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La chronologie relative de la Basse Vallée du Nil jusqu'au 3<sup>e</sup> millénaire BC  
(coord. E.C. Köhler)

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# Introduction

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For the Origins 3 Conference in London 2008 Stan Hendrickx initiated the Chronology Workgroup, where significant issues arising from new research on early Egyptian relative chronology were to be discussed (Hendrickx 2011). It was then decided that the time had come for the topic to be reviewed more comprehensively. In order to make a start on that task a team of experts was subsequently formed to determine just where we stand today, what has been achieved already and, more importantly, what needed to be done in the future. Some of the individual results of this review are being presented in this volume.

Numerous studies have been conducted for over 100 years that deal with the question of chronology in Egyptian archaeology and especially with the chronological frameworks that apply to later Egyptian prehistory and the early historical or Early Dynastic Period<sup>2</sup>. Summaries of these have recently been presented in some detail by Hendrickx and others (1996; 1999; 2006; Rowland 2008), and need not be reiterated here. What needs to be addressed, though, is the fact that all of these relative dating frameworks essentially rely on Flinders Petrie's initial work at Diospolis Parva in 1898 (Petrie 1899), despite there being 'fundamental problems' of a methodical as well as conceptual nature with this work. A number of attempts to correct these short-comings have subsequently been made, for example, by using horizontal stratigraphy to check Petrie's seriation of grave assemblages or by employing computer aided statistical approaches to enlarge the sample database and to increase statistical depth and accuracy. However, these studies have tended to focus on cemetery data, which employed only a small number of suitable grave assemblages, deriving from old excavations conducted in the late 19<sup>th</sup> and early decades of the 20<sup>th</sup> century. These excavations often uncovered large parts of cemetery area in little time and with little scientific control. Often, supervision was performed by inexperienced assistants who commanded large numbers of workmen. Only a small percentage of assemblages, i.e. mainly those that contained interesting or larger quantities of artifacts, were selected for publication and analysis. A vast quantity of data never made it into the published records, which already caused Caton-Thompson to complain in 1928: "*As we stand at present very little profitable information in this respect can be obtained from a study of past publications of Predynastic cemeteries*" (Caton-Thompson 1928: 70). Although many old cemetery excavations, whose finds were taken to various museums and collections, have been published and analyzed in recent times, this new work had to rely on old observations and field diaries, incomplete data among which diagnostic artifacts could not be identified with reliability or were missing. It is therefore obvious that, although it would be unwise to completely ignore it (see for example Hendrickx, this volume), such material is of limited value for modern analysis and interpretation. Modern cemetery and settlement excavations have the potential to correct many of these short-comings, but they also have to face their own problems and it is now opportune to take a fresh look at a number of aspects concerning the relative chronology of early Egypt.

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1. The editor is grateful to the dedication and work the various authors of this volume invested in their contributions. In particular, I wish to express my gratitude to Christian Knoblauch and especially to Jane Smythe for helping with the English language editing and to Stan Hendrickx for providing feedback on this introduction.

2. Confusion about the terminology of the periods under discussion abounds (see also Buchez, this volume). For the purpose of neutrality, this writer will employ the most basic terminological concepts, i.e. Egyptian prehistory comprises all the periods prior to the beginning of the historical period, i.e. the beginning of written records.

### **Relative and absolute dating in modern archaeology**

In modern archaeology, relative and absolute dating normally go hand-in-hand. Relative dating essentially establishes sequences of artifacts, features, sites and cultures and provides a contextual point of reference as to what is earlier and what is later. Absolute dating usually complements relative chronology as it provides a scientific means to test if the observed sequences are valid and to express their duration and relationship in calendar years. Numerous archaeological projects the world over employ both methods in tandem and have been successful in arriving at fairly accurate dating frameworks and synchronizations (see for example Gatto, this volume).

