A FALSIFIABLE HYPOTHESIS:

SEMASIOGRAPHY IN FOURTH MILLENNIUM B.C. EGYPT

MARTIN UILDRIKS, LEIDEN UNIVERSITY

Keywords: Predynastic Egypt, iconography, C-Ware, D-Ware, writing, semasiography, semiology

ABSTRACT

Dynastic Egyptian society seemingly developed from a stimulating cross-fertilization of the various accumulated Predynastic (ca. 3800 B.C. – 3200 B.C.) communities along its (currently still) principal source of life: the Nile. The various levels of complexity involved in this process receive increasing attention, but too strictly defined scholarly barriers may prohibit a deeper understanding of its various aspects (politics, economics, religion, cognitive developments *et cetera*).

One such aspect is the perception of space and its transference from a three-dimensional plain to a two-dimensional surface which doubtless affected the development of writing. This matter deserves further attention in areas housing highly logographical scripts, especially in light of the attested preceding and contemporaneous three-dimensional writing systems (e.g. tokens and tallies) in relation to their highly graphical and three-dimensionally inspired scripts.

1.1   INTRODUCTION

The fourth millennium B.C. northeast African Nile Valley area saw the accumulation and merging of many individual communities (cf. Bard 2008: 69-120), which must have initiated a migratory process for cognitive data. Rigorous subconscious *and* conscious unpredictable transactions may have taken place (comparable to biological trait-exchange), dynamically and continuously re-shaping Predynastic man's mind-set which resulted in equally unpredictable dynamics.

Although scholars are inclined not to sway from their particular area-studies, it should be remembered that the patchwork of the Predynastic *segregated* communities' large and overlapping cultural complexes extended far beyond the current (and Dynastic confines) of 'Egyptian' geographical space (at Aswan). Hence, Predynastic material culture reflects many *local* 'Preformal' (and individual!) expressions *and* (!) the beginnings of a merging with 'formal' material culture (Kemp 2006: 113ff).

Although this multidimensional palimpsest of international proportions was stored relatively safe in the archæological record, it has now been irreversibly damaged by the early archæologists' inadequate researches which are often either improperly executed or recorded, or their results simply destroyed during intermediary crises. The extreme number of Egyptian Predynastic antiquities which surfaced during these early excavations are likewise destroyed, sold or otherwise untraceable in scientific circles.

Consequently, both large and insignificant museums and other collections are crammed with much Predynastic material – which often lack any information – and are difficult to study due to various reasons, although museums are beginning to understand the value of a scientific evaluation. Difficulties with working in Egypt stimulate a shift of the researcher's focus towards a re-appraisal of the early excavated material and attempting to correct the above outlined theoretical issues to the best of his or her abilities.

However, the theoretical problems also result in methodological consequences for instance in establishing a secure (if at all possible) Predynastic chronology in which local traditions are synchronized. Seriation-sequences initiated by Petrie (cf. Petrie & Mace 1901) are still being refined and elaborated (see also Kantor 1944; Kemp 1982), although Petrie's Sequence Dates (SD) and Kaiser's (1957; 1990) *Stufen* are no longer in use and the periodisation is still given after the type-site of Naqada.[1]

Current experts on seriations emphasize a research focus on the Naqada I and Naqada III periods (Hendrickx 2008), the former (ca. 3800 – 3500 B.C.) as the initial stages of state-formation and the latter (from ca. 3200 onwards) its final stages (see slide 2). However, the current chronologies are far from complete, especially considering that the developments of individual decorations (also on Naqada II ceramics) have not been utilized to their full potential.[2]

The Naqada I decorated ceramics type-artifact is the method (white) and (geometric) style applied to the so-called White Cross-lined Ware (C-Ware), which seemingly mostly originated from southern Middle and Upper Egypt and Lower Sudan. The Naqada II Decorated Ware (D-Ware) appears in Middle Egypt, but is also attested in more northern and southern contexts. Thus, leaving out D-Ware ceramics or its iconography would not result in a better chronological understanding of the unification and adjacent processes, although obviously the decorations may not represent any particular aspect (economy, time etc.).

The decorations under consideration may be categorized as *units* (single strokes that form single instances of a particular graphic) and *constructs*, which are large conglomerations ('constructions') of units. The last of the plant- skin- and galley-constructs characterizes 'elaborate' D-Ware examples which seem to emerge during early Naqada II.

The remainder of this essay will focus on the elaborate D-Ware ceramics' iconography (slide 3-4) which is subject of two MA-theses by the current author: the first studies the Naqada II decoration-complexity (Uildriks in prep.-d), which may allow integration in current ceramic seriations (something similar is yet to be done for C-Ware) and the second deals with the iconography's problematic identifications (Uildriks in prep.-a).

2.1 THE METHODOLOGY OF THE FIRST THESIS

Over the course of time D-Ware iconography has received a great deal of scholarly attention, unfortunately resulting in not very tenable conclusions. The loss of information and specimens has caused a situation where scholars are momentarily uncertain of how many D-Ware vessels have been uncovered, by whom and where, and where the specimens went. Over the last hundred years two articles and one volume were dedicated to cataloguing the D-Ware vessels, all three unfortunately not very eligible for further study.

Newberry's (1913) alleged total of 159 specimens may be brought down to 149 unique specimens[3] (not 151 as Aksamit 2006: 558 claims) by removing duplicates of documented examples. Newberry (1929) claims 170 unique specimens in 1928, but did not publish his data thus the number cannot be checked. Aksamit (2006) enumerates 271 vessels and presents a more reliable situation without duplicates. However, she excludes 72 specimens which were incorporated in Graff's (2009) catalogue.

Graff (2009) enumerates only 240 unique examples (lacking a minimum of another 159 specimens) in her ambitious and somewhat controversial work when 14 duplicate D-Ware entries, C-Ware examples and various loose sherds are excluded. Newberry (1913; 1929) and Aksamit (2006) recorded the specimens by listing the standards (the ⌐-units) on the galley-construct. When comparing earlier lists (Aksamit 1981; 2006; De Morgan 1897; Foucart 1905; Graff 2009; Newberry 1913) it seems these lists lack the finesse of properly distinguishing ⌐-units resulting in various phantom-types and non-existing specimens.

