de Morgan 1897: 29; Kaiser 1961: 26-40). Also, the lack of any kind of investigation in the last 30 years must be taken into account (the recent discovery of an Early Dynastic cemetery at Deir el-Bersheh, Hendrickx pers. comm, is an exception to that.). All known sites (including those in the Badari region) are located on the east bank, as such the lack of west bank sites severely hampers full analysis of the regional settlement pattern. As the political landscape of Upper Egypt clearly shows, the early political centres were situated on the west bank (van Wetering in prep. a) and it is likely that the same holds true for Middle Egypt. According to Hassan (pers. comm. 2005) the narrowness of the west bank in Middle Egypt makes it very susceptible to sand dune movements from the Western Desert, a phenomena also noted by Embadi (2004: 114), therefore it is likely that early sites are buried beneath a thick layer of sand showing few, if any, surface traces. This implies that the available information relating to Middle Egypt is in no way representative and as with other parts of the Nile Valley, the modern population pressures are making archaeological research more difficult and threatening to destroy many sites. The statements, like the one by Brewer, relating the paucity of sites in Middle Egypt to an ancient situation are therefore problematic as many indications point at early occupation of this region.

Lower Nubia: 3000-2500 BC

When the Nubian A unit was defined (from a perspective of northern Lower Nubia) all indications pointed at an end of the Nubian A3 phase (around 2900 BC) due to the military campaign(s) directed by Egypt against the Nubians. With more and more information becoming available, from the Nubian Rescue Project and recent excavations in the surrounding deserts and Upper Nubia, it is time to re-examine the end of the Nubian A unit and define what happened during the Egyptian incursions, how this affected northern Lower Nubia and southern Lower Nubia differently, and what took place in Lower Nubia after 2900 BC. Here, a socio-political development model is suggested for Nubia from around 3000 BC to 2500 BC.

- 1 = es-Saff
- 2 = Qasr Sagha area
- 3 = Kom Aushim area
- 4 = Kom el-Asl area
- 5 = Ezbet George
- 6 = Kafr Tarkhan
- 7 = Gerza / Gerzeh
- 8 = Meidum
- 9 = Seila / Gebel er Rus
- 10 = Gisrel Hadid (J, FS3-5)
- 11 = Abusir el-Meleq
- 12 = Gadallah
- 13 = el-Lahun
- 14 = el-Harageh
- 15 = Kiman Faris
- 16 = Medinet Madi
- 17 = Ghurob
- 18 = Sedment
- 19 = Nazlet Awlad
es-Sheikh
- 20 = Qarara
- 21 = Sawada
- 22 = Zawiyet
el-Maiyutin
- 23 = Awlad Nuweir
- 24 = Sheikh Timai
- 25 = es-Sheikh Ibada
- 26 = Deir el-Gabrawi
- 27 = Arab Miteir
- 28 = Deir Bisra
- 29 = Matmar area
- 30 = el-Mustagidda
area
- 31 = Deir Tasa area
- 32 = el-Badari area
- 33 = Hammamiya area
- 34 = Qaw el-Kebir area
- 35 = Akhmin
- 36 = es-Salamuni

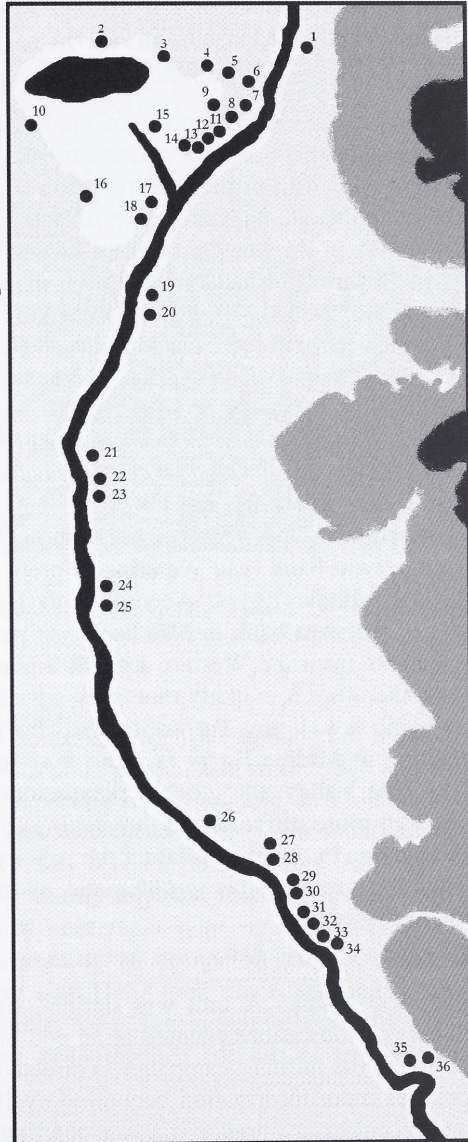


Fig. 5. Sites of Middle Egypt, those located along the palaeobeaches to the north and southwest of the lake are too numerous to individually label and so have been grouped in regions (Map based on Kemp 2006: 9).

The focus is here on the social developments. The political developments will be discussed in more detail by Joris van Wetering (in prep. b) but as political actions have social ramifications, here the political developments are discussed as a background to the cultural developments.

During the Nubian A2 phase a political landscape with several emerging polities can be argued, albeit on the basis of inconclusive information, which changed during the Nubian A3 phase into a political landscape dominated by the polity centred on Faras and Qustul (van Wetering in prep. b) contrary to the assumptions by Nordström (1998) and Jimenez-Serrano (2003: 262-263, fig. 5) that during this phase, control of this territory was divided between the rulers buried at Cemetery 142 in the Sayala area and those buried at Qustul. During the Protodynastic Period (3200-3000 BC), 3 large-scale polities existed in Upper Egypt and Lower Nubia these polities are identified as proto-Kingdoms: the proto-Kingdom of This-Abydos in Northern Upper Egypt, the proto-Kingdom of Nekhen [Hierakonpolis] in southern Upper Egypt, and the proto-Kingdom of Faras-Qustul in Lower Nubia (van Wetering in prep. a-b).

It can be assumed that the relations between Upper Egypt and Lower Nubia were both hostile and peaceful, with the proto-Kingdom of Nekhen viewing the proto-Kingdom of Faras-Qustul as both a necessary economic partner and as a military opponent. Prior to the Unification of the Two Lands, the three proto-Kingdoms most likely kept each other in check (with This-Abydos focusing on Middle-Lower Egypt to secure the northern trade route to the southern Levant). After this political event, the political landscape changed drastically with the powers of This-Abydos fusing with those of Nekhen, thus creating a united kingdom of the Two Lands (van Wetering in prep. a). During the reign of King Narmer internal dynamics and consolidation of the territory took precedence but certainly from the reign of King Aha, Egypt took steps to remove a political rival and economic opponent as indicated by a label from this reign that depicts campaigning in (Lower) Nubia (Wilkinson 1999: 71). It is not clear if Egypt carried out one massive campaign or several campaigns, each penetrating further south but the political centre at Faras-Qustul was almost certainly the primary target. The indications of destruction there, dated to Dynasty I (Williams 1986: 183), seem to be evidence that the Egyptians indeed reached Faras-Qustul. These military incursions led to a disruption of political development in Lower Nubia (Edwards 2004: 74), although not the complete eradication of Nubian society in (northern) Lower Nubia, as is sometimes assumed (O'Connor 1993a: 6; Fattovich 1999: 80). It appears that there were groups of people, be they the populace who stayed or refugees from the elite that survived to continue the cultural traditions, at least for a certain time. Rather the Egyptian campaigns led to the removal of the ruling elite of Nubian society that formed the backbone of

political life as these were most likely specifically targeted by the Egyptians. Also, these events would probably have led to mass movement of Nubian people, fleeing their homes and homeland as northern Lower Nubian, at least up to Faras-Qustul, would have been severely affected. The refugees would have made their way upstream (into southern Lower Nubia) and into the deserts (Bonnet 1997: 38). Sites with material resembling that of the Nubian A unit has been found in the Western Desert: Laqiya region - Wadi Shaw (Lange 1998; 2003) and Eastern Desert: Wadis Allaqi and Gabgaba. Some of these groups that fled upstream, to southern Lower Nubia, even went past the Third Cataract, into the fertile Kerma basin (Bonnet 1997: 38; Fattovich 1999: 79).

The slim evidence of a population in northern Lower Nubia points to a less complex society, which was less stratified and hierarchical than the preceding Nubian A society (Smith 1991: 101). Its existence is attested by the occupation at sites that used to be main centres: Faras-Qustul (Williams 1989: 121-133; Honegger 2004: 45), Aniba (Gratien 1995: 54) and Kubban near Dakka as well as other sites: Shellal, Meris, Qurta (Rampersad 2000: 90) and Toshka (Williams 1989: 121-133). That certain, albeit very few burials can now be identified as belonging to this period (Williams 1989: 126) attest to such a less complex society although their visibility is due to the relatively richness of these burials in relation to the majority of poorer burials which cannot be differentiated within the archaeological record. The presence of Egyptian imports (post-dating early Dynasty I) are the main indicators of the date of these burials, which might have belonged to local (community) chiefs. The few indications of this period are, therefore, as much the result of the way this area has been excavated and published as it is a representation of what actually happened there. In southern Lower Nubia, the situation is different with settlements showing continuous occupation from the Nubian A to Nubian C unit: Maghendohli Settlement 11-M-7; Maghendohli Cemetery 11-H-15; Saras West Settlement 11-L-14 / S.5; and possible Saras West 11-Q-72 (Gratien 1995: 54). Despite the problems inherent in interpreting the sites in southern Lower Nubia, it seems that the Nubian A unit sites continued in this region (Gratien 1995: 55), probably because this area was beyond the range of the Egyptian incursions.

The dispersal of Nubian people resulted in a cultural landscape where the resettled population in the Western Desert, southern Lower Nubia / Batn el-Haggat, Eastern Desert continued to display the cultural traits of the Nubian A3 phase (possibly with a certain degree of regional diversity), the same is true of the remaining population of/in southern Lower Nubia (Fig. 6).