While much progress has been made with regard to relative dating, especially for the prehistoric and early historical periods, Egyptian archaeology has unfortunately been disadvantaged in the area of absolute dating. In the late 1980s, just at the time when Radiocarbon dating as well as other scientific dating methods were becoming more accurate, and thus more employable for archaeology, an Egyptian antiquities law was passed that prohibited the export of archaeological samples from Egypt. For about 30 years it has therefore been impossible to legally export samples for scientific testing. This situation has recently improved with the opening of the Radiocarbon laboratory at the IFAO in Cairo.<sup>3</sup> Before this time, archaeologists had to work with materials that were available in museums and collections already outside Egypt;<sup>4</sup> however, a number of significant problems in this strategy of using old samples have been identified. Firstly, samples may have been contaminated due to storage conditions and old conservation methods that potentially caused exposure to modern carbon or any other agents that could alter the test results. Secondly, and more importantly, the precise contextual background of many old samples cannot be established with certainty due to the early date of excavation and the lack of scientific control. Furthermore, even if such contextual information is available, it is still not certain if the sample derives from a sealed context or not. What an archaeologist of the early 20<sup>th</sup> century would happily describe as an ‘intact burial’ often only appears undisturbed, especially when the skeletal remains of the occupant seem in their correct anatomical position. However, not readily observable natural and cultural formation processes (see below) may have been in action that could potentially have impacted upon the samples, especially when the aforementioned excavation conditions applied. It is imperative for modern-day dating of archaeological materials that samples being subjected to scientific analysis derive either from an uncontaminated, sealed or primary context, or if these conditions are not given, from well-documented secondary contexts, where sufficient archaeological and environmental information is provided in order to later evaluate the test results (see also the criteria defined by Waterbolk 1971). Any factors that may affect the reliability of a sample must be documented during excavation and taken into consideration. Bearing in mind that even modern excavations sometimes fail to identify such factors, the limitations presented by old data pose serious systemic problems for their modern utilization.

### **Taphonomy, diagenesis and the preservation of contexts**

Apart from the simple differentiation between primary and secondary contexts, modern archaeologists distinguish between natural and cultural formation processes. These processes have an impact on the taphonomy or diagenesis<sup>5</sup> of archaeological evidence and potentially alter the information derived from the context of ecofacts, artifacts, assemblages and sites. They not only present themselves to the modern excavator, but most probably did so to 19<sup>th</sup> and 20<sup>th</sup> century excavators as well, but were rarely observed or acknowledged.

3. The presence of one laboratory in Egypt, however, does not solve the problem entirely, because several control tests of the same sample ought to be run by different laboratories for cross-checking.

4. Various scientific dating projects have been successfully conducted; for example the Leverhulme Trust Project “Synchronising Absolute Scientific Dating and the Egyptian Historical Chronology” established at Oxford University, cf. Ramsey *et al.* 2010.

5. The terms taphonomy and diagenesis have been developed for the study of geology, ancient organisms and fossils, but are now being increasingly adopted in modern archaeology for any processes and changes occurring as a result of deposition.

The naturally dry environment in large parts of modern Egypt has caused relatively favorable conditions resulting in a high degree of organic preservation and little post-depositional displacement; however, the excavator in Egypt must also be aware of a variety of other natural factors, which may apply especially at sites in the floodplain, the Delta, low desert or *wadis*. These are, for example, inundation as well as exposure to ground water that can affect absolute dating, as water-logging can change the isotopic composition of samples. Other natural formation processes, such as heavy rains, flash floods, river action, erosion, scavenging animals and rodents may also have altered the initial context of deposition in ways that are often not appreciated by the inexperienced observer, especially in the early days of Egyptian archaeology. Thus, it is essential that the precise depositional context, including soil matrix and sedimentation, is described and recorded during excavation in order to fully understand the nature of the context. Where this has not happened, it is impossible to be certain of the context's precise depositional history and reliability or of a sample's diagenesis.

Cultural formation processes are particularly pertinent in Egypt and apply to both modern as well as ancient processes, especially considering that many sites were continuously occupied for thousands of years. They include re-deposition as a result of physical alteration of deposits (e.g. ancient or modern *sebbakh* activities) and mixture of contexts (e.g. where occupation shifts spatially and houses are built over graves or vice-versa). Particularly in cemeteries, the taphonomy of assemblages can be affected by secondary (systemic) burials, (non-systemic) re-use of tombs and tomb robbing (Polz 1987; see Köhler, Smythe & Hood, this volume).

