"LUCIAN BLAGA" UNIVERSITY OF SIBIU
FACULTY OF HISTORY AND PATRIMONY
INSTITUTE FOR THE STUDY AND VALORIFICATION
OF THE TRANSYLVANIAN PATRIMONY IN EUROPEAN CONTEXT

ACTA TERRAE SEPTEMCASTRENSIS

VIII

Editura "ALTIP"

Sibiu - 2009

ISSN 1583-1817

Contact adress: „Lucian Blaga" University of Sibiu, Faculty of History and Patrimony, *Institute for the Study and Valorification of the Transylvanian Patrimony in European context*, B-dul Victoriei Nr. 5-7, 550024 Sibiu, România; tel. / fax. 0269 / 214468; 0745 / 366606; e-mail: sabinadrian.luca@ulbsibiu.ro, ins.arheologie@ulbsibiu.ro; **web:** http://arheologie.ulbsibiu.ro.

CONTENT

A INQUIRY INTO CLUES OF LITERACY IN NEOLITHIC AND COPPER AGE SOUTHEASTERN EUROPE

Marco MERLINI
„Lucian Blaga" University Sibiu - IPCTE (Romania)
EURO INNOVANET, Rome (Italy)
Institute of Archaeomythology, Sebastopol (USA)
E-mail: *marco.merlini@mclink.it*

Key-words: *Neolithic, Cooper Age, Danube script, literacy, Southeastern Europe*.
Abstract: *General and archaeological data concerning objects bearing signs, distinct semiotic information on the inscribed artifacts, the inscriptions, and the signs.*

A few inscriptions as sample of more than 1000

A Middle Neolithic female figurine was found in the 1950s by Milutin Garašanin at Supska (next to Cuprite, Republic of Serbia), but he did not comment on the "A," "I," "M," "H," "Y" motifs positioned on a large triangle incised on the chest (Starović 2004; Merlini 2004a). The object bears signs that echo capital letters of the Latin alphabet, which are furthermore aligned in a row and underlined.

Figure 1. A Middle Neolithic female figurine from Supska (Republic of Serbia) with signs that resemble capital letters of the Latin alphabet, are aligned in a row, and are underlined.

Figure 2, an inscribed small clay cup from Ovčarovo tell (Bulgaria), belongs to the Boian-Poljanica culture (Poljanica phase IV) (Bonev 1982, 2; Makkay 1990,

26/2), i.e. Late Neolithic according to my own databank *DatDas* (Databank for the Danube script), Middle Chalcolithic according to the Bulgarian timeline. Chronologically, it is positioned between two famous Bulgarian inscribed artifacts: the Gradešnica platter and the Karanovo seal.
The miniaturize vessel has a height of 2.4 cm and the maximal diameter is 2.2 cm. It was discovered in 1972 during rescue excavations within a burned dwelling of the fifth building level, associated with pottery resembling the one from Boian-Spanțov culture. The cup is biconical with straight rim edge, cylindrical strip in the middle area and slightly bended within the walls in the lower half. It is manufactured from fine purified clay and has polished grayish-brown surface. The firing is uneven.
Nine signs are incised on the middle strip. According to the archaeologist in charge (Bonev 1982: 33), they are:
1) three oblique parallel strokes
2) down opened V
3) combination of one oblique and two vertical strokes
4) an acute angle
5) acute angle with elongated right shoulder
6) three vertical parallel strokes
7) irregular down opened V,
8) X shaped sign
9) acute angle with elongated shoulder

Figure 2. A Late Neolithic vase from Ovčarovo (central Bulgaria).

Bonev finds parallels with signs from Neolithic and Copper Age of Southeastern Europe, insisting that the nine signs from Ovčarovo represent an "inscription" and that Bulgaria is "one of the centers of the most ancient writing" (Bonev 1982: 33). Other semiotic indicators point toward the presence of a script on the Ovčarovo cup. Signs are intentional, identifiable, highly stylized, elementary in form, not

ornamental, similar in size, standardized according to a model. The sign is a ligature between a and a . The tri-lines are marked by a dot. The nine signs are arranged in a horizontal sequence. A linear organization of signs is also found in other pre-classical systems of writing such as cuneiform, Egyptian hieroglyphs, Linear A and B, Cypriot-Minoan and Cypriot Syllabic. Finally, the inscription from Ovčarovo is divided into three segments, which seem to express different concepts of phrases/words.

The linear-elementary shape of the signs and their alignment in a sequential arrangement are evident on a miniaturize vessel belonging to the Turdaş culture (4900-4600 BCE) and recovered at the eponymous settlement. The y, Λ, and X signs are framed within two horizontal lines according to the flow of concepts or words/phrases (Torma *Notebook*: fig. 4.20; Winn 1990: 268, fig. 12.2.i, Winn 2004a).

Figure 3. Linear signs are structured along two registers on a Turdaş mignon vessel. (D. Bulgarelli, *Prehistory Knowledge Project* © 2007).