From about 2950 BC to 2700 BC, the Egyptian Dynasty I and II state most likely tried to prevent any redevelopment of local polities or any strong social entity in both northern and southern Lower Nubia. This was probably pursued

- | | | |
|------------------|-----------------------|-----------------------|
| 1 = Elefantine | 11 = Aniba | 21 = Saras west area |
| 2 = Shellal | 12 = Toshka | 22 = Saras plain area |
| 3 = Meris | 13 = Abu Simbel | 23 = Sai Island |
| 4 = Gerf Hussein | 14 = Faras | 24 = Arduan Island |
| 5 = Dakka area | 15 = Qustul | 25 = Tumbus |
| 6 = Qurta | 16 = Buhen | 26 = Kerma area |
| 7 = Sayala area | 17 = Halfa Degheim | 27 = Gism el-Arba |
| 8 = Mediq | 18 = Gemai | 28 = Kawa area |
| 9 = Afiya | 19 = Maghendohli area | |
| 10 = Tomas | 20 = Murshid area | |

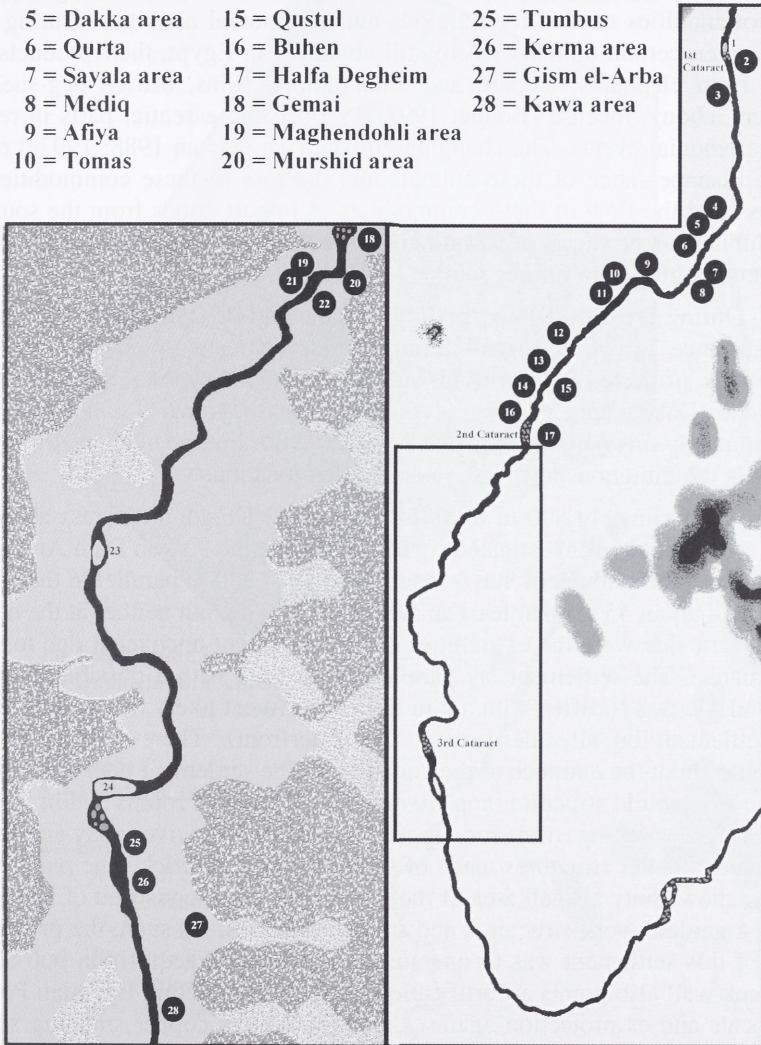


Fig. 6. Nubia with selected sites of the Nubian A unit and sites with material dated to the period 3000/2900 to 2400 BC (Map based on map inside front cover of: Sudan & Nubia. The Sudan Archaeological Research Society Bulletin 1, 1997).

through regular military raids in northern Lower Nubia and posturing, threatening towards southern Lower Nubia if not actual raiding. Beside the political aim, these raids would have benefited the economic aspirations of the Egyptian state, extracting tribute and booty like cattle, prisoners / forced labourers, gold, copper, and commodities needed for religious and ceremonial activities. During earlier times when certain animals were still abundant in Egypt, their products: ivory tusks from elephants, leopard and other animal skins, ostrich egg-shells and feathers, ebony, incense (Bonnet 1997: 38) became essential parts in religious and ceremonial events. The changing climate (see Hassan 1988; 1997a) resulted in the disappearance of these animals and the loss of these commodities. This necessitated the flow of these commodities as import goods from the south with the Nubians as producer of certain commodities and as facilitator / middle-men for commodities from further south.

During Dynasty III and possibly by the end of Dynasty II, the pattern of long-distance Egyptian control through raids changed to one of more direct control as projected by fortified outposts of the Egyptian State at strategic locations: Dakka area (Kubban / Ikkur), Tomas, Aniba, Toshka and Buhen. Unfortunately this pattern is still very sketchy with limited evidence from Buhen and a lot of ambiguous information from other locations.

Approximately 800 m north of the Middle Kingdom fortress at Buhen, a large settlement was investigated by Emery during the Aswan Dam Archaeological Project. The settlement 'has a length of at least 300 m parallel to the river and a width of about 45 m so at least an area of 13,500 m² but neither at the northern, nor eastern side were the extremities of the settlement uncovered due to modern disturbance. The settlement lay parallel to the river with a possible quay while the landside was fortified with a 2 m thick wall (most likely this wall surrounded the settlement on all sides except the waterfront). There is no information available about the entrance to the compound. The settlement plan (Fig. 7) shows a large stone-build structure (app. 10 m by 20 m) with six rooms and in front of it, at least three smelting ovens for copper, situated near the river quay and around it (landside) smaller structures made of stone and/or mud-brick. The plan, unfortunately, shows only a small area of the settlement which consisted of house-structures, a garden, work-structures and storage facilities. As such, the primary purpose of this settlement was to operate as an economic acquisition hub although the thick wall also points at fortification, for both 'Projecting Egyptian Power' to the locals and as protection against them. At Buhen, copper smelting seems to

⁴ The description of the Old Kingdom fortified settlement at Buhen is based on the preliminary reports by Emery (1963; 1965: 11-114) and his popular publication on Nubia (Emery 1981: 99-100) as well as a research article by Gratien (1995) who had access to the, unpublished, final report prepared by O'Connor (in prep.).

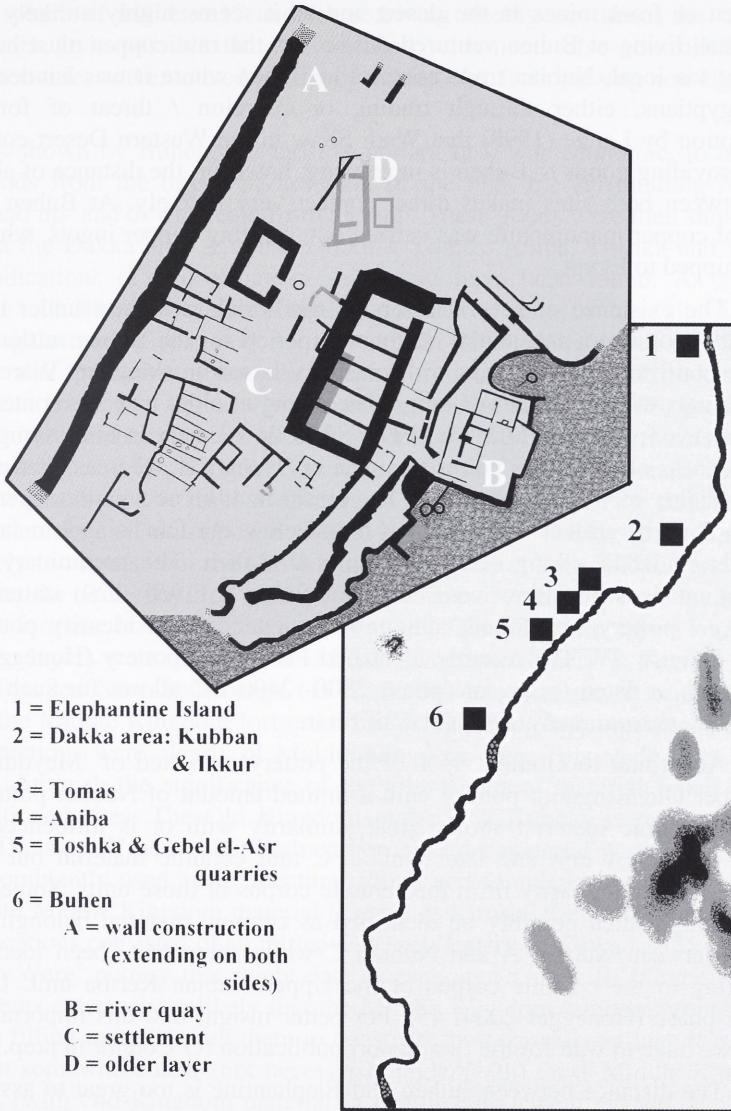


Fig. 7. Lower Nubia with sites showing Egyptian presence, with enlarge plan of the fortified settlement at Buhen, Old Kingdom (Plan based on Emery 1963: pl. XXVI).

have been a central task but as there are no known copper mines nearby, it seems that the raw copper was brought to the settlement from either mines south of Buhen or from mines in the desert and as it seems highly unlikely that the Egyptians living at Buhen ventured out so far, the raw copper must have been brought via local, Nubian trade contacts to Buhen where it was handed over to the Egyptians, either through trading or coercion / threat of force. The assumption by Lange (1998) that Wadi Shaw in the Western Desert could have been providing goods to Buhen is interesting; however, the distance of about 400 km between both sites makes direct contact very unlikely. At Buhen the first stage of copper manufacture was carried out, creating copper ingots, which were then shipped to Egypt.

The existence of several layers of mud-brick structures under the stone structures point to a substantial occupation period for the Buhen settlement, the earliest confirmed layers dating to Dynasty IV based on 'Meydum Ware' pottery and sealings with the names of kings. The dating of older layers is contentious as Trigger (1965: 79) and Fattovich (1999: 80) follow Emery in his assumption that the thickness of the bricks points to a date in Dynasty II, whereas Gratien (1995: 47) considers such a date too early. The presence of an occupation layer consisting of stone revetment walls about 1.5 m below the Old Kingdom layer does however, indicate a long occupation span at Buhen. The preliminary state of publication does not allow verification of Emery's (1965: 129) statement that Dynasty I pottery was found, although Gratien does not identify pottery pre-dating Dynasty IV. The recently identified Pre-Kerma pottery (Honegger 2004: 45), which is dated to the late phase 2800- 2400 BC allows for such an early dating but, unfortunately, does not confirm it.