In addition the lists do not provide any other information than a possible whereabouts, their publications and the ⌐-units' types. Graff's (2009) catalogue does contain additional code-referenced information, albeit presented in a problematic manner: the iconographical variation is improperly distinguished, the descriptions are often wrong (a mismatching or no registration-number, faulty dimensions etc.) and the bibliography is incomplete or mismatching.

Needless to say, these parameters obstruct the proper study of these valuable items and necessitated the compilation of a more reliable list by synchronizing the earlier three lists and supplementing them by the available literature and browsing the internet (cf. Uildriks in prep.-b). The objects may be more properly described by useful and reliable drawings and photographs (if published they are often too dark or low-quality), which then enables a revision of Graff (2009) her typology.

However, a systematic study needs also to consider the location of the iconography on the jars, and thus a Prototypical grid-system which functions by horizontal layering (Horizons A-G) and vertical layering (number of Acts) may be applied. The D-Ware iconographic contents can then be recorded, and – similar as Middle or Classical Egyptian hieroglyphs in Gardiner's (1957) indexation – considering various main- and sub-types.

Horizons A, B and G (bottom and top of the jars) contain eight geometric patterns that might be applied to the edges of the decorative surface (base or top of the jars or handles): spirals, wavy-lines, plain lines, wavy-lined circles (with or without a central line), cross (plain-lined or wavy-lined), short perpendicular (plain or wavy-lined) strokes, hatched patterns, thick bands of slip and rows of chevrons. Horizon C contains both (or either) the plant- and skin-constructs. Horizons D and F are located in between horizons B and G and contain figural patterns: small S-shaped figures, interlocked strokes, a bulgy triangular object, 'plant'-motifs, animals and human figures. Horizon E is placed in between horizons D and F and contains the galley- and ship-constructs.

All the coded data may be inserted into database-software such as Excel which may then run queries to expose relationships between the various units, constructs, scenes, and across vessels and their types. However, to enable comparison of iconographic content (and complexity) across the various vessel-types, the used surface needs to be correlated to the available surface. Therefore (against ethnographic arguments) the carriers of the iconographic contents are classified by handle-type (as handled determines function and function determines necessity of decoration) and then by size.

This results in six main Shape-types: lug-handled (S1), wavy-handled (S2), lug- and wavy-handled (S3), beak-handled (S4), fancy-handled vessels (S5) and vessels without handles (S6). Several sub-varieties are distinguished by their dimensions. The presence/absence of certain horizons provides a relative index of the used surface (expressed as the D-class): the absence of horizon B is indicated as D1b, while the absence of horizons B- and C is given as D2b|c.

The complexity of the units (and thus constructs) may be assessed by simply counting the number of strokes used in creating each unit. This arduous method is particularly suitable for the galley-constructs. The galley-construct consists of five units: ¡-, ○-, ⁊)-, ⌂- and ⅂, of which the ¡-unit would seem the least susceptible to semiological interference (i.e. this unit may have possessed the least meaning). It will thus be most appropriate to serve as a 'neutral' index to which the counting of the remaining units may be compared.

Consequently, the remaining iconography on the same vessel may be correlated to the same index and a certain degree of complexity (in relation to particular iconographic elements) may be suggested. In theory this may result in a somewhat absolute, but still very relative iconographic outline, although currently there is no further evidence to suggest what the variable characteristics of the vessels or decorations represent (time, social or economic factors etc.). An immediate problem that arises is to determine whether iconography belongs to the horizons and acts or with other iconographic contents.

2.2   THE RESULTS OF THE FIRST THESIS

Thus far the research has shown that the D-Ware iconography may not be constant, meaning that the initial representations and accompanying semiology may in fact have differed very much from their successors. It should be kept in mind that the degree of complexity does not reflect (if at all) a direct sole chronological development. Kemp (1975) has convincingly argued that the paths of chronological development may be affected by social, economical and political circumstances and other conditions on a 'local' and 'individual' scale – however big or small these scales may be – and that they may vary per each item.

3.1   THE METHODOLOGY OF THE SECOND THESIS

The D-Ware iconography's initial scientific 19th Century exploration attempted to identify the units, but this has proven quite troublesome. Many highly controversial identifications arose over the last centuries leading to many incredible and unconvincing suggestions; individual interpretations per unit and construct are outlined in the second chapter of the second thesis, but suffice it to say that two influential ideas were presented. The iconography either shows:

  (1) an aquatic setting with some ideological or ideational realistic (Van Walsem 2005: 33-38) or otherwise unexplainable features, or

  (2) some terrestrial fortification of either religious or secular significance.

However, an analysis and evaluation of all arguments for and against the identifications of individual units has shown that only very few arguments hold any truth:

  1. No acceptable direct archæological, iconographical or textual analogies have been presented to explain the iconography. One suggestion of a burial-skin for the skin-construct may be considered.

  2. The iconography is rare (ca. 400 examples over tens of thousands excavated graves) and applied to ceramics that are mostly found in mortuary contexts. This preference may be skewed by the few archæologically explored settlement-contexts, but, although this number is increasing, the number of D-Ware vessels originating from settlements, is not. The iconography does not show any preference for other material culture.

3. An ideological representation seems more plausible than a secular *kôm* or other subsistence ideal, and some of the graphics may have held a symbolic value, rather than an obvious functional application.

Additionally, aquatic- and plant-life is only combined with the unusual *ship*-constructs, which are noticeably different from the galley-construct.[4] The depicted fauna likely represents land-animals and there is no archæological *or* textual evidence that would support the existence or the possibility of Nile-navigation with wooden ships of the represented magnitude.