Numbers of artifacts from the Neolithic and Copper Age time-frame in Southeastern Europe bear strange compound signs. All of the above-mentioned examples have been discovered in a wide area having the Danube basin as axis. My own databank *DatDas* organizes a catalogue of 1091 inscriptions composed of two-more signs (Merlini 2008d) . The system of writing under scrutiny, the *Danube script,* flourished from c. 5900-5800 BCE up to c. 3500-3400 BCE. It is named *Danube script* because it appeared in the central Balkan area and had an indigenous development. It was used only in the core area of the *Danube Civilization* (c. 6400 BCE to c. 3500-3400 BCE), comprised within southern Hungary, Ukraine, central Greece, and the Adriatic see.

The traps on the possible existence of a script in the Danube Basin and beyond throughout the Neolithic and Copper Age time-frame

The absent or retarded acknowledgment of some ancient scripts such as the Indus script, the Danube script or, in the recent past, the Maya script is due to the inadequate definitional approach to writing technology and the still partial establishment of the research on it as an independent domain of cultural sciences.
Harald Haarmann and Joan Marler have recently recalled that studies on the history of writing has remained, to this day, an arena where experts from different fields (mainly linguists and archaeologists) and amateurs alike demonstrate their expertise (or speculations) by making pronouncements about the emergence of ancient scripts and their historical development (Haarmann and Marler 2008). Linguists who are familiar with languages of antiquity and who study the scripts in which they are written may have an understanding of the organization of sign systems and how signs are applied to the sounds of a language in case of phonetic scripts. However, their grasp on the historical mechanisms behind the origins of this invention and on how writing skills unfolded is limited by the widespread relegation of *ars scribendi* to a vicarial role as a more or less truthful mirror of the spoken language and by the lack of comprehension on archaeological insights about the cultural embedding of ancient societies and their motivation to introduce writing. Archaeologists make authoritative declarations about writing systems without even discussing basic definitional approaches to writing technology. They are not engaged in the study of sign systems (language and non-language related) within a network of communication, because that semiotic scientific terrain extends beyond the archaeological sphere. Therefore, they often observe patterns of consensus and adhere to conventional truisms such as, "We all know what writing is".
The state of art is even more problematic concerning the studies on the possibility that Southeastern Europe could have developed an original script in the Neolithic and Copper Age time, i.e. the "Danube script" within the frame of the "Danube civilization" that developed between c. 6400-3500 BCE, because both linguists and archaeologists put at work the entrenched old-fashioned truisms of the other discipline that the proper specialists are in process of discarding.
Linguists discuss about "why" and "how" – and above all "if" - *ars scribendi* came out in the villages of early farmers without becoming involved in archaeological studies, examining assemblages of inscribed objects in museums and in excavation sites, coping with the material and cultural fabric of the Danube civilization, and dealing with the trajectories of institutional-socio-cultural evolution of these communities, cultural groups and complexes as they emerge from the archaeological record. In many cases, their archaeological and historical background is anchored to out of fashion visions limited to contemplate the occurrence of a European archaic script so unthinkable that the simple possibility of it is ignored and its evidence given very scanty attention or to postulate a *from oriente lux* drift for this technology.
Archaeologists make pronouncements about how writing technology came out in ancient societies and its nature and role as an institution of early civilization without proper semiotic methodological tools, intimate knowledge of the infrastructure of sign systems and how various principles of writing apply to different linguistic structures and even without discussing basic definitional

approaches to writing technology. It is not for a case that the archaeological record of inscribed artifacts from the Neolithic and Copper Age of Southeastern Europe is cheapened persistently by many of them as bearing "pre-writing" signs, "potter's/owner's marks", magic-religious symbols, or generically "signs", despite the presence of features that lead clearly versus such a supposition. Indeed, in its comprehensive meaning, the term "Danube script" indicates the original successful experiment with writing technology of these ancient populations and not, for example, a form of 'pre-writing' (see Winn 1981; Masson 1984).

The concept of 'pre-writing' has no firm theoretical or historical basis. A routine of our mind is used to divide societies between "literate" or "illiterate", overestimating the role of writing technology in the advent of "civilization" and utilizing the literate status as watershed line from prehistory to history. However, we are discomfort with the earlier scripts where the value of a sign is not a strict representation of a sound, but a conventional notation that the reader has to fill in for himself and where grammar is a left option. Even the Mycenaean reader of Linear B must have been left a lot of guesswork to understand words out of what he/she read on a tablet. This situation would be quite intolerable if a script was used for correspondence or legislation. However, Linear B has been employed for lists and accounts read only by the writer and his colleagues working in the same administration or archive.

Besides, the common opinion according to which an ancient script is deciphered when every trained person would make the same sense of almost every word of a given inscription is challenged by ancient scripts. Being much more complex and subtle than our modern alphabets, they make reasonable a wide spectrum of opinions between the poles of deciphered-undeciphered. In the case of Mayan writing, for example, most scholars agree that a high proportion, as much as 85 per cent, of the inscriptions can be meaningfully read, and yet large numbers of individual glyphs remain contentious or obscure. Scholars can often decipher the numerical system, the arithmetical procedures, and/or the calendrical scheme of an ancient script without knowing its underlying language. Even a not trained person can sometimes obtain accurate sense merely from the pictographic/iconic feature of certain signs, such as the recognizable humans, creatures, objects and actions in some Egyptian hieroglyphs. In other words, there is not an indisputable shibboleth by which scholarship judges a script to be deciphered or still undeciphered. One has instead to deal with *degrees of decipherment*. The most useful criterion is the degree to which the proposed decipherment can generate consistent readings from new samples of the script, preferably produced by persons other than the original decipherer (Robinson 2002: 18).