According to Gratien, 95% of the pottery consisted of 'Meydum Ware' and other Old Kingdom pottery with a limited amount of Nubian pottery. This Nubian ceramic material shows great similarity with or is influenced by the earlier Nubian A unit and later Nubian C unit ceramic material but also has vessels that do not easily fit in the ceramic corpus of those units. Some of these vessels might then possibly be identified as ceramic material belonging to the period between Nubian A and Nubian C while some have been identified as belonging to the ceramic corpus of the Upper Nubian Kerma unit: Late Pre-Kerma phase (Honegger 2004: 45). For better insight into this important settlement, we have to wait for the final report publication (O'Connor in prep.).

The distance between Buhen and Elephantine is too great to assume that ships regularly sailed between them without stop-over stations. Therefore, it is more likely to assume that Buhen was just one of hubs in a network of Egyptian fortified settlements (Gratien 1995: 49) allowing ships to stop-over at protected 'ports' and be provisioned with fresh food. These hubs acted as interaction points

with the local population, first stage production of raw goods, and outposts of the Egyptian State to project military power in an area considered by the Egyptians as their sphere of influence¹⁷ and for receiving intelligence about the state of local affairs. It is possible that the fortified settlements also controlled local riverine activities and extracted a form of tribute / tax from passing non-Egyptian ships.

As shown by Buhen, the most important task was economic, to acquire (raw) goods from the direct environment of the hub, the surrounding Nubian Deserts and up- and downstream from the hub. These goods were then shipped to Egypt via the Dakka area (Kubban / Ikkur), Tomas, Aniba, Toshka and Buhen where indications of Old Kingdom settlement have been found. As already stated, the indications for an Old Kingdom presence at some of these sites is indirect and again contentious. Both Firth (1912: 22-25) and Steindorff (1937: 2-6) proposed that precursor structures existed at or near the Middle Kingdom fortresses at Ikkur and Aniba, thus a situation similar to Buhen. The amount of Old Kingdom material found in and around the Kubban fortress does also suggest some sort of Old Kingdom occupation, Emery assumed a small Egyptian garrison was stationed at Kubban (Emery & Kirwan 1935: 2-3, 26, 58). Kubban and Ikkur are located on opposite sites of the Nile near Dakka, it is, therefore, more likely to assume that the Old Kingdom material at both Kubban and Ikkur came from the same fortified settlement. The actual excavation of the Middle Kingdom fortress, however, did not show any Old Kingdom layers and both occupation layers were dated to the Middle Kingdom (Emery & Kirwan 1935: 26-44). This led Säve-Söderbergh (1941: 30-36) to reject the assumption that some of the Middle Kingdom fortresses had an Old Kingdom precursor because all constructions were clearly of Middle Kingdom date. This study does, however, not diminish the significance of the Old Kingdom material found at the aforementioned sites. The Old Kingdom material at Kubban is predominantly dated to Dynasty IV and V but both earlier and later material was found, and it was predominantly used as architectural filling and foundation material, usually mixed with Middle Kingdom material (Emery & Kirwan 1935: 26, 58). The few early indications consisted of an intrusive vessel (Emery & Kirwan 1935: 58) and 'Meydum Ware' pottery that might date as early as Dynasty III (Gratien 1995: 46). It seems extremely unlikely that the Middle Kingdom builders brought Old Kingdom filling material with them to construct their fortress, as such it is more likely that somewhere near (not necessarily underneath) these Middle Kingdom fortresses (with Old Kingdom material) a fortified settlement existed, similar to the situation at Buhen where the early structure was about 800 m away from the later structure.

The evidence of Old Kingdom material at most sites dates to Dynasty IV and later, as such the riverine network must have been already intensively used during the Old Kingdom. It seems to have been abandoned during Dynasty V, although the Old Kingdom occupation at Tomas seems to have continued, and this abandonment falls in the same period as the intensification of indigenous occupation, identified at the Nubian C unit (Gratien 1995: 49). The start of this riverine network according to Gratien (1995: 49) occurred during Dynasty IV but as shown above there are indications at Buhen to suggest an earlier start, maybe not during Dynasty II but most likely during Dynasty III. It might even be possible to correlate the development of the fortress at Elephantine Island and the start of the riverine network. The existence of a fortress during Dynasty I and II could point at the absence of a regulated information network in Lower Nubia, informing the Egyptian State what is going on in there. At some stage during late Dynasty II to early Dynasty III, the need for a fortress is superseded and the fortress is demolished (Seidlmayer 1996: 113). If at the same time, a network of fortified settlements existed or was being constructed in Lower Nubia, this would function as an early alarm system for the Egyptian border, informing the state officials at Elephantine what was going on and as such the need for strong fortifications there was diminished. It is not clear how far south the network extended, Buhen need not necessarily have been the most southern outpost. As such, Egyptian political influence in northern Lower Nubia evolved from being indirect through campaigning / raiding during Dynasty I and II, to direct through its fortified settlements from Dynasty III to V.

The situation in southern Lower Nubia which was most likely outside the Egyptian sphere of influence is still very unclear. Most Nubian A sites in this region are still only known through preliminary reports, for many of these sites only their location is known (Rampersad 1999: 82-84). As indicated the Nubian A3 phase sites of this region are of great importance for modelling the period just prior to and preceding the Egyptian military campaign(s) during early Dynasty I in Lower Nubia. Here and in the Western Desert (Laqiya region) it needs to be realised that sites with seemingly Nubian A3 phase material remains might date to the period after the Nubian A3 phase.

Two settlements located on the Saras Plain are of great significance, for Nubian archaeology as well as the Nubian A unit and the period between the Nubian A3 phase and the appearance of the Nubian C unit. Unfortunately, both sites have as yet not been published and as such a detailed description is lacking. Settlement 11-L-14 / S.5 shows possible continuous occupation from the Nubian A2 phase (and possibly even preceding this phase) to the Nubian C unit contemporary to Dynasty V (Mills & Nordström 1966; Rampersad 1999: 82-83). Settlement 11-Q-72 has a stratigraphy of six occupation layers which at certain places

has a depth of at least 2 m (Mills 1968: 201-202). A detailed description of the stratigraphic sequence of both these settlements will provide much needed settlement data to off-set the dominance of cemetery data in the chronology of Nubia.

In Upper Nubia, an incipient polity was forming around Kerma and maybe also at other places (van Wetering in prep. b). The arrival of refugees from Lower Nubia, some of whom probably belonged to ruling elites of Nubian A unit society, most likely not only created tension in Upper Nubian society as well as provided political stimulus, both would have accelerated Upper Nubian state formation. During the late Pre-Kerma phase, Upper Nubian pottery is found at what must have been important local settlements in Lower Nubia: Faras and Saras (Honegger 2004: 61), thus indicating a degree of interaction between Upper Nubia and Lower Nubia during the existence of the Egyptian riverine network. Outside the range of Egyptian influence / coercion, the polity at Kerma could evolve and slowly mature into a political rival and economic competitor of Egypt, during the early Kerma phase (van Wetering in prep. b).

A marked difference has been noted by Geus (1998) in Nubian A unit material found at middle Pre-Kerma phase sites (Kerma) with that found at late Pre-Kerma phase sites (Sai Island). By the late Pre-Kerma phase, the local population (Nubian A unit: A3 phase) had been pushed out of northern Lower Nubia and the presence of Nubian A unit material in Upper Nubian sites should therefore be identified as that of a resettled population that is in the process of integrating itself in their new surroundings. These people probably started to emulate the way of life (and the material culture) of the indigenous peoples (Kerma unit: late Pre-Kerma phase) to acculturate themselves more with the local residents. The Nubian A unit site at Arduan Island / Kilgel east MLG017 (Edwards & Osman 2002) and the Nubian A unit cemetery at Kerma (Fattovich 1999: 79) might be identified as refugee sites, belonging to that initial stage shortly after the Egyptian incursions into northern Lower Nubia and the end of the Nubian A3 phase there.

It seems other Nubian A unit sites were found by the Mahas survey north / down-stream of Arduan Island (Osman & Edwards 1992: 64).

During Dynasty V, Egyptian presence in Lower Nubia seems to diminish, thus creating a new situation for local development. The resident population seems to flourish in both political and economic sense and consequently becoming visible again in the archaeological record. Complementing this process, it seems people from Upper Nubia relocated to Lower Nubia (Edwards 2004: 88). Decades ago, the material culture appearing in Lower Nubia around 2400 BC was identified as Nubian C unit without adequate insight into the developments further south (Edwards 2004: 77). Instead of a distinct regional unit, the initial stage of the Nubian C unit: C1a-b phase should be identified as a northern expan-

sion of the Kerma unit: early Kerma phase (Edwards 2004: 77-78, 88). This can therefore best be seen as a period of Egyptian retreat that stimulated local communities which had been in contact to Upper Nubia, to development of socio-political entities while at the same time people from Upper Nubia were resettling in Lower Nubia to exploit the new opportunities the Egyptian retreat offered and who, in turn, stimulated local socio-political development. This process would be visible in many ways in the archaeological record and would show as already noted by Gratien (1995: 49) that the relationship between the locations of key settlements of the Nubian A unit and those of the Nubian C unit points to a cultural continuum although the geographical limitations of the Nubian Nile Valley must not be underestimated.

The apparent cultural continuity between Nubian A unit and the period thereafter suggests that the current strict cultural diversion might obscure long-term Nubian developments. It therefore seems that a new cultural framework is needed to define the continuation of the Nubian A unit, the interaction with the Pre-Kerma phase of Upper Nubia and the development of the Kerma-influenced material culture appearing around 2400 BC. For the time being, it should be acknowledged that the Nubian A unit continued and Nubian A unit sites need not necessarily date to the Nubian A3 phase, especially those outside northern Lower Nubia. Nor should the material culture of sites outside northern Lower Nubia be used as defining the material remains of sites in the flooded areas of Lower Nubia as the dispersal of the Nubian people might have resulted in distinct regional developments, each showing the traits of the parent material culture: Nubian A unit although not necessarily the same cultural traits.

If the Egyptian state had not intervened in the way it did, it is likely that a state would have developed in Lower Nubia with Faras-Qustul as its capital with strong interaction networks in northern Sudan, Sub-Saharan Africa and the oases, and the Horn of Africa as well as with Egypt. The course of action undertaken by the Egyptian state did, however, not bring Nubian state formation to an end. State formation now centred on Kerma in Upper Nubia where between 2600 and 2200 BC a state developed (van Wetering in prep. b). The Egyptian state throughout its history might not have wanted a strong political-economic power on her southern border but the needs of Egyptian society stimulated it anyway, albeit always just outside the military reach of the Egyptian state, growing in political strength and declining in relation to the decline and rise of strong centralised administration in Egypt. This is not to say that Egypt dictated the agenda by 'allowing' Nubia to flourish at certain times, but rather Nubia pushing Egypt to create opportunities at certain times, whereas, at other times the roles were reversed.