In light of the early 20th Century's *Zeitgeist* much evidence was neglected in the identification-processes, as are of course recent archæological discoveries and epistemological and linguistic theoretical developments. The second thesis explores these two angles by reviewing the archæological and palæographical evidence and the systematic clustering of some D-Ware iconography signs.

3.2   THE RESULTS OF THE SECOND THESIS

The uncovered remains of the early Naqada II exceptionally large (ca. 9 x 16 m) Tomb 23 in the southern Egyptian Hierakonpolitan cemetery of Locality 6 (slides 5-7) revealed an interesting superstructure. The tomb was possibly built over an older tomb (Friedman 2005, 41) and part of a larger complex (Friedman 2008a, 45; Friedman 2008b). It had an exterior post-fence, an inner wall-structure, remnants of two wood-built constructions (*acacia*) and animal-remains of ibex and ram. No D-Ware was found within the tomb, which suggests that D-Ware may not have been an exclusive upper-class grave-ware.

The entrance to the complex was aimed at the nearby (but possibly unrelated) settlement. According to Adams (1995: 48) a surveyor's socket may have been located higher up near the later nearby Tomb 1. A view from this position would have provided an overhead view, although it is unknown why such a perspective may have been chosen and how it would relate to the more simplistic renderings in use during the Dynastic period.

3.3   SEMASIOGRAPHY IN FOURTH MILLENNIUM B.C. EGYPT

The D-Ware iconography's units may be explained from an archæological point of view:
- the galley-construct's ¡-unit may have represented the palisade and the ⌂-unit (as well as that in the plant-construct) the portable wood- and/or wickerwork-architecture;
- the skin-construct may relate to matting and the skins in which the dead were wrapped as have been found at for instance Badari (cf. Brunton & Caton-Thompson 1928: plates 5-8).

However, the ○-, 〵)- and ⏋-units remain improperly explained. The nature of, and relations between, the human and animal figures are equally obscure, but their explanation is more likely to be sought in the mortuary domain. Animal-units (in particular gazelle, ibex, ram and other quadrupeds) are often combined with human figures with large curved utensils. Large and elaborate cutting-utensils have been recovered from many archæological excavations.

Clear archæological equivalents for the ○-, 〵)- and ⏋-units are absent and their functional explanations are unconvincing. Shamanism, anthropomorphism, magic and superstition quite likely were active parts of Early Dynastic Egypt (covering the first and second Dynasties) and it may be assumed that these then may also have been an active part of Predynastic Egypt which would thus provide a setting to explain the ○-, 〵)- and ⏋-units.

The ○-units from the galley- and plant-constructs should be treated separately as their renderings and application differ and each have several varieties that do not seem directly related. Three main-types of the ○-unit (two on the galley-construct and one on the plant-construct) may be distinguished. The ⩓-unit is found in the usual D-Ware examples, while the ⫯-unit is more common in unusual D-Ware examples with ship-constructs.

There are no direct archæological analogies for the more common type, although it resembles hieroglyph ⊙ and ⩑ (Gardiner 1957: 485, N5 & 486, N8), both related to the sun. The ⫯-unit may have a direct archæologically attested equivalent found quite frequent in grave-excavations (slide 8). Hendrickx (1991: 42, no. 26) questionably interprets this enigmatic piece as a fish-head amulet, and, although uncertain whether it is a fish or amulet, the usual execution in precious material (ivory, bone) may suggest it would have been used with care.

Therefore, it would not have functioned as an anchor, and, if worn as Hendrickx (*o.c.*) suggested (or otherwise attached), it may have functioned for instance as a charm or amulet which would bestow an unknown power upon its carrier. On the ship-construct this would be like our figurehead.

The galley-construct's 〵)-unit appears in two varieties ($〵)^1$ and $〵)^2$) of which the simpler $〵)^1$ version resembles the Old Kingdom tallying sign *rnp.t* ⌠ (Gardiner 1957, 479-480: M4-7; see also Newberry 1948). Both 〵)-units have clearly different semiology as in some cases they are combined when in other cases they appear single. Their sub-varieties do not seem to show a preference to any other iconographical unit, and may perhaps represent a chronological or other type circumstance.

The simple $〵)^1$-unit appears supplementary in the skin-construct, and single or symmetrically doubled on the plant-construct. Budge (1911), Frazer (1914: 330ff) and Frankfort (1948) suggested a prehistoric 'crop-spirit' origin for Osiris, and however controversial this theory may be, the possibility of rendering Predynastic divine forces with a plant-motif cannot be excluded.

The Dynastic Osiris represented god of life and death, but there is no evidence that suggests the existence of this principal deity in Predynastic Egypt. Therefore, it would stretch too far to call the ꜣ-unit an Osirian representation. His various Dynastic aspects may have been separately represented by various icons and logically a plant may have represented the continuous life-cycle (Uildriks in press).

Attaching the ꜣ[1]-unit to other units might then represent a magic act of bestowing amuletic power of life or death (or both) to the host-unit. A similar suggestion may be made for the plant-construct's ☉-unit which would then transliterate the whole plant-construct from top-to-bottom as '*[sacred][solar][architecture]*'.

Most ꜣ-units lack archæological equivalents and rightly so do not correspond in a one-to-one relationship to textual information as a underlying phonetic principle is suppressed in the D-Ware iconography. These units may be dealt with more properly after clarifying their significance in the development of writing. The following passages are taken from chapter four of the author's second thesis.

———

Reading connects that which is 'read' to that which is 'understood', whereas 'seeing' or 'observing' is mere mental registration of the visual. The 'read' may be defined as *absorbed* graphical data, while the 'understood' is subjective (or suggested) interpretation of *that* data. The exact opposite may be argued for writing.

Writing connects that which is 'written' to that which is understood, whereas 'drawn' or 'painted' is the mere result of expressing the understood (i.e. a form of art). Therefore, the order of the cognitive sequences defines that which is 'written' as disseminated graphical data – which persists for an unknown time-duration – during which at least one other individual (besides the author) has (1) observed, (2) understood and (3) possibly established an (æsthetical) appreciation.