These factors have rarely been considered by early archaeologists. And yet, their results are the backbone of current chronological frameworks. By always using the same old site reports and typologies, modern archaeologists who have engaged in re-analysis of old cemetery data and excavation registers have unwillingly perpetuated those fundamentally inherent problems.

If we take the Petrie classifications with 1700 or so types in his corpus of prehistoric pottery as an example, very little is known about: a) the depositional history of the vessel that formed the proto-type for this type of pottery; and b) the depositional history of the subsequently recorded vessels that apparently belong to the same type and that then feature in the finds registers (apart from the many problems of a more typological nature).

### Typology and seriation

The typological method, developed by the early 20<sup>th</sup> century Swedish archaeologist Oscar Montelius (Schoch 1997), has been successfully applied in Egyptian archaeology. Notably, it allowed Petrie to discover the relationship between, at first glance, totally different types of ceramic vessels, such as large, globular vessels with two wavy ledge handles usually made of Marl clay and small, plain beakers of cylindrical shape usually made of Nile Silt. That these two are indeed related by typology, and that this typological sequence provides the backbone for relative dating spanning not only some 600 years, but also the transition from the prehistoric to the historical period, is one of the first things every student of archaeology can understand. However, what should be remembered is that, while typology can be a very useful tool for relative dating, its direct significance does not lie so much within the development of certain rim shapes or other details, but in the typological development of whole assemblages of multiple types of objects over time. In order to capture these changes in statistically significant and therefore large samples, modern archaeology can make use of a number of statistical methods and computer applications that are specially designed for archaeology.

Seriation and correspondence analysis are among those methods. They have been employed more or less successfully for the purpose of archaeological dating in Egypt and in essence go back to Petrie's day. After his early attempts resulting in the Sequence Dates, and subsequent refinement of the technique by various scholars, multivariate contextual seriation and correspondence analysis have proven the most appropriate and standard method for dating artifact groups and contexts. It is also necessary and opportune to employ frequency seriation, but this



has proven to be more difficult due to the large quantity of material that the Egyptian archaeologist is often confronted with during the primary documentation phase. Another restricting factor in the application of these methods is the fact that the many excavation projects currently working in Egypt employ many different recording and classification methods, some using Petrie's types, others typologies of their own, and it is very difficult – yet not impossible – to quantify such material for the purpose of frequency seriation.

However, in spite of the advantages that computer-based seriation and correspondence analysis can offer, particularly for the analysis of modern excavation data, there are numerous challenges with the interpretation of such data in prehistoric Egyptian archaeology, especially where the material database derives from cemeteries. Mortuary data bears inherent issues relating to non-chronological factors, such as social differentiation and foreign influence, which have been discussed previously (e.g. Hendrickx 1996: 49-50), but were initially dismissed. However, certain aspects, such as horizontal and vertical social differentiation, economic differences arising from the contrast between centre and periphery as well as regionalism should be seriously considered as factors that may influence the seriation results, but have no chronological bearing. Because many of the attempts at seriation were ultimately used to test the validity of Petrie's Sequence Dates or Kaiser's Naqada *Stufen* chronology, their scope was broad from the outset with the aim to provide a more refined, yet broad chronological framework for the entire Egyptian Nile Valley in prehistoric and early historical times. However, those potentially inherent problems with the nature and interpretation of mortuary data, which are today at the fore of discussion in mortuary archaeology, will need to be addressed in the future.

### Stratigraphy

Thanks to the more intensive exploration of the Nile Delta over the past 30 years, more settlements are being excavated and more stratigraphic information is becoming available that has great potential to test and re-evaluate the results derived from cemetery data. The importance of stratified settlement material was acknowledged by early scholars such as Caton-Thompson, but again, due to the early days of exploration, their full potential was never really explored, as is obvious from the publication of the material from Hemamiya (Caton-Thompson 1928). Various natural and cultural formation processes that affected the deposition of settlement strata make it difficult to distinguish layers and phases, even to the experienced archaeologist of today. Due to the large quantity and complexity of excavated settlement material, analysis of diagnostic artifacts or features is time- and personnel consuming thereby delaying the publication of all data in a satisfactory, objective and, for other researchers, accessible manner. Although some progress has been made to reconcile those two distinct sets of data, i.e. cemetery and settlement, as seen for example in Mączyńska and Jucha and Buechez's papers in this volume, a great deal of work is yet to be done, especially on Upper Egyptian settlements.