Considering Archaeological Methodology

The various regions of Egypt and the Sudan bring their own peculiar problems for investigations, and even within the various regions there are variations in conditions. The preservation rate for objects and structures varies enormously from north to south and so each site requires its own research design and sampling strategies, which must be tailored to the requirements of each individual site (Tassie & Owens in press). The various areas within Northeast Africa also pose their own logistical problems. Many sites in northern Sudan are located far from any modern facilities, whereas those in the central Nile Delta are often near built-up areas but beneath several metres of alluvium and situated below the water table. All these factors have to be considered and surmounted when investigating prehistoric sites in Northeast Africa.

Archaeological investigations of the prehistoric cultures of Northeast Africa can be traced back to the turn of the nineteenth century with scholars such as Petrie (1896; 1900, 1901a-b; 1902; 1903; 1920), De Morgan (1896; 1897), Quibell (1898; 1900; 1913; 1923), Amélineau (1899; 1902; 1904; 1905), Petrie & Quibell (1896), Randall-MacIver & Mace (1902), Quibell & Green (1902), Garstang (1903), Ayrton, Currely & Weigall (1904), Reisner (1908a) and Mace (1909) finding material that was obviously older than that of the known dynastic civilisation. Throughout the twentieth century great advances were made, notably by Ayrton & Loat (1911), Engelbach (1923), Petrie & Brunton (1924), Brunton & Caton-Thompson (1928), Caton-Thompson & Gardner (1934), Brunton (1927; 1937; 1948), Emery (1938; 1939; 1949; 1954; 1958) and Said (1947; 1951). Although the Archaeological Survey of Nubian rescue campaign (Firth 1912; 1915; 1927; Reisner 1910a; 1910b) uncovered many important sites, it is in the 1960s that exploration of prehistoric Nubia really starts to increase with the UNESCO Nubian Rescue Campaign (Nordström 1972) and (Williams 1986). From the 1970s onwards exploration of prehistoric Northeast Africa really starts to flourish (see above for discussion of these excavations), although the advances in deep de-watering techniques must be noted at Tell el-Fara'in (Buto) by von der Way (1986; 1987; 1988; 1989; 1991; 1992; 1997) Faltings (1997; 1998), Faltings et al. (2000), Faltings & Köhler (1996), Schmidt (in prep.), Köhler (1998), Zimmerman (2002) and Hartung et al. (2003). In the area of radiocarbon dating, building on the original work by Libby (1955), Hassan (1980; 1984a; 1984b; 1985; 1989), Hassan & Robinson (1987), Hassan & Matson (1989) and recently Hendricks (1999) have refined the absolute dating of the period. This has been supported by refinements in Petrie's (1899; 1901b) pottery seriation by Kaiser (1957) and Hendrickx (1996; 1999). Many advances have also been made in the areas of the past environment, bioarchaeology and human ecology, subsistence strategies, craft and craft specialisation, cult, ideology and art,

regional and foreign trade and relations, population and settlement patterning, and the beginnings of writing, many papers on these subjects being published in the Poznan Proceedings. These various areas of interest all go to help explain state formation in Egypt and Nubia. In the latter half of the twentieth and beginning of the twenty-first century there have been many theories including Baumgartel (1947; 1960; 1970a; 1970b), Massoulard (1949), Wilson (1955; 1960), Emery (1961), Carneiro (1970), Krzyżaniak (1977; 1989), Janssen (1978), Hoffman (1979; 1982), Castillos (1982; 1998; 2000), Endesfelder (1984), Fattovich (1984), Wildung (1984), Hassan (1988; 1992; 1997a; 1997b; 1998), Bard (1987; 1992, 1994a, 1994b; 1996; 2000), Trigger (1987; 1993; 2003), Kemp (1989; 1995), Wenke (1989; 1991; 1997), Kaiser (1990), Enrödi (1991), Mortensen (1991), O'Connor (1991; 1993a), Seeher (1991), Dreyer (1992; 1998), Hendrickx (1994), Köhler (1995; 1996; in press), Gatto & Tiraterra (1996), Wilkinson (1996; 1999; 2000), Savage (1997; 2000; 2001), Baines & Yoffee (1998), Gundlach (1998), Baines (1999), Midant-Reynes (2000), Campagno (2000; 2002), Ciałowicz (2001), Haanen (2002), Hendrickx & van den Brink (2002), Proussakov (2002), Raffaele (2002; 2003a; 2003b; 2005), Jiménez-Serrano (2003; 2004) and Wengrow (2006). However, to be able to answer some of the questions arising from these studies, such as how did the rise of state effect settlement patterning, the populations health and diet, regional material assemblages and ideology, trade relations, movement of population, when did the rise of state first begin and when did the different stages of state formation end, further research needs to be conducted. To facilitate research into these various areas, new techniques and methodologies have been and still are being developed.

Remote Sensing and Predictive Modelling

Research into settlement patterning in Northeast Africa has been influenced by Adams (1965; 1981) and Adams & Nissen's (1972) surveys of the Diyala and Sumerian Plains in Iraq. In Egypt, studies into settlement patterning in the Abydos-This region (Patch 1991; 2004), Hierakonpolis region (Harlan 1985) and the East Delta (van Wetering & Tassie 2003) have investigated the roles and interactions of the various sizes of settlements. Although many reconnaissance surveys have been conducted, the rate of destruction of sites is increasing due mainly to agricultural intensification and urban sprawl and in the area of the Fourth Cataract the building of a huge hydro-electrical dam (Tassie in press a; in press d). The west bank of the Nile, particularly in Middle Egypt has suffered encroachment from sand dunes, burying sites, which not only protects them, but makes their location through surface survey nearly impossible. It is also important to understand how the floodplain was utilised in the past (Friedman 1994: 33), only then can we fully interpret early society and its dynamics.

Therefore, the need to find more efficient ways of locating, evaluating and recording archaeological sites is increasing. Although pedestrian survey will never be replaced, new innovations for examining archaeological distributions are refining the way these surveys are being conducted. Technological advances, particularly in remote sensing (satellite images) and recording techniques (geographic information systems – GIS), are making it easier to locate, record, analyse and interpret human behaviour at a whole range of scales. Also, many satellite images are now in the public domain or relatively cheap to acquire, making their use by archaeologists a cost-effective method for surveying large areas.

Much of the original research done by Adams and his colleagues in Iraq is forming the basis of an innovative project by the Centre for the Archaeology of the Middle Eastern Landscape (CAMEL) at the Oriental Institute, University of Chicago. This project is combining the data from pedestrian surveys with remote sensing methods, such as satellite imagery and aerial photographs. Along with additional geoarchaeological studies of the buried landscapes and environmental change, combined with textual information on human land use it is allowing reconstructions of demographic histories, economic landscapes and the various ways people related to the landscape (Wilkinson 2003: 1). A modelling (GIS with crop and demographic models) programme has been constructed to simulate how the Bronze Age Near Eastern societies provisioned themselves with food and how long-term strategies varied with climatic fluctuations (Wilkinson 2003: 1). The project will eventually cover the area from Greece in the west to Afghanistan in the east and from the Black Sea in the north to the Horn of Africa in the south (Harms 2005: 1-2).

Sarah Parçak is currently studying various aspects regarding the environment around and location of archaeological sites in the Sinai, Delta and Middle Egypt as seen in satellite images and aerial photographs (Parçak 2005; in press). This study is examining the effects of climatic change, alterations in riverine regimes, coastal expansion and changes in floral and faunal resources over time. Parçak has analysed satellite imagery data through Corona, SPOT, Landsat, ASTER and Quickbird images, in conjunction with existing archaeological survey data and maps. In the Delta the study is primarily concentrating on the settlement patterning in the regions surrounding the Mendesian Branch, particularly around Mendes and Tell Tebilla, but also covers the whole Northeastern Delta. All the known sites were plotted onto the satellite imagery data, and a 93% success rate was obtained in locating 119 of these previously identified sites. She then applied these location techniques to previously unknown sites and discovered 44 new sites at a 90% success rate. During the summer of 2003 ground-truthing was conducted at 62 new and little known sites thought de-

stroyed, conducting interviews with the local inhabitants, photographing the area, assessing the landscape and artefact scatters. The examination of surface pottery from these sites revealed that they date from the Old Kingdom, Late Period and Roman era. These sites, along with the already known sites were plotted on maps of the ancient East Delta, especially in relation to geziras, marshes, canals, river branches, and the ancient coastline. The results of this survey will also be used to calculate archaeological site loss, the anthropology of site destruction and the general implications for Egyptian archaeology (Parçak in press; also see Mumford 2002, Pavlish et al. 2003). In the Sinai work was concentrated on locating modern waterways that have been in use since antiquity. These water sources are where most sites cluster. In Middle Egypt, in an area 15 x 30 km on the West Bank across from Amarna, 70 archaeological sites, 43 of which were previously unattested, have been located and ground-truthed (Parçak 2005). As well as fieldwalking these sites, geophysical sub-surface survey and drill coring were used to evaluate the archaeological remains. Pharaonic remains were only found at one of the sites, all the other sites were primarily Roman to Late Antique, even to a depth of 5-6 m below surface. The location of earlier sites will need to use more industrial coring equipment than a hand auger used in the programme, which has a maximum range of 6-7 m below surface. Parçak's survey in Middle Egypt has shown that 10% of the sites visited were open tell sites, 13% were beneath modern fields, 20% lay beneath modern cemeteries, and 63% were beneath modern towns (Parçak 2005: 9).

Multi-spectral satellites sample many different windows of the electromagnetic spectrum, picking up variations not usually discernable in normal aerial photographs. Near and middle infra-red bands are strongest in picking up moisture retention in vegetation communities, thus allowing the location of buried archaeological sites that absorb moisture more readily than the surrounding landscape. As Parçak is demonstrating the location of sites through this method on the Nile floodplain and low desert is proving very successful, however, due to the transitory nature of many high desert sites (Friedman 2002) and the general lack of moisture in the desert environment it is more difficult to discern sites in the near and middle infra-red bands. Technological, theoretical and methodological advances may in the future allow for better detection of high desert sites. Parçak, in co-operation with the SCA, is conducting a teaching programme to disseminate this latest survey technique to Egyptian antiquity officials and hopes to expand her programme to the rest of Egypt. This innovative CHM tool is relatively quick and cost-effective in relation to pedestrian survey in locating new and little known sites for further evaluation, as well as assessing the landscapes surrounding known sites.