Both the written and art may be differently (1) observed and (3) appreciated, but are undoubtedly differently (2) understood. The written transmits subjective established definite, categorical, certain and clear-cut information which 'speech' (a temporal flow of connected utterances) is meant to express and can easily describe in its entirety. Ideally, *l'art pour l'art* is meaningless, but regardless, art will always transmit subjective cognitive information (such as emotions; cf. Wilson 1988, 177), which speech is not meant to – and could only superficially – describe.

However, art and the written are inseparable from language, as language brings culture and culture carries the understood of both. Both 'art' and the written communicate information, enjoy a leisure value and have an appreciative or understanding observer/reader (contra Powell 2009, 56-58), both are linked to language (contra Rogers 2005, 9) and both may be either conscious or unconscious (contra Diringer 1962, 16).

Art may transcend cultural limitations and requires only superficial initiation in its understood to evoke appreciation, while the written operates by specific agreement on various social levels of the *culturally* initiated; in order to function as writing, its repertoire of symbols should be reasonable to learn and express a multitude of thoughts (Trigger 2004, 45).

Essentially, 'writing' *records* attempts at graphic *communication* that reflect *thoughts*, while art may *record* attempts at graphic *expression* that reflect *thoughts*. Relations between both may be visualized through slide 9 where 'A' represents either pure (unattainable) art or writing and 'C' the (unattainable) opposite of 'A'; 'B' is the intermittent stage where both are ideally equally represented.

By various levels of functionality, the font of this text (Times New Roman) lies somewhere between A and B, while its appreciation in relation to its functionality lies in between B and C. The relatively low efficiency of the hieroglyphic writing system is puts the system closer to B, while its appreciation in relation to its functionality leans towards C. The question is where these two aspects of D-Ware are located and possibly meet.

Many definitions of 'writing' start and end with phoneticism (Gelb 1963; Postgate, Wang & Wilkinson 1995; Dreyer 1998; Kahl 1994; 2001; 2002; 2003a; 2003b; 2004; Morenz 2002; 2005; Bard 2008, 27; Regulski 2007, 2008a; 2008b). Consequently, studies on the Egyptian 'origins' of writing focussed on the origins, introduction and adaptation of *phonetic syntactic structures* to a two-dimensional graphic system. Such writing systems are vocally expressed by speech (glottographic) and function according its principle of connecting a temporal flow of segments (letters, syllables, moræ etc.); therefore, it will here be further referred to as segmental writing.

Art's understood may suggest a second type of writing of which some parts are expressed by speech and other parts are not (many refer to these as proto-writing or sign systems; see Baines 2008, 842-846; see also Baines 1983, 576 on his *decorum*; Gelb 1963 referred to these as mnemonic devices; see also Powell 1981, 421; Trigger 2004, 40) such as Incan knot ropes (Ascher & Ascher 1981; Quilter and Urton 2002), North American Iroquois Wampum colour symbolism (cf. Dubin 1999, 170-171), African Yoruba cowry mussels (Coulmas 1989, 19), plain and complex tokens (Schmandt-Besserat 1989; 1994) and tallies (Vendryès 1948) also more recent applications such as Bliss symbolism (Bliss 1965), modern traffic-signs and similar graphic instructional notices (Rogers 2005, 270).

Obviously such semiological writing systems are culturally and context dependent. For instance in smoking-familiar cultures, the color- and symbol-semiotics of the otherwise 'meaningless' red enclosure with diagonal crossing-out line in 🚭 informs its reader of a logographic smoking-prohibition (contra to Eykerman & Hendrickx 2008 illustrations are not *universally* readable). Proper interpretation of the illustration requires (1) conventional use and understanding of its abstract units (cigarette, stroke, circle, colour etc.) spatial properties (reading direction, orientation etc.) and (2) of its contextual space (cf. Crubézy 2001a; 2001b; see also Senner 1989, 5).

Illustrative of the first is the classic 19th century Cheyenne Indian Letter (slide 10), in which an Algonquian Indian father (Turtle-Following-His-Wife) requests his son (Little Man) to return home and he send along $53,- for the trip (Mallery 1893). At first glance it seems lacking the crucial systematic structure which would allow one universal reading and formulation of a response (Rogers 2005, 3).

However, without a doubt, as other representations such as rock-paintings (cf. Crubézy 2001a; 2001b, 17), it essentially carried one specific original message. Even in our segmental writing system, multi-interpretability of words often generates more readings or responses as result of semantic holism.

The recorded original message also allows reconstruction of its syntax. The two principal figures are rendered as native American. The father's name (1) would be known to his son (2) and *vice versa*, as well as (3) the $53,- enclosed with the letter. The request is indicated by (4) lines issuing from the mouth while its contents is given by (5) a line issuing from the little man near Little Man. For instance, if his father requested to visit, no. 5 would have been inversed and placed near Turtle-Following-His-Wife.

Their position seems to characterize the images individually, while at the same time they are contextualized and related to the other images. In a space-syntactical sense the derived meanings are contextualized within their initially intended context; e.g. slide 10 is presented and thus contextualized as a letter, 🚭 is presented and thus contextualized as a prohibition, 🔥 is presented as a fire exit and thus contextualized as a fire-emergency notice, and traffic-signs are presented (and thus contextualized) as navigational notices; all obviously highly dependent on established culture-specific and born-in (Powell 2002, 64) or also *nurtured* recognition of the colour-symbolism.

This mode of writing may be called semasiography. Semasiography can be limited to domain-specific (e.g. religious, economic etc.) information (Trigger 2004, 44) and – as 🔥 suggests – may be supplemented and specified by a segmental system. Both record attempts at *communication* that reflect thoughts and may thus be called writing (contra to Trigger *o.c.*), but segmental systems provide more in-depth information as they allow combinations of unrelated (abstract or not) images to construct new speech-dependent entities.