It seems to this writer that, in order to arrive at a valid relative chronological framework for early Egypt, it is necessary to operate on three separate levels: the first being at site level where precise site-internal phases are defined on the basis of stratigraphy, modern type classifications and typologies; the second being on the basis of regional comparison, and the third on the basis of interregional comparison and synchronization. For the purpose of the second and third level it is necessary to identify a more broadly applicable framework of typological and chronological markers, *fossiles directeurs*, *Leittypen* or index fossils that can assist in defining more appropriate assemblage horizons. Considering the distance between sites along the Nile Valley and the growing evidence for regionalism, it may not be possible to establish a common chronological framework and terminology for the entire Nile Valley, such as that attempted with the chronology of the Naqada Culture with its many sub-phases, unless very broad (or long) common phases can be accepted.



### Conceptual issues and terminology

Finally, there is the 'thorny issue' of terminology that may actually lie at the core of the problem and that must be addressed. To start with the most radical question at hand: would it be sufficient to only make adjustments to the current chronological system, but maintain the term Naqada Culture for the later part of prehistory and the early historical period? Or to put it simply: is the term Naqada Culture still appropriate?

This problem can only be comprehended in the context of the history of research. In the early days, many archaeologists considered it more 'rewarding' to excavate graves as there was more promise of finding 'interesting' and especially well-preserved artifacts. Uncovering graves in Upper Egypt, where the cemeteries are located in dry, sandy soils, was particularly popular because it did not require much time and effort to achieve this objective. Then came the problem with Petrie's uncertainty with the chronological position of the graves he had uncovered in Upper Egypt, and once that was solved, thousands more graves were excavated because such early material now had its own attractiveness and its excavators readily understood its significance. The period of investigation that followed, and that covered almost the entire 20<sup>th</sup> century, should be understood as a time of cultural taxonomy for the cultures of early Egypt as well as of research into their significance for the origins of Pharaonic Egypt. Precise sequences had to be devised in order to determine the processes and time involved for early Egyptian civilization to develop towards statehood. Following the 19<sup>th</sup> century European tradition, terms such as Tasian, Badarian, Amratian, Gerzean, Semainian and Naqada Culture were articulated, whose foundations almost entirely rested on the basis of about 15000 Upper Egyptian graves, although only a very small percentage of these were actually published and utilized for further analysis. Gradually, the scope of interest moved into areas outside Upper Egypt, especially to the Nile Delta. However, Lower Egypt was largely represented by settlements (such as Fayum A, Merimde Benisalame, Maadi, Buto), which could not be easily integrated into the Upper Egyptian cultures of graves. But it was now essential to understand how these northern sites related to the south and to the process of cultural or political integration. Because these early settlements seemed so different, it was suggested that Lower Egypt therefore had its own culture, the so-called Maadi or Buto-Maadi Culture (von der Way 1993; 1997). It is important to acknowledge, although this is not agreed upon by all, that this perceived contrast between the cultures of Upper and Lower Egypt may have emerged and persisted as a convenient archaeological reflection for the division of Upper and Lower Egypt in Pharaonic state ideology and mythology. Although differences between north and south cannot be denied, it is very possible that this general methodical and conceptual approach may have amplified those differences between the Upper Egyptian culture, best defined by their cemeteries and the Lower Egyptian culture of settlements. Ironically, even though the differences have been emphasized by so many, the chronological framework of the Naqada Culture, which was devised exclusively on the basis of Upper Egyptian graves, has been used to date Lower Egyptian settlement sites. Only the last two decades of the 20<sup>th</sup> century and the years thereafter saw a shift towards a more objective and processual approach to early Egypt that moved away from a history of cultures as the backdrop for socio-political change and historical events.