When using fieldwalking to evaluate a tell, particularly when surveying for the earlier phases there are certain limitations. Studies have shown that surface collections of sherds on mound sites are significantly biased in favour of the later periods, by as much as 10 to 1 (Miller-Rosen 1986). This is not only a result of stratigraphic replacement, but also due to erosion of earlier materials. This bias in favour of the later periods is also true of off-mound sherd distribution. The underrepresentation of the earlier periods and overrepresentation of the later periods can be slightly mitigated by scraping the surface by 5 cm to collect potsherds. However, the Predynastic, Early Dynastic and Old Kingdom sherds will only be expected if the level of these occupations is less than 5 m from the surface (Hassan, Tassie & van Wetering 2005). At the famous Predynastic West Delta site of Tell el-Fara'in (Buto), not a single early potsherd has been found on the surface, the surface scatter is of Late Period and Graeco-Roman sherds (U. Hartung, pers. comm. 2005). This is due to the fact that the Predynastic layers are located about 10 metres below the surface. However, sites in the Abydos-This survey were located in the low desert not only by a surface scatter of Predynastic potsherds, but the shape of the graves in the Naqadian cemeteries could still be located (Patch 2004: 909). The retention of early potsherds and lithics on the surface is also noted in the Faiyum in the area to the north of Lake Qarun (Caton-Thompson & Gardner 1934). Therefore, when conducting fieldwalking to gain the site signature, it is essential that the type of landscape is considered and on tell sites and areas of heavy alluviation it is particularly important that it is complemented by further evaluation techniques, such as coring, shovel tests and trenching (Tassie & Owens in press), otherwise the site cannot be assessed for its full archaeological potential, especially the site stratigraphy. It is essential when locating sites through satellite images that not only fieldwalking is conducted to ground-truth potential sites, but that a full evaluation at each site is conducted to gain a truer picture of the diachronic settlement patterning and understand the full site signature of each individual site. Once sites have been evaluated targeted excavation of sites can then be conducted, focusing on those sites most in danger of being destroyed or likely to answer particular research questions (Tassie & Owens in press).

Once sites have been located using satellite imagery it is essential to use deep location techniques to evaluate the sites, to locate the earliest levels of occupation buried deep beneath Nile alluvium and subsequent occupation debris. Although many of the sites located through satellite imagery and evaluated by hand auguring by Parçak are only producing relatively recent archaeological remains, many of the surveys mentioned above found that the *fehlt was? oder: there ????* was a predilection for these later sites to be located on earlier sites – often Predynastic to Early Dynastic sites were found to be located beneath Late Period to Roman sites, with a hiatus of settlement in between. It is essential that

professional cable percussion drill coring rigs, which can retrieve cores 50+ m in length, are used when evaluating sites located through remote sensing. Although these rigs cost more money to hire and have to be operated by professional drill corers, this extra cost is money well spent, for it is the only means of locating and retrieving deeply buried cultural material. The usual geophysical techniques – magnetometry and resistivity – are also limited in their scope, for they can usually only detect anomalies up to a depth of 3 m below surface, although in ideal desert conditions can detect archaeological deposits at depths of 10 m below surface (Clark 1996: 36). Although Ground Penetrating Radars (GPR) have been around since the 1970s, modern advances are making this technique more viable for locating deeply buried archaeological deposits. A particularly effective GPR, is the LOZA, a portable enhanced power ground penetrating monopulse radar, which in wet clay can penetrate up to 9 m and in limestone is effective up to 40 m below surface. The real-time data can be viewed directly on a computer screen and stored for later interpretation. A three-dimensional model of the sub-surface deposits can then be reconstructed.

Although predictive modelling existed before the development of GIS (using paper maps and databases), because of the ability of GIS to inventory and display a wide-range spatial data it is an ideally suited computer-based technology to recreate past landscapes and predict ancient settlement patterning. The landscape as opposed to environment in terms of usage is socially constructed; it consists of mosaics of temporally and spatially dynamic resource patches in which ecological, geomorphological, and cultural systems operate at various scales (Church et al. 2002: 146). To understand the various activities conducted in the landscape and that modified the environment it is necessary to construct various models that are appropriate to the domain of activity (Hassan 2004). The landscape was shaped and organised for economic, social, religious, symbolic or cultural reasons; it also helped in the construction of myths and history as well as shaping human behaviours (Wilkinson 2004: 334). Sites (cemeteries, settlements and activity locations) are not independent entities, but are components of a system – and their locations are dependent upon the locations of other components in that system, including other sites (Ebert 2000: 131). Predictive modelling needs to be used conservatively to avoid the trap of becoming too environmentally deterministic, but are a useful tool for calculating the locational preferences for settlements, cemeteries and other activity areas. Therefore, to understand past landscapes it is important to understand not only the ecosystems and geoarchaeology of the area being studied, but also the cultural record (Wilkinson 2004: 334).

Modern versions of both commercial and open-source GIS software provide significant spatial database and predictive modelling functionality. For

predictive modelling to be effective it is essential that remote sensing data and computer simulation modelling are combined in the GIS programme (Church et al. 2000: 147). Elevation, slope and aspect are also important independent variables. Available elevation data, such as sampled data points and contour lines, which have to be digitised, are likely to be incomplete or in a form unsuitable for the calculation of slope and aspect. Therefore, interpolation algorithms (the procedure of estimating the value of properties at unsampled sites within the area covered by existing point observations) must be applied to construct a usable digital elevation model (DEM), which recreates a three-dimensional digital representation of the past landscape (Hageman & Bennett 2000). Simulation modelling of the past ecology allows for the past ecological landscape to be created (Costanza & Voinov 2004). The information needed to be entered into the simulation model includes floral and faunal data, palynological data, climatic data, geomorphological data, hydrological data and a temporal dimension. For various regions of Egypt and Nubia there is environmental data available, however, very few simulation models of past eco-systems have been built. Studies of macro flora and fauna have generally been site-based (Boessneck & von den Driesch 1992; von den Driesch & Boessneck 1985; De Roller 1992; Moens & Wetterstrom 1988; Thanheiser 1990; 1992a; 1992b; 1996; Yokell 2004) as have pollen studies (Bottema 1992; Saad & Sami 1967). Wickens (1975) has analysed the available environmental data for the Sudan, however, little work on creating ecological simulation has been conducted in the region. Although environmental data was collected on a regional-scale in the Delta by Stanley et al. (1996), it is essential the more large-scale regional environmental sampling is conducted using cable percussion drill coring rigs to extract cores up to 50 m long. The environmental data retrieved from these cores can then be used in creating ecological simulations for the various regions and periods of history.

Predictive models should put human use of an area into the past environmental context. It should not only define those environmental variables or combination of variables that would attract human use and thus predict site location, but also address post-site formation processes that may obscure or destroy sites (Church et al. 2000: 146). The cultural landscape includes such utilitarian qualities as proximity to water, mineral and food resources, seasonality of resources, accessibility and defensibility, distance and ability to travel between sites, and also ritual and cognitive qualities. The use of archaeological survey and excavation data on the preferred location of sites in different regions and time periods is important in validating hypotheses generated by models, but should not form the basis for model-building (Church et al. 2000: 149). Other variables to be included in the multiscale dynamics and their relationship to human agency include geomorphology, the temporal dimension, scale, and climate. The General Ecosystem Model (GEM) (Fitz et al. 1996) has been designed to simulate a

variety of ecosystems using a fixed model structure. The generic nature of the model is designed so to alleviate the need to keep remaking models for various ecosystems. However, the GEM is insufficient in covering all of the possible varieties of ecosystem processes and attributes (ecotones) when going from one ecosystem to another (Voinov et al. 2004: 43).

Geoarchaeological work has been conducted in many parts of Northeast Africa and for many regions the geomorphological processes are well recorded (Butzer 1976; 2002; Hassan 1997 1997a oder 1997b??). In the Delta Butzer (2002: 89-90) has shown that for the period of state formation not only did the coastline look very different to that of the present (in various areas ca. 50 km further to the south than present), but that the riverine system was a lot more complex than the present with two main branches and five to six minor branches existing. In the Memphite region Jeffreys & Giddy (1992: 6-7) have shown that the River Nile has gradually moved eastwards, moving right over the ancient city of Memphis. This eastward movement of the Nile has also been located in the area of ancient Thebes. Using the three technologies under a theoretical umbrella it should be possible to predict the location of sites, which must be ground-truthed and evaluated in the same way as locating sites through the use of satellite images. Two related areas of GIS application are viewshed and cost surface analysis, which can aid in interpreting the cognitive landscape and site catchment (Gaffney et al. 1996). These analytical tools can measure the visibility of monuments in the cognitive landscape and measure the cost of traversing the landscape to obtain resources in the site catchment area.

As satellite images have been taken since the early 1960s they provide an invaluable cultural heritage monitoring tool for archaeological sites, examining their changing states of preservation or loss. The expansion of agriculture and the development of roads, suburbs, land reclamation and other forms of land use have all accelerated since the early 1960s, thus threatening the finite archaeological remains (Tassie in press a; in press d). The examination of different satellite images taken of an area over a period of time is ideally suited for the long-term monitoring and assessment of archaeological sites. This type of reconnaissance is particularly useful once the date and size of a site is already known from pedestrian surveys (Wilkinson 2003: 6). Once the extent and date of a site is known, it is a relatively easy task to monitor the recent life history or total demise of archaeological sites and also to establish when they are under threat from encroaching developments or when they start to be looted (Wilkinson 2003: 6).

Excavation Strategies

Excavation is a costly and time consuming enterprise, to make it more cost-effective sampling strategies should be used. The sampling strategy is based upon the research design, and is shaped to provide answers to the objectives

within the constraints of logistical issues (i.e. material survival, technology, bureaucratic negotiations, budget, etc). The strategy should be designed to provide the information required according to the nature of the site, and the level of survival of archaeological remains (Tassie & Owens in press). The use of drill-cores, test pits and trenches in evaluating a site is often supplemented by geophysical prospecting (ground penetrating radar [GPR], magnetometry, resistivity) to allow targeted excavation. On large settlement sites such as Buto and Pi-Ramesses geophysical techniques are used to create detailed ground plans of individual buildings and other settlement features of the mud-brick walls, stone elements, sand foundations for columns, and negative trenches (Pusch 2000: 146). Targeted excavation can then provide the stratigraphy, date, and function of selected areas, which can provide answers relevant to the research design or have been formulated due to the results of the geophysical survey.