Semasiography is expressed in sematograms, which may be combined to create new sematograms. When [Fire Exit ↓] is compared with [Fire Exit →] the arrow (sematogram) specifies two spatially different contexts and thus has two semiologically different meanings – respectively below and right – although both signs still refer to the location of the fire exit.

Other similar prohibitions may be expressed depending on context, such as 'no phones' (⊘),'no camera' and 'no photography' (⊘) etc. The symbols are logo- or ideographic representations that are easily combined, but only allow superficial modification of the meaning (cp. Dynastic Egypt Esna's hymn to Sobek-Re in Wilson 2003, 79).

The two types (segmental and non-segmental) are observed co-existing in (amongst many others) the 6th dynasty stela of *S3.rnn.wt=t* (BM585): one lexigraphic consonantal type expressing a specific offering formula which is quite likely strengthening or specifying (as in the fire exit sign; see Ong 1982, 73-83 & 89-90) the semasiographic non-segmental type which records a banquet.

At the same time the artistic dimension is expressed in (amongst many other things) small unintentional variations of body-curves. The same may be said for Mesoamerican anthropoid glyphs which all show anatomically incorrect body-curvature, but which '*have a charm and grace which is even more important'* (Peet 1915, 88).

The two systems co-existed in Early Dynastic times although the semasiographic type may have been dominant as suggested by the Early Dynastic Narmer palette's iconography. For instance, on the primary face (with the grounding-basin), the horns of the bull in the lower section, may contextually represent a logogram for the noun *wp* 'to open' (cf. Millet 1990, 59). This trend may suggest that prior to the development of a segmental system, which is currently believed to date to tomb U-j, a semasiographic system may have operated in the earlier and slightly contemporary D-Ware iconography.

Knowledge of the underlying language – which enables decipherment of segmental writing systems (Powell 2009, 92) – only provides superficial understanding of a meaning-based writing system. Study of a segmental writing system's complexity, learnability, inventory size (signary according to Coulmas 2003, 36), entropy and efficiency (Köhler 2008, 3) should be approached differently than that of a meaning-based writing system.

D-Ware obviously inherited C-Ware's iconographic systematisation (compare MRAH3002 and UC15339), which clearly functioned according to a set of rules ('conventions'). C-Ware of this decoration-complexity lacks rims, lips and handles which impose three-dimensional conceptual barriers on the graphic designer. In D-Ware these features (rims, lips and handles) may be considered the edges of the pages to which the iconography was applied.

The handles effectively split the circumferential surface for two-dimensional processing (cp. Davis 1982, 11ff) and therefore served a grammatical space-separating function according to which the scenes were constructed (Petrie 1920, 18; Kantor 1974, 231). All handle-types may carry decorations: lug- and beak-handles with varying patterns, fancy-handles and even single lines on the wavy-handles and thus it was attempted to incorporate them in the decoration-scheme, basically bridging the gap between the carrier's space syntactical and iconography's semasiographic dimensions.

[…]

This system of combining images to graphically design new concepts is fundamental to a developed semasiographic writing system and may also confirm the identifications of horizons A, B and G. The D-Ware iconography may thus represent the graphic communication of ideology which is normally reflected in flexed burial positions with the head south, facing east or west, and grave-contents placed in front of the face. As with 🚭, 🟩, 🚭 and 🔴 this may be interpreted as space syntactical contextual information which records the same information – albeit in a different execution for shamanistic or thaumatological communication, indeed from the mythic (Bard 1992, 299) mortuary (Baines 1989, 477) sphere.

———

Questions regarding the development of writing should then lie at when and why did the segmental writing systems develop? The 'how' for the development of segmental writing in Egypt may be answered in the D-Ware iconography which brings us finally to the ד-units. The core of a semiological writing system (the idea) does not allow fragmentation.

For example, imagine the concept of the bank, the institution where monetary transactions are handled, and all its related components. The concept of the bank does not allow itself to be split up in fragments without compromising the integrity of the idea itself: the bank will *remain* the bank. On a material level, the components of the bank do let themselves be fragmented: i.e. a bank-employee is the person working at the bank, the Automated Teller Machine (ATM) is the bank's cash distribution-point.

Parts of each of these two examples may be re-assigned to new contexts altering or possibly creating new meanings to their basic structure depending on their contextualization – the employee becomes a supermarket-employee, the machine-circuitry may be recycled into components for other devices – while the bank remains the institution responsible for monetary affairs; it is not recyclable.

Thus, it is argued that the recycling of units in new contexts creates new meaning and precisely this practice may be visible in prehistoric patterning. For instance, the ↑-unit is also found attached to ⬲-units (ritual fans?) and human figures atop the galley-constructs. Interaction between units (exchanging of properties?) is also observed in TGM6200 where ∤ (Gardiner 1957: 543, Aa26) precedes sˢˢˢˢ. Based on BM36328 it may be assumed that the sˢˢˢˢ in TGM6200 may represent birds, although the same sˢˢˢˢ-units are found 'submerged' (cf. OM44-446) and often in relation to ⬲-units; would they then represent processionalists?

Thus, as in Chinese writing D-Ware iconography may have known parasemantism (Boltz 1986: 426) meaning that similar units may represent different things depending on context. This is equally the basis for the determinatives, semantic classifier used in linguistics to specify phonetics. However, D-Ware iconography contains the grammar of determinatives but not specifically related to phonetics.

Sixty ⌐-units are attested in D-Ware of which 55 are attested in the corpus. Four out of 55 show the combination of two other ⌐-units. The combining of these units may represent the same concept as with the above example of the bank, where the compounded ⌐-units result in the creation of new meaning, i.e. they have segmented meaning.

Surely, it is this moment in time when, to express these new meanings, they must have been assigned a graphically expressed segmented phonetic value in order to be referenced. However, such a similar process may also be assumed for C-Ware or even earlier graphic expressions when compounding of for instance ↑-units with human figures may have resulted in new meanings.