In this fluid and complex framework of the semiotic mechanisms of ancient scripts, a hypothesized European 'pre-writing' is a key that does not open any door being conceived to open simultaneously all the doors. In fact, it has been interpreted both as a system of signs that *does not constitute writing* and as a system of signs that *precedes writing* and is a step beyond it. The lexical escamotage makes the idea of a Balkan-Danube script more plausible to scholarship, avoiding challenging traditional notions about the Near Eastern origin

of writing technology during the Bronze Age (Merlini 2008d) and restricting the Danube script to the a stage in which concepts were expressed in ritual usage (Winn 1981: 257). Shan Winn, who launched the idea of a European 'pre-writing' in the eighties, abandoned this approach through an article published in 1990 (Winn 1990; ibidem 2008). Paradoxically, at the same time it became a mainstream viewpoint among the Southeastern European archaeologists exactly because of its ambiguity. In particular, they give status of "pre-script" signs to the incised ornaments that do not follow the known canons (see, for example, Čohadžiev S. 2006: 71). On the one hand, they are acknowledged of the communicational aim of these incisions. On the other, they do not grant the status of writing to the Danube script adhering to the traditional and rigid usage of the terminology in which "true writing" or "full writing" is reserved to mean "phonetic writing" and doubting that the ancient European graphemes are capable to convey linguistic messages setting in space words, syllables or letters.

According to some scholars, the category of "potter's/owner's marks" explains almost all the occurrences of script signs from the Neolithic and Copper Age of Southeastern Europe (Garašanin 1960-1961; ibidem 1973; Tringham, Krstić 1990: 609). Adhering to a traditional standpoint, a mark of this kind cannot be considered a sign of writing, being a mere ensign. The category of the personal markings is supposed do not comprise texts, having the function to directly link a particular object with an individual, a group of persons, a workshop, an institution or a locality. It serves as a identifying mark or unique signature indicating ownership, actual or symbolic possession, authority, responsibility, affiliation, authorship or producership (Kammerzell 2007). A mark of this kind can identify a distinct person, but it is not a true "signature", because it does not carry the phoneticism of its name. It is a "visual mark" that might be abstract, arbitrary, and synthetic, but in any case does not reflect any speech sound.

However, the notion that a personal mark is not "written", not corresponding to discrete linguistic units, collides with the historical fact that in ancient societies *ars scribendi* came out with tracing graphical signs in order to represent ideas that may be not necessarily orally articulated. From the phenomenological point of view, only a limited number of signs can be considered a "potter's/owner's mark". The copious presence of signs on the bottom of vessels, usually hidden to the sight and therefore unbeneficial for utilitarian purposes, and their incision after a period of vessels use or even breaking are argument against the interpretations of the signs as marks identifying the producer, the possessor, the content, or the destination of the pottery. The limited number of marked vases (about 1/3, potshard included) comparing to the wide range of inscribed artifacts, which take into account also human figurines, miniature altars, spindle-whorls, seals and many other typological categories as well as the ritual and not utilitarian function of most of the inscribed artifacts contribute to challenge the interpretation of the signs on pottery as identity trademarks. Occurrence of long inscriptions with more than 10-20 signs, recurrence of the same signs for two millennia and half on a wide territory comprised within southern Hungary, Ukraine, central Greece, and the Adriatic See, their recordability within a distinct and systematic inventory, and

appearance of wide combinations of signs contrast to the interpretation of them as marks that had to have a local and even a personal nature.
In the Danube civilization, there was actually a restrict number of personal identifiers to express individual or collective identities. They include ownership or manufacturer marks, family ID symbols, lineage recognition or community affiliation insignia, glyphic monograms on seals, and tags. However, they belong to the symbolic system of the Danube civilization and not to its writing system. They were not enough common and widespread to be confused with units of a script in use at tens of sites for hundreds of years. The choice to indicate possession or authorship on an artifact through a distinct emblem was a very personal decision that at least involved the family, the household, or the village. Second, personal identifiers were not codified through a general organized system of signs, being in the same situation of the heraldic insignia whose numbers and shapes are not predetermined, but depend on how many aristocrats there are and on the pedigree of their families. Third, these Neolithic and Copper Age marks go beyond some important conventions that rule the outline and the organization of the Danube script signs. For example, even if the identifier of a person can be modified applying to it diacritical markers such as small strokes, crosses, dots and arches possibly in order to express the position within the household, it cannot be reversed or inverted as the script units. The divinity standards, which establish and manifest the identity of a divine being, belong to the general category of the personal marks.

Figure 4. A divinity mark is placed on the vulva of "Lady Vinča". (After Bulgarelli D