Many sites have been identified through survey, such as those in the Northeastern Delta. As aforementioned, at present there is an imbalance in our knowledge of the Delta, with early sites being grossly underrepresented in the Central and West Delta. There are two main reasons to account for this: 1) the imbalance in intensive survey between the East and West Delta, and 2) the greater accumulation of silt in the Central and West Delta, burying the earlier sites (Butzer 2002). In 2005, the Geology Department of Cairo University conducted a drill-coring programme in the area of Banha using a cable percussion drill coring rig, and found early potsherds at a depth of 17 m below surface (M. Hamden, pers. comm. 2005). The UCL/Cairo University geoarchaeological survey of the Faiyum (Hassan et al. 2004: 25-26) while investigating the geological nature of the Hawara Channel located a thick layer of Dynasty I potsherds at Gadallah, 5.5-6.5 m beneath the surface. A multi-disciplinary approach to locating sites buried by several metres of alluvium or sand is one of the most time and cost-effective methods. Combining surveying programmes with the disciplines of geology and geography or just greater dissemination of information and greater access to data and material facilitates more efficient use of the time, money and valuable resources.

Once deeply buried sites have been identified, these sites need further evaluation. Another problem with many Predynastic sites in the Nile Delta is that they are below the water table, as well as several metres of alluvium. The use of dewatering pumping equipment, at sites such as Tell el Fara'in and Sa el-Hagar (Sais) has enabled the earliest levels to be investigated (von der Way 1997; Wilson & Gilbert 2003). However, the depth of the buried Predynastic sites in the central Delta has so far prohibited any excavation in the region. Deep excavation and dewatering has been conducted in other parts of the world. At Coppergate in York, England, excavation of 9 m of stratified layers was under-

taken, many of the lower levels being waterlogged (Renfrew & Bahn 1991: 482-483). To ensure safety for the excavators and drain the area of water a cofferdam of sheet piling was constructed around the large open-area to be excavated and pumps were kept running for 24 hours per day. Although other methods have been used for deep excavations, such as stepping the sides of the trenches (Renfrew & Bahn 1991: 93), this technique is unsuitable when dewatering is also required. Excavating in a box-grid is also an unsuitable technique to use when excavating deep waterlogged deposits as the securing of the baulks to prevent them collapsing into the excavation area would obscure much of the archaeology and would be more costly than using open-area excavation. Therefore, if open-area excavation is to be used, single context recording should also be employed (Tassie in press b; in press c). Moreover, open-area excavation and single context recording is by far the most effective method of excavating whether the site has deeply stratified deposits or not.

Bioarchaeology

Humans are bound by the constraints of their biology, environment and culture. A stress or change in any of these spheres ultimately results in an individual response to cope with the changed condition. These changes/adaptations are ultimately reflected in the health, mortality, and genetics of the population (Brace et al. 1993; Lovell & Johnson 1996). The transition to state ca. 3350-3050 BC produced social, occupational, and ecological changes that had serious implications for the health, diet and microevolutionary genetics of the Nile Valley and Delta populations (Podzorski 1990). Human behaviour is both influenced and predicated by biology. It is fundamental that any explorations of the emergence of the state documents what changes in biology and culture occurred, how these changes affected individuals and how populations adapted to these changes in conditions. The majority of threats to human health do not occur randomly but are correlated with patterns of human activity, which is important for our understanding of the impact of social developments on diet and health (Rose et al. 1993; 1998).

Analysis of the skeletal material may help elucidate if there was demic-diffusion from Upper Egypt to Lower Egypt during the transitional period of cultural change ca. 3650 BC (see below for further discussion). By conducting Stable Isotope Analysis on the teeth of an individual it will indicate the region in which he or she was born, whereas conducting it on the bones will indicate where they lived in the last ten years of life. The results may show that men moved into the region or that it was women who moved, or that the whole populations moved from the Valley to the Delta. However, it may show that there was no change in the population, indicating that it was purely a change in materiality and not people (Bentley et al. 2002; 2003a; 2003b; 2004; n.d.; Price et al. 2001;

2002). DNA studies are promising to be able to better explore patterns of kinship, exogamy and residence (Jones 2004: 44-5). DNA studies can also help elucidate if there were multiple or unitary domestication of animals and plants (Jones 2004: 44). However, the preservation rate of skeletal material, particularly at such Delta sites as Kafr Hassan Dawood (KHD), may prevent these types of studies, as diagenetic processes may have completely destroyed the organic material in the bones (Lovell 2000: 40). Due to the wide variation in local burial conditions and the fact that smaller samples are now required (the KHD samples were taken in 1995), it is imperative that samples are taken and tested so that these promising areas of investigation may enlighten our knowledge of the demographic nature of Northeast Africa and understand the movement of people during this critical period of state formation.

The peopling of Egypt has been a long debated point, using qualitative and quantitative methods of comparing 36 dental morphological variants. Irish (in press) has investigated three particular points of interest:

1. The origins of the Badarian population?
2. The population genesis of the Naqada population, indigenous or a new 'Dynastic Race'?
3. Was the unification of Egypt due to internal developments from the Naqada culture?

Many scholars based on interregional cultural similarities have suggested that the Neolithic populations of the Western Desert came into the Nile Valley ca. 5,000 to 4,500 BC and mixed with the Nilotes (Hassan 1988; Holmes 1989; Midant-Reynes 2000). Irish (in press) examined a Neolithic population from Gebel Ramlah in the southern part of the Western Desert and compared the results with those from Badari. He found there to be significant differences, but concluded that the Western Desert population was closest to early Upper Egyptians, including those from Badari, that the differences could be accounted for by the fact that the Badarians were a mixture of indigenous Nilotes and people moving into the region from the oases a lot farther north.

The Badarian and Naqadian samples showed a great similarity and indicate a direct relationship amongst these two groups and also those from Hierakonpolis (Irish in press). This confirms the hypothesis of Arkell & Ucko (1965) and goes against the 'Dynastic Race' theory proposed by Petrie (1939) and Baumgartel (1970a, b). However, these bioarchaeological results are contrary to non-metric (Prowse & Lovell 1996) and metric (Keita 1996) traits observed on the skulls of the same Badari and Naqada populations, which showed the populations to have significant differences, however, see Zakrzewski (this volume) for a fuller discussion of craniometric evidence..

There seems to have been great biological affinity between the populations of Naqada and Hierakonpolis based on dental trait concordance (Irish in press). Both of these sample populations show great affinity with Dynasty I and II samples from Abydos. The samples from Abydos showed no significant differences to those from Dynasty I Tarkhan, indicating continuity in population from the Predynastic, through the Protodynastic and into the Early Dynastic Period (Irish in press). This deduction again goes against the 'Dynastic Race' theory. Moreover, Zakrzewski (this volume) has shown that there was a gradual increase in stature of the Predynastic population, particularly in the long bones, until it reaches its apex in the Early Dynastic Period.

This line of enquiry is showing some very promising results, however, samples from only five early sites were used, and none from the Delta. A much larger sample base is required to have more confident results and the disparity between the cranial and dental results also needs to be explained. Because of the potential that bioarchaeology is offering to explain various aspects of state formation, when excavating a cemetery site or where human remains are likely to be discovered, it is essential that a bioarchaeologist is a member of the archaeological team (Owens et al. in press).

Archaeology in Egypt and the Northern Sudan: Looking Forward

It should be recognised that early Egypt was 'put on the map' from a Dynastic Egyptian point of view, meaning it got endowed with the splendour and power of the state that Egypt was to become during the Old, Middle and New Kingdom Periods. From this pedestal on which early Egypt was placed, researchers like Reisner went south and put early Nubia on that same map, albeit in an inferior position compared to early Egypt. This point of view has influenced the way relations between early Egypt and its southern neighbour were modelled and also how the Nubian A unit was interpreted. With the amount of information presently available for Northeast Africa, it is possible and necessary to reassess the contemporary interactions and social and cultural developments throughout the Nile basin. The cultural and political developments in Upper Egypt and Lower Nubia stimulated events in surrounding areas, particularly Lower-Middle Egypt and Upper Nubia but also farther afield. These developments did not take place in splendid isolation but were part of the Nilotic-African cultural landscape.

Nor should it be assumed that the North was dominant in relation to the South, only after the Unification of the two northern polities did the northern union of Egyptian polities gain sufficient advantage to act against the southern polity. Whereas before the unification it seems an evenly balanced power situation existed which prevented one polity to attack and annex another one. After the unification the balance of power changed in favour of the north and

resulted in a decisive action by the northern union (under the leadership of the First Dynasty kings) against the rival polity in the south that competed for the same resources, to eliminate the middle-men (van Wetering in prep. a-b).

As Edwards (2004: 67) points out, it is only now after years of intensive fieldwork in other parts of the Sudan and East Africa that the other necessary viewpoint can be added to modify that Egyptocentric perspective of the Nubian A unit. This long identified unit has been central in interpreting Nubian development, as archaeological researchers interpret the unknown by contrasting it with the known. The A unit became the principal unit to which new units farther south were measured against and used to interpret cultural development in Lower Nubia. With more and more information becoming available for the Nile basin and surrounding areas, the Nubian A unit is in accord with the wider Nilotic-African perspective as a local Lower Nubian development important in its own right but also peripheral to development to the south (Edwards 2004: 67). Therefore, it is essential that the early development in Egypt and Lower Nubia is re-examined in this light, un beholden to later events along the Nile River. The dominant role acquired by Egypt during the Protodynastic Period and formalised at the beginning of Dynasty I with the formation of the united kingdoms of Egypt had an enormous effect on the Nile basin. The state formation process in Lower Nubia was brought to a halt and a similar but more incipient, state formation process in Upper Nubia was stimulated, this cycle of Egypt stimulating Nubian power beyond her sphere of power is a recurring feature of Egyptian-Nubian interaction.