The conclusions of this study would consequently also affect our perception of the development of the later Dynastic segmental writing systems. As a semasiographic writing system D-Ware is a logical predecessor to the earliest segmented scripts. Especially characteristics like the determinative, but also the reading direction (top-to-bottom) which is typical for early Dynastic segmental writing systems and certain script-elements, continue in historic times.

Obviously much research would need to be done to further explore and revise the foundations of non-segmental and segmental writing systems. For instance, the possibility that phonetic symbols were added to explicate the meaning of the often ambiguous D-Ware writing instead of *vice versa* undermines the current understanding of the initial conception of the determinative (see Gardiner 1957: 31, §23).

4.1 CONCLUSIONS

Most D-Ware iconography examples were found during early campaigns which resulted in a global scattering over numerous and many unregistered or unpublished collections, or, in the worst-case scenario, their destruction. Although D-Ware is statistically rare, it presently does seem to represent a grave-ware, not specifically associated with the highest classes.

Its iconography has been subject of debate and there are much propositions of what may be depicted. Most, however, neglect archæological evidence and other involved aspects of society, as well as the variation and the implicit dynamics of meaning. With many reservations there is still a chance that the D-Ware iconography depicts a mixed perspective, but mostly overhead graphical representation of objects from the three-dimensional plain to a two-dimensional surface, mingled with graphical representations of abstract concepts that may not yet be phonetic expressions.

The burial-contexts then suggest that the intended three-dimensional objects may be mortuary architectural constructions (which coincidentally appear with the earliest depictions of the galley-construct in D-Ware) such as tombs, solar-altars and wrappings for the dead, all concepts that are also attested in the ensuing first and second Dynasties. However, this is just one of many possibilities that should be considered, while other equally plausible suggestions may arise.

The iconography does possess a complex system of arrangements which, in terms of communication, would hint at a writing system. On a theoretical basis it may be argued that D-Ware iconography is a semiology-based writing system, and precedes segmented writing systems in Egypt, not very unlike many writing systems still currently in use in our own societies like traffic-signs, instructional notices *et cetera*. The implications of this research should be tested on other areas with similar circumstances.

5.1 NOTES

1   Calibrated carbon-dates are taken from Wilkinson (1996). Relative dates may be found in Hendrickx (1996; 1999; 2006).

2   Petrie (1920: 16-21) acknowledged some potential, but this has not been properly reviewed in light of the new seriations. Gilbert (1999) only provided some notes on the chronological significance of the iconography as the title of his article implies.

3   Including examples from private collections and antiquities dealers.

4   The authenticity of the decorations on these genuine vessels has been questioned (e.g. Brunton 1934; Payne, Kaczmarczyk & Fleming 1977), but there is evidence to suggest that, although unusual in regards to D-Ware, the decorations are also genuine (Uildriks in prep.-a) but may be Sudanese in origin (Uildriks in prep.-c).

5.2 BIBLIOGRAPHY

ADAMS, B., 1995. *Ancient Nekhen. Garstang in the City of Hierakonpolis*. New Malden: SIA Publishing.

AKSAMIT, J., 1981. Representations of Boats in Predynastic Egypt. *Fontes Archaeologici Posnanienses* 32: 156-168.

AKSAMIT, J., 2006. A new list of vases with 'cult-signs'. In KROEPER, K., M. CHLODNICKI & M. KOBUSIEWICZ (eds.), *Archaeology of early northeastern Africa. In memory of Lech Krzyzaniak*: 557-592. Poznan: Poznań Archaeological Museum.

BAINES, J., 1983. Literacy and Ancient Egyptian Society. *Man. New Series* 18 (3): 572-599.

BAINES, J., 2008. Birth of writing and kingship. In MIDANT-REYNES, B., Y. TRISTANT, J. ROWLAND & S. HENDRICKX (eds.), *Egypt at its origins 2. Proceedings of the International Conference "Origin of the state, Predynastic and Early Dynastic Egypt", Toulouse (France), 5th-8th September 2005*: 841-849. Leuven & Paris: Uitgeverij Peeters & Departement Oosterse Studies.

BARD, K.A., 2008. *An introduction to the archaeology of ancient Egypt*. Oxford: Blackwell Publishing.

BLISS, C., 1965. *Semantography*. Sydney: Semantography Publications.

BOLTZ, W.G., 1986. Early Chinese writing. *World Archaeology* 17: 420-436.

BRUNTON, G.O.B.E., 1934. Modern painting on Predynastic pots. *Annales du Service des Antiquités de l'Egypte* 34: 149-156.

BRUNTON, G.O.B.E. & G. CATON-THOMPSON, 1928. *The Badarian Civilisation and Predynastic Remains near Badari*. London: British School of Archaeology in Egypt.

BUDGE, E.A.T.W., 1911. *Osiris and the Egyptian Resurrection*. London: Warner.

COULMAS, F., 1989. *The writing systems of the world*. Oxford & Cambridge: Blackwell Publishers.

COULMAS, F., 2003. *Writing Systems. An introduction to their linguistic analysis*. Cambridge: Cambridge University Press.

CRUBÉZY, E., 2001a. Capacités cognitives, représentations visuelles du message et naissance de l'écriture en Egypte. *Archéo-Nil* 11: 5-12.

CRUBÉZY, E., 2001b. Cognitive capacities, visual representations of a message and the invention of writing in Egypt. *Archéo-Nil* 11: 13-21.

DAVIS, W.M., 1982. The canonical theory of composition in Egyptian art. *Göttinger Miszellen* 56: 9-26.

DE MORGAN, J.J.M., 1897. *Recherches sur les origines de l'Égypte. Ethnographie préhistorique et tombeau royal de Négadah.* Paris: Ernest Leroux.

DIRINGER, D., 1962. *Writing*. London: Thames and Hudson.

DREYER, G., 1998. *Umm el-Qaab I. Das prädynastische Königsgrab U-j und seine frühen Schriftzeugnisse*. Mainz am Rhein: Verlag Phillip von Zabern.