This modern research has shown, for example, that what used to be understood as the core region of the Naqada Culture from where the process of state formation was thought to have originated, i.e. the sites between the regions of Abydos and Hierakonpolis, should no longer be considered a unitary cultural sphere, but comprised of distinct regional assemblages and polities (summary in Köhler 2008) that also cover different periods of time. In the future, it will therefore be necessary to establish distinct relative chronologies for the Hierakonpolis, Naqada and Abydos regions. Relevant ground work has already been done as the contributions by Friedman (1994) as well as by Hartmann and Buchez, included in this volume, document. It is important to remember that, while the overall characteristics of contemporary sites may be consistent, their individual chronological boundaries could still be quite distinct. The question therefore arises again if it would be appropriate to apply an internal sub-phase

defined on the basis of a small number of graves of one region (e.g. Naqada IIIA2) upon the entire length of the Upper Egyptian Nile Valley. Instead, it may appear to be more opportune to operate with broader chronological units, or horizons, when dealing with a larger area.

This call for a broader chronological framework especially applies when ceramic data are not available, even though the majority of chronological studies rest on the foundation of ceramic typologies, often upon the changes within as well as presence or absence of one single type of vessel, in particular Petrie's Wavy Handled Class. Although attempts have been made to incorporate other diagnostic artifacts (e.g. Petrie 1901; Kaiser 1957), the phases of the Naqada Culture, for example, are in essence ceramic phases. But to what extent do these ceramic phases reflect relative chronology of the entire body of material culture? Other areas of important evidence, such as rock art, relief or statuary, have rarely been found in direct association with diagnostic ceramic types. They can therefore not be dated accordingly and the question arises if the established chronological stages, derived from the ceramic assemblage of (sometimes a handful of) graves, represent valid and all-encompassing chronologies at all. Or, does a change in ceramic style or in the choice of funerary items represent a valid chronological benchmark if there is no other evidence in support?

No one would doubt that Naqada was an important site for the later prehistoric occupation of Upper Egypt. However, since not all phases that are currently defined within the Naqada chronology are represented at this site (e.g. Naqada IIID), its status as a type site, lending its name to the entire Nile Valley, comprised of several regional assemblages and covering a considerable length of time, is highly problematic. This is particularly pertinent, when considering the beginning and the end of the Naqada Culture. For example, Hartmann (this volume) suggested that Cemetery U at Abydos exhibits a phase that appears to be earlier than what had previously been defined as Naqada Ia/IA and that a relationship with the Badarian should be considered. Although the precise nature of this relationship is yet to be examined, the question therefore arises if our chronological classification system should not include the Badarian. A similar problem is presented when considering the other end of the Naqada Culture. It has been noted earlier that its currently defined last phase, Naqada IIID, roughly corresponds with Dynasty 2 in historical terms, but so far, it has not been possible to determine if another phase should be added to the Naqada chronology, be it Naqada IIIE or Naqada IV. A continuation would be justified because the material culture continues without hiatus well into the Old Kingdom and beyond (see Köhler, Smythe and Hood, this volume). How appropriate would this be? Should the Old Kingdom, or consequently any other period subsequent to that, be regarded a continuation of the Naqada Culture?

This writer has recently been using more neutral terms such as Neolithic or Chalcolithic when discussing broad cultural phenomena, yet this also is problematical because: a) they still require a more precise definition, especially when looking at areas that are not very well explored and; b) it is possible that distinct areas developed from one period into another at different times, hence their application for dating is problematic (see also Buchez, this volume). This is currently one of the issues that archaeologists in the Levant are trying to tackle, for example, with the transition from the Chalcolithic to the Early Bronze Age, or for a more precise definition of the Early Bronze Age III in the southern Levant.

The different papers in this volume highlight the potential and, indeed, many positive aspects of the currently available evidence from early Egypt. However, they also raise significant challenges to our understanding of the relative chronology of these important formative periods of Egyptian civilization. If this situation is to be addressed in the future, it will be imperative as a first step to clearly separate the concept of relative chronology of assemblages from notions of the cultural history of the Egyptian Nile Valley. Furthermore, considering the significance and ramifications of some of the issues raised in this volume, modern Egyptian archaeology is ultimately left with two choices: one could accept it all as an inconvenient truth, but leave it as it is, continue to acknowledge that problems exist and allow future generations to judge this decision. Alternatively, have the courage to change, and change radically.

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