Defining Cultural Development

The characterisation of cultural traditions, including spatial extent and temporal changes mainly uses the culture history approach, which emanated from the European and American traditions (Shennan 2004: 4-5). This approach equated culture with material assemblages and saw distinctive artefact types chronologically, geographically and contextually associated with these cultures (Shennan 2004: 4). These cultural units became the building blocks on which archaeology was built. In the archaeology of Northeast Africa these building blocks were called Naqadian, Maadian, Badarian, Nubian A, etc., which were defined strictly on the basis of mortuary data and which were clearly defined in time and space. Problems of definition in separating adjacent or successive cultures are inherent in this system. As shown above, the Badarian unit and the Naqadian unit of Upper Egypt are maybe too strictly defined in relation to each other's mortuary data, whereas those defined boundaries are not reflected in the settlement data of Upper Egypt. As argued by Shennan (2004), more fluidity in cultural boundaries is required to reflect the nature of society that produced the materiality and account for the discrepancies found in the archaeological record.

This culture history legacy has become entrenched in archaeology and although it has been a useful tool for ordering material remains, recent advances in analytical archaeology now propose a new evolutionary approach that regards the diachronic patterns in materiality at different hierarchical levels and cultural practices associated with them as central to archaeological investigation (Shennan 2004: 17). Using quantitative analysis of the frequency of various attributes of the materiality (Shennan 1997) these diachronic patterns will be better understood and result in more reliable interpretation of the data if combined with other kinds of studies (Ellis 2006: 246). The achievements of Petrie, Reisner and others, although admirable, was done with the quantity and quality of archaeological data available to them at that period, it is now time to review the cultural landscape of Northeast Africa. The amount of available archaeological data has grown enormously in the last few decades, and re-assessing the internal dynamics, constituent parts and boundaries of the cultural units using new advances in archaeological theory and analysis is essential in light of the problems highlighted above.

Shennan (2004: 9) notes that there are core cultural traditions whose components adhere over time, providing the basic cultural framework that has a major influence on social life without organising everything, so there exist peripheral cultural elements not closely tied to the core. Cultural transmission can occur through imitation or teaching, inheriting cultural traits from peers of parents, as a system of inheritance (Boyd & Richerson 1985: 283). There can be wilful modifications or improvements made in the transmission of culture from one generation to the next, due to either an individual's agency and own experiences or interaction with other groups (Shennan 1996: 286). Another way that change can occur is a copying error, where one person unwittingly does something in a different way. These new cultural traits will then be passed on to the next generation, who may modify it again in their own way causing cultural drift. For changes to be accepted and absorbed into society, the new elements must be compatible physically and symbolically with the already existing elements of culture or run the risk of being rejected as being incomprehensible (Lemonnier 1993). These new elements may be externally borrowed through diffusion or the whole may be just a reorganisation of elements already present, rarely do people come up with straight inspiration, rather it is normally a case of transpiration [constant development] (Lemonnier 1993).

This evolutionary theory could account for the regional variation found within the archaeological record of Northeast Africa, especially when one does not equate a particular population in time and space with a particular cultural unit but instead identify a population throughout the Nile Valley that adapts to local situations, and limitations. Therefore, creating a more fluid materiality with

distinct features but also strong similarities whereby it might be possible to view the distinct features that define the boundaries between Naqadian and Badarian as mortuary differences, whereas the similarity found in the settlement data conforms more to the core cultural traditions. The lack of excavated sites in Middle Egypt to assess the interaction between the Upper Egyptian Cultural Complex and the Lower Egyptian Cultural Complex is in this regard a huge disadvantage that should be rectified.

The appearance of the Naqadian unit in Lower Egypt is often described in a way of what was in Upper Egypt is now also in Lower Egypt (Friedman 1994: 919) but this obfuscates the dynamics going on in the whole Nile Valley at this period; as the way of life in Upper Egypt also changed significantly during the Naqada IIB-C phase (Friedman 1994: 862-863). This period should probably be seen as a dynamic phase of intensive interaction between neighbouring communities throughout the Nile Delta and Valley, although each with their regional adaptations. Technological advances during the Naqada IIB-C phase created new, better, faster ways of producing goods used in daily and ritual life, and this knowledge spread through the neighbouring communities, emulating the new ways of their neighbours. This process of cultural acculturation is the transference of ideas, beliefs, traditions and sometimes artefacts by long-term, personal contact and interaction between communities or societies which sees the adoption of a different materiality through assimilation by prolonged contact (Darvill 2002: 2). This diffusion or spread of ideas, material items, or cultural traits from one culture or society to another does not necessarily imply a movement of people, for the aforementioned can move through trade and other forms of contact (Darvill 2002: 121). Acculturation may also be the result of emulation, which is a theoretical framework to explain cultural transmission and cultural change tracing the rise and decline in popularity of styles, forms, functions and fabrics; emulation patterns can illuminate the social dynamics in which they are at work (Cannon 1987; Miller 1982; Shennan 1996: 283). Emulation can take the form of copying of material styles and forms by cultures with 'inferior' styles and forms. In periods when Egyptian society expanded, the faster these changes occurred, opening the way to more effective changes on their material world including faster rates of emulation (Cannon 1987).

This acculturation process is observed at several settlement sites in Lower Egypt: Tell el-Farkha; Tell Ibrahim Awad; Tell el-Iswid South; and Buto (Tell el-Fara'in) (Hendrickx & van den Brink 2002: 370-371), where a transitional layer or layers is visible in the archaeological record indicating a gradual change-over from one (Maadian) cultural unit to another (Naqadian) unit. Instead of a clear break, which would suggest other dynamics at play, the progressive admixing of materiality suggests a gradual transference of traditions, ideas and

objects through interaction. Our knowledge of the mortuary development in Lower Egypt is still very sketchy, with few cemetery sites having been extensively investigated and published. To date, no indisputable mortuary information is available that shows the gradual cultural transition indicated from settlement sites.

At four cemetery sites; Minshat Abu Omar (MAO); Kom el-Khilgan (KeK); Sedment and el-Harageh (Hendrickx & van den Brink 2002: 348-352), indications of the cultural change-over seem to be present, whereas at a third cemetery site; Tell el-Farkha (TeF), such indications can be expected. At the cemetery site of Kafr Hassan Dawood (KHD) (Hassan et al. 2003), indications of Naqada II phase occupation are present but no indications of material of the Maadian unit have been found. At MAO, the first cemetery extensively excavated in Lower Egypt (as such comparisons were primarily made with Upper Egyptian cemeteries), initial analysis indicated that all burials dated to the Naqadian unit, from Naqada IIC-D phase onwards (Kroeper & Wildung 1996; 2000). However, the recent re-analysis by Köhler (in press) indicates that in the earliest phase cultural traits of the Maadian unit are visible. As almost the entire cemetery was investigated, it can be excluded that there were earlier burials (predating the Naqada IIC-D phase) dated to the Maadian unit. The likelihood of such early burials seems to be validated by the presence of early settlement occupation on the tell, however, the dating of the earliest occupation layer is difficult as only non-diagnostic sherds of indefinable form were found, which led to a general dating of the Neolithic Period (Krzyżaniak 1992; 1993), possibly connected to the Merimidian and Maadian Periods. It therefore seems that the cemetery with Naqadian unit burials, albeit with a small amount of Maadian traits, was spatially separated from an earlier cemetery with Maadian unit burials (of which no trace was found on the extant tell at MAO).

At KeK a cemetery is in the process of excavation with Maadian unit burials, the earliest of which date to the Wadi Digla phase II and the later to the Naqada IIC-D phase (Midant-Reynes in press). In the later phase there is a small amount of Naqadian unit material. Some, although not all, of these burials are cut by later Naqadian unit graves of the Naqada IIIA-C/D phase, possibly indicating reuse of the cemetery. Although the relationship between these latter phases is still unclear, and as such no definitive statement can be made, the ongoing excavations may elucidate if there is a break in mortuary practices at KeK (Tristant & De Dapper in press). If indeed the cultural change-over occurred during the Naqada IIC-D phase, when at MAO already Naqadian unit burials are present (albeit with Maadian traits), then it seems that this specific cemetery shows a time-lag in relation to the change-over at settlements and with the MAO cemetery. It should be noted that the KeK cemetery is quite small and does not

belong to a high status community. Interestingly, during the Naqada III phase, the low-middle status cemetery at KeK seems to be connected with an, as yet, uninvestigated site on a large gezira across the ancient river branch and possibly also associated with the high status cemetery at Tell es-Samara. No settlement remains dated to either the Naqada III phase or Maadian unit phase have so far been located on the KeK gezira where the cemetery is located.

At Sedment (Faiyum region), a similar situation exists with the Maadian unit cemetery and nearby but spatially separated cemetery with Naqada III phase burials. Whereas at el-Harageh a small cemetery with Maadian unit burials (Cemetery D-S) exists with Naqadian unit Cemetery H burials dated to the Naqada IIC-D phase. It is, however, unclear, if the Maadian unit cemetery is actually a cemetery, as only circular pits containing objects, but no traces of human remains were found, this led Williams (1982) to suggest that this was a barter place similar to ones found in Nubia. The cemeteries at el-Harageh should show indications of the change-over, and it is therefore essential that the material from this site is reanalysed. At the site of Abusir el-Malek there is a high percentage of black-polished vessels (Adams & Ciałowicz 1997: 19), possibly indicating the presence of a Maadian unit component, though again this cemetery needs to be reanalysed. In this regard, the on-going reanalysis of the cemetery remains at Gerza, which are also dated to the Naqada IIC-D phase, will hopefully provide new information (Stevenson in press).

At TeF, where the settlement shows continuity between the Maadian unit and the Naqadian unit, indicating a gradual acculturation, the cemetery may also be expected to reflect this dynamic (Chłodnicki 2004). The associated cemetery has not been fully excavated, and the earliest graves excavated so far date to the Naqada III phase. The on-going investigation at TeF will hopefully provide incontrovertible evidence of the dynamics at play during this period of acculturation.

The gradual change in materiality as shown in settlement sites argues against large-scale demic-diffusion, whereby people from Upper Egypt migrated to Lower Egypt and displaced the indigenous Delta population. The tendency of spatial separation between the Maadian unit and Naqadian unit cemeteries at certain sites, however, does point at a cultural, and possibly an ethnic, break between those interred in the separate cemeteries. As already stressed, more information is needed, not only from on-going excavations but also from known, but poorly published sites though re-investigation of the material found there.