DUBIN, L.S., 1999. *North American Indian Jewelry and Adornment: From Prehistory to the Present*. New York: Harry N. Abrams.

EYKERMAN, M. & S. HENDRICKX, 2008. Visuele documentatie van de grafmodellen uit het graf van Henu te Deir el-Bersha (Egypte). *ArcK* 2: 80-90.

FOUCART, G., 1905. Sur la décoration des vases de la période dite de Neggadèh. *Comptes-rendus des séances de l'Académie des Inscriptions et Belles-lettres* 49 (3): 257-278.

FRANKFORT, H., 1948. *Kingship and the Gods. A Study of Ancient Near Eastern Religion as the Integration of Society and Nature*. Chicago & London: University of Chicago Press.

FRAZER, J.G., 1914. *Adonis Attis Osiris. Studies in the history of oriental religion*. London: MacMillan and Co.

FRIEDMAN, R.F., 2005. Excavating Egypt's early kings: recent discoveries in the elite cemetery at Hierakonpolis. *L'Egypte pré- et protodynastique. Les origines de l'Etat. Predynastic and Early Dynastic Egypt. Origin of the State. Toulouse (France) – 5th-8th September 2005. Abstracts of papers*: 40-41. Toulouse.

FRIEDMAN, R.F., 2008a. Origins of monumental architecture: investigations at Hierakonpolis HK6 in 2008. In FRIEDMAN, R.F. & L. MCNAMARA (eds.), *Egypt at its Origins. The Third International Colloquium on Predynastic and Early Dynastic Egypt*: 82-84. London: The British Museum.

FRIEDMAN, R.F., 2008b. Remembering the Ancestors: HK6 in 2008. *Nekhen News* 20: 10-11.

GARDINER, A.H., 1957. *Egyptian grammar. Being an Introduction to the Study of Hieroglyphs*. London: Oxford University Press.

GILBERT, G.P., 1999. Some notes on Prehistoric decorated vessels with boat scenes. *The Bulletin of the Australian Centre for Egyptology* 10: 19-37.

GRAFF, G., 2009. *Les peintures sur vases de Nagada I - Nagada II. Nouvelle approche sémiologique de l'iconographie Prédynastique*. Leuven: Leuven University Press.

HENDRICKX, S., 1991. Pre- en vroeg-dynastieke periode In GUBEL, E., P. DE PEUTER & A. PETRE (eds.), *Van Nijl tot Schelde*: 34-49. Wommelgem: Blondé Artprinting International.

HENDRICKX, S., 1996. The relative chronology of the Naqada culture: Problems and possibilities. In SPENCER, A.J. (ed.), *Aspects of Early Egypt*: 36-69. London: British Museum Press.

HENDRICKX, S., 1999. La chronologie de la préhistoire tardive et des débuts de l'histoire de l'Egypte. *Archéo-Nil* 9: 13-81 & 99-107.

HENDRICKX, S., 2006. Predynastic-Early Dynastic Chronology. In HORNUNG, E., R. KRAUSS & D.A. WARBURTON (eds.), *Ancient Egyptian Chronology*: 55-93. Leiden & Boston: Brill (= Handbook of Oriental Studies 83).

HENDRICKX, S., 2008. The chronology workshop. In FRIEDMAN, R.F. & L. MCNAMARA (eds.), *Egypt at its Origins. The Third International Colloquium on Predynastic and Early Dynastic Egypt*: 31-32. London: The British Museum.

KAHL, J., 1994. *Das System der ägyptischen Hieroglyphenschrift in der 0.-3. Dynastie*. Wiesbaden: Harrassowitz Verlag.

KAHL, J., 2001. Perspektiven der Erforschung der frühen ägyptischen Schrift und Sprache. In POPIELSKA-GRZYBOWSKA, J. (ed.), *Proceedings of the First Central European Conference of Young Egyptologists. Egypt 1999: Perspectives of Research. Warsaw 7-9 June 1999*: 47-55. Egypt: Institute of Archaeology, Warsaw University (= Warsaw Egyptological Studies III).

KAHL, J., 2002. Schriftentwicklung in Ägypten. *Welt und Umwelt der Bibel* 4: 62-67.

KAHL, J., 2003a. Die frühen Schriftzeugnisse aus dem Grab U-j in Umm el-Qaab. *Chronique d'Égypte* 78: 112-135.

KAHL, J., 2003b. Entwicklung der frühen Hieroglyphenschrift. In SEIPEL, W. (ed.), *Der Turmbau zu Babel. Ursprung und Vielfalt von Sprache und Schrift. Band IIIA: Schrift*. Graz.

KAHL, J., 2004. Naissance des hiéroglyphes. *Le Monde de la Bible* 162: 26-29.

KAISER, W., 1957. Zur inneren Chronologie der Naqadakultur. *Archaeologia Geographica* 6: 69-77.

KAISER, W., 1990. Zur Entstehung des gesamtägyptischen Staates. *Mitteilungen des Deutsches Archäologisch Institut in Kairo* 46: 287-299.

KANTOR, H.J., 1944. The Final Phase of Predynastic Culture: Gerzean or Semainean(?). *Journal of Near Eastern Studies* 3 (2): 110-136.

KANTOR, H.J., 1974. Ägypten. In MELLINK, M.J. & J. FILIP (eds.), *Frühe Stufen der Kunst. Propyläen Kunstgeschichte*: 227-255. Berlin: Propyläen Verlag (13).

KEMP, B.J., 1975. Dating Pharaonic Cemeteries. Part I: Non-mechanical Approaches to Seriation. *Mitteilungen des Deutsches Archäologisch Institut in Kairo* 31: 259-291.

KEMP, B.J., 1982. Automatic Analysis of Predynastic Cemeteries: A New Method for an Old Problem. *The Journal of Egyptian Archaeology* 68: 5-15.

KEMP, B.J., 2006. *Ancient Egypt. Anatomy of a Civilization*. London & New York: Routledge.

KÖHLER, R., 2008. Quantitative analysis of writing systems: an introduction. In ALTMANN, G. & F. FENGXIANG (eds.), *Analyses of Script. Properties of Characters and Writing System*: 3-9. Berlin & New York: Mouton de Gruyter (= Quantitative Linguistics 63).

MALLERY, G., 1893. *Picture Writing of the American Indians*. Washington & New York: Government Printing Office & Dover.

MORENZ, L.D., 2002. Die Phonetisierung des Bildes und ihre Folgen. Ein Modell für die Entstehung der ägyptischen Schrift. *Saeculum. Jahrbuch für Universalgeschichte* 53: 175-192.

MORENZ, L.D., 2005. Gender and the emergence of writing. In MIDANT-REYNES, B., Y. TRISTANT, J. ROWLAND & S. HENDRICKX (eds.), *L'Egypte pré- et protodynastique. Les origines de l'Etat. Predynastic and Early Dynastic Egypt. Origin of the State. Toulouse (France) – 5th-8th September 2005. Abstracts of papers*: 70. Toulouse.

NEWBERRY, P.E., 1913. List of Vases with Cult-Signs. *University of Liverpool. Annals of Archaeology and Anthropology* 5: 137-142.

NEWBERRY, P.E., 1929. *Ägypten als Feld für anthropologische Forschung*. Leipzig: Hinrichs'sche Buchhandlung.

NEWBERRY, P.E., 1948. The Hieroglyphs M4 and M4var. *The Journal of Egyptian Archaeology* 34: 119.

ONG, W., 1982. *Orality and Literacy: The Technologizing of the Word*. London: Methuen.

PAYNE, J.C., A. KACZMARCZYK & S.J. FLEMING, 1977. Forged Decoration on Predynastic Pots. *The Journal of Egyptian Archaeology* 63: 5-12.

PEET, E.T., 1915. The Art of the Predynastic Period. *The Journal of Egyptian Archaeology* 2 (2): 88-94.

PETRIE, W.M.F., 1920. *Prehistoric Egypt*. London: British School of Archaeology in Egypt & Bernard Quaritch.

PETRIE, W.M.F. & A.C. MACE, 1901. *Diospolis Parva. The cemeteries of Abadiyeh and Hu*. London: Egypt Exploration Fund.

POSTGATE, N.J., T. WANG & T. WILKINSON, 1995. The evidence for early writing: utilitarian or ceremonial? *Antiquity* 69 (264): 459-480.

REGULSKI, I., 2008a. Development of early writing in Egypt: A palaeographic study. In KOUSOULIS, P. (ed.), *Tenth International Congress of Egyptologists. Abstracts of papers*: 201-202. Rhodes: International Association of Egyptologists & University of the Aegean (Department of Mediterranean Studies).

REGULSKI, I., 2008b. The origin of writing in relation to the emergence of the Egyptian state. In MIDANT-REYNES, B., Y. TRISTANT, J. ROWLAND & S. HENDRICKX (eds.), *Egypt at its origins 2. Proceedings of the International Conference "Origin of the state, Predynastic and Early Dynastic Egypt", Toulouse (France), 5th-8th September 2005*: 985-1009. Leuven & Paris: Uitgeverij Peeters & Departement Oosterse Studies.

SCHMANDT-BESSERAT, D., 1989. Two Precursors of Writing: Plain and Complex Tokens. In SENNER, W.M. (ed.), *The Origins of Writing*: 27-42. Lincoln & London: University of Nebraska Press.

SCHMANDT-BESSERAT, D., 1994. Forerunners of writing: the social implications. In WATT, W.C. (ed.), *Writing Systems and Cognition. Perspectives from Psychology, Physiology, Linguistcs, and Semiotics*: 303-310. Dordrecht, Boston & London: Kluwer Academic Publishers.

SENNER, W.M., 1989. Theories and Myths on the Origins of Writing: A Historical Overview. In SENNER, W.M. (ed.), *The Origins of Writing*: 1-26. Lincoln & London: University of Nebraska Press.

UILDRIKS, M., in prep.-a. *Boats, Tombs and Ideology. Middle fourth millennium B.C. (Predynastic) northeast African red-on-buff decorated ceramics (D-Ware). A review & evaluation of earlier interpretations and an archæological & semasiographic re-interpretation with particular emphasis on the galley-construct.* Master of Arts. Leiden: Leiden University.

UILDRIKS, M., in prep.-b. *The D-Ware corpus: a guide to theses. A synchronized and updated list of documented elaborate decorated D-Ware examples*. Master of Arts. Leiden: Leiden University.

UILDRIKS, M., in prep.-c. Differentiatie en ontwikkelingen in noordoostelijke Afrikaanse scheepsiconografie.

UILDRIKS, M., in prep.-d. *Iconography and Chronology. Middle fourth millennium B.C. (Predynastic) northeast African red-on-buff decorated ceramics (D-Ware). A statistical assessment of its iconography and further chronological implications*. Master of Arts. Leiden: Leiden University.

UILDRIKS, M., in press. An Egyptian Predynastic perception of Dynastic space. In BORRELL, F., M. BOUSO, A. GÓMEZ, C. TORNERO & O. VICENTE (eds.), *Broadening Horizons 3. 3rd Conference of Young Researchers Working in the Ancient Near East*. Barcelona: Universitat Autònoma de Barcelona.

VAN WALSEM, R., 2005. *Iconography of Old Kingdom elite tombs. Analysis & Interpretation, Theoretical and Methodological Aspects*. Leiden & Leuven: Ex Oriente Lux & Peeters.

VENDRYÈS, J., 1948. L'écriture ogamique et ses origines. *Etudes Celtiques* 4: 83-116.

WILKINSON, T.A.H., 1996. *State Formation in Egypt. Chronology and society*. Oxford: Tempus Reparatum.

WILSON, E.O., 1988. *Consilience. The unity of knowledge*. New York.

WILSON, P., 2003. *Sacred signs. Hieroglyphs in ancient Egypt*. Oxford: Oxford University Press.