Similar to the situation in Lower Egypt, the cultural change-over from the Abkan unit to the Nubian A unit in northern Lower Nubia shows evidence of continuation of settlement occupation within the same settlement whereas the cemeteries, each with distinct cultural burials are spatially separated. At east

Aksha, three sites provide a rare glimpse into the cultural development as both the settlement and cemetery context of a community during the change-over has been investigated here. Settlement Nag' el-Gezira 303 has two occupation layers, the lower one dated to the Abkan unit and the upper one to the Nubian A3 phase whereas cemetery Nag' el-Gezira 321 has at least eight graves and several disturbed pits, all graves are dated to the Abkan unit and cemetery Nag' el-Gezira 298 has 18 burials dated to the Nubian A2-3 phases (Nordström 1972: 140-51). The settlement seems to show a continuous occupation from the late Neolithic Abkan cultural unit to the Nubian A unit: A3 phase, and about 1 km south of the settlement two cemeteries, one with burials dated to the Abkan unit and the other one with burials dated to the Nubian A2-3 phases. The absence of Nubian A1 phase material in both the settlement and the cemetery is not unexpected as the Abkan unit in the north of northern Lower Nubia is partially contemporary with the Nubian A1 phase in the southern part of northern Lower Nubia. The lower layer of the settlement is dated to the Abkan unit while the upper layer is dated to the Nubian A3 phase; the associated cemetery has material dated to the Nubian A2 phase, so it seems likely that Nubian A2 phase material was also present at the settlement. There is about 500 m between the cemeteries and no evidence that they form one large cemetery, so either social or environmental reasons determined the change of burial location whereas the settlement location remained stable. Based on the available information, the cultural development of this community in northern Lower Nubia also points at cultural emulation.

Detailed analysis of the archaeological data makes it possible to detect how the process of acculturation / emulation in both Egypt and Nubia occurred; the use of stable isotope analysis and DNA studies may be able to answer the questions relating to the continuation of family ties in a cemetery context (see above). Whereas, further diachronic analysis of the styles, forms, fabrics and functions of the material assemblage, particularly at sites with transitional phases, may also help to understand the causes of this change in materiality. However, it is essential that the excavation of material is done using strict stratigraphic control, so that the exact provenience of the material is recorded and establish sequence and event, the best system to enable this is single context recording => Satz???? (see Tassie in press b; in press c; Tassie & Owens in press).

Issues in the Archaeology of Early Egypt and Nubia

Many regions of Egypt and Nubia have been extensively surveyed, locating not only early sites but the whole diachronic range of archaeological sites. The northeast Faiyum (Caton-Thompson & Gardner 1934; Puglisi 1967; Wendorf & Schild 1976), Delta (Bietak 1975; Brewer et al. 1996; van den Brink 1988; van den Brink et al. 1986; Chlodnicki et al. 1998; Coulson 1988; Holladay

et al. 1982; Spencer & Spencer 2000; Wunderlich 1988), and the area around the Second and Fourth Cataracts (Adams 1961; 1962; 1964; Emery 1930; 1931; 1981; Firth 1912; 1915; 1927; Nordström 1972; Reisner 1910a; 1910b; Säve-Söderbergh 1962; 1963; 1964; 1968; 1997; Smith 1962; Tassie 2005) have been the focus of large pedestrian surveys. However, there are still areas that have barely been investigated, such as the area to the northwest of Lake Qarun in the Faiyum, where further Epi-Palaeolithic and Neolithic sites are most probably located, complementing those to the northeast of the lake. The area between Gebel es-Silsila and the First Cataract, the Kom Ombo Plain (the narrow valley and wadi mouths), which was an important border-zone between two cultural complexes and competing polities has also received little investigation, apart from the site of Fatira. The new British Museum - University of Milan Survey (Gatto 2005) is an important step in the full-scale pedestrian surveying of this region of southern Upper Egypt, and will no doubt lead to a better insight into the Nubian-Egyptian interaction in this important border-zone. The location of early sites in the West and Central Delta and Middle Egypt is still required. The present view of settlement patterning for Egypt and Nubia is still largely an artefact of reconnaissance survey. In Egypt and Nubia nationwide surveys need to be instigated and the recent Egyptian-Sudanese protocol on antiquities needs to be widened to cooperation on archaeological methods. This survey of Northeast Africa could take the form of a mosaic of regional surveys under the auspice of a steering committee, with the cooperation of the international community. The use of satellite imagery could help pinpoint areas for large-scale pedestrian survey. Surface collection alone is not enough to locate deeply buried early sites, sub-soil detection techniques also need to be implemented. This information then needs to be stored in local and national sites and monuments records (SMRs) and made available to researchers to interrogate (Tassie in press d).

The call by Nordström (1998) to widen and improve the research on the Nubian A unit is being answered by such researchers as Gatto, Rampersad, Takamiya and others who have analysed the Nubian A unit or important aspects of it. Research, however, is only as good as the quality and quantity of the data so the more data there are at the researcher's disposal the better. Notwithstanding the admirable job Nordström has done in publishing archaeological data (Nordström 1972) and strong research (Nordström 1996, 1998), his own field-work, the survey conducted by the Sudan Archaeological Service⁵, is still only

⁵ See Sudan Archaeological Service / SAS preliminary reports by Adams 1961, 1962, 1964; Adams & Nordström 1963; Mills 1965; 1968; Mills & Nordström 1966; Nordström 1962; Verwers 1961; 1962. Dr. Adams has recently published final reports on the SAS survey on periods post-dating the prehistory, it is hoped the sites with Nubian A material found will soon be published.

available in preliminary reports. The publication on the Scandinavian Joint Expedition / SJE fieldwork in relation to early sites is one of the cornerstones of research on the Nubian A unit (Nordström 1972), but it should not be unique for being one of the few published final reports of fieldwork carried out during the UNESCO Nubian Rescue Project. It is hoped that Nordström will complete the writing up of his fieldwork in a further monographs and papers so that researchers have more sources of information to work with (contrary to preliminary reports which frequently lead to more questions than answers!). Also, it has to be stated that researchers who take up the job of publishing other's work, however admirable, often do not have the full array of knowledge at their disposal that the actual fieldworkers had, and as such it is always preferable that the actual fieldworkers are involved in writing the final report. And writing the final reports is nothing if not urgent, because as Säve-Söderbergh (1997: 24) so eloquently put it with '*before all those who worked in the field have passed away*', time is running out for those who have a detailed knowledge of what was found and how it was found. That knowledge needs to be put on to paper so it can be used by the current pool of researchers for its '*paramount important synthesis of the cultural, socio-economic and political history*' is empowered by this information (Säve-Söderbergh 1997: 22).

As pointed out above, a better geographical, chronological understanding of the Nubian A3 phase and the period directly after it is needed in both the core area of Lower Nubia and the Batn el-Haggar area, as well as in the surrounding deserts. This is not only required for a better understanding of the situation in Lower Nubia, especially the Batn el-Haggar area, but also to get a better insight into the interaction between the Nubian A unit and the Pre-Kerma phase of Upper Nubia. At this time, every site with material of the Nubian A unit in Upper Nubia is classified as Nubian A3 phase, whereas there is a strong possibility that the sites are to be dated to the period after the Nubian A3 phase. The same applies to northern Lower Egypt, Saras region where besides Nubian A2-3 phase occupation, later occupation is likely to exist which might resemble the Nubian A3 phase material remains. To assess this situation, detailed publication of what has been found at sites is needed; especially the results of excavations in northern Lower Egypt. Also it is very likely that information about and possible even artefacts from unknown sites with early Nubian material found during the Aswan Dam Rescue Project are stored in archives, waiting for fuller investigation.

Concluding Remarks: the Future of Archaeological Investigation

The establishment of the Dymaczewo Conferences at Poznań in Poland as a forum for research into prehistoric Northeast Africa has facilitated both progress and growth in this area of investigation as illustrated by the establishment of the Origines Conference (at Krakow in 2002 and Toulouse in 2005),

which focuses on state formation processes in Egypt. These meetings of prehistorians, archaeologists and other scholars provide good forums for discussing many of the current issues concerning the investigation of early Northeast Africa. Therefore, within these forums the leading scholars need to devote special workshops to agreeing on terminology to clarify certain issues. Terms such as Neolithic, Early Bronze Age, Predynastic, Protodynastic, Naqada Culture and Dynasty '0' are being used indiscriminately in publications, neither is there agreement on the terminology for the different stages of state (see van Wetering in prep. a for arguments to discard the Dynasty '0', '00' and '-1' terminology). A particular area that is showing promising signs of advancing our understanding of early state economics and trade is the research into early writing and iconography. Although reading the potmarks on Naqada III ceramic vessels is not presently possible, the current research being conducted by Breand (in press), Jucha (in press) and Tassie et al. (in press) is promising to advance the initial work by van den Brink (1992) and Kroeper (2000). The work of Kahl (1994, 2001a; 2001b), Kahl et al. (2002, 2003a; 2003b), Regulski (in press) is running parallel to these studies on pre-formal writing and may in a few years lead to the full decipherment of these early hieroglyphic writings. The workshop on potmarks, which is to present and discuss its findings at the next *Origines* Conference due to take place in London in 2008 has brought together specialists from different disciplines, is a step in the right direction (Tassie 2005). The informal discussion held at Krakow and to a lesser extent at Toulouse between the participants need to be formalised in workshops on specific topics of which the result can be presented at future *Origines* and *Dymaczewo* Conferences.

Egyptology has been criticised for not fully embracing mainstream archaeological methodology and analysis, or as Christian Guksch puts it '... in Egyptology an isolationist position [is detectable] with regard to results and models . . . from other sciences and a shying away from synthetic statements as if Egyptologists share the ancient Egyptian's fear to travel beyond the realm and to die on foreign soil' (1992: 10). Whereas this statement eloquently reflects the state of affairs for Egyptology as a whole, the research on early Egypt and Nubia has had many brilliant researchers, such as Michael Hoffman, Fekri Hassan and Lech Krzyżaniak who led the way in the 1970s and applied current theoretical interpretation to their work. Although Wengrow (2006) still criticises the lack of theory used in the archaeology of Northeast Africa, the situation is now very different thanks to these pioneers. Many young scholars have been trained in the use of mainstream archaeological methods, theory and practice, with a distinct division arising between them and those classically trained in history and philology. More universities need to offer courses in Egyptian and Nubian archaeology, and within Egypt and the Sudan academies need to be established to teach cutting edge archaeology and heritage management at postgraduate level. It

is essential if the discipline of archaeology is to progress in Northeast Africa that both foreign and young Egyptian and Sudanese archaeologists cooperate and disseminate knowledge in the application of modern field, analytical and interpretive techniques.

This paper has shown the potential ways in which the study of early Northeast Africa can progress, highlighting areas that need further research, and field techniques that can be implemented. The loss of Lech Krzyżaniak will be felt but hopefully those he trained will continue and together with those already working in the field and those starting their studies, the study of this region of Africa will move forward and contribute much to mainstream archaeological method, theory and practice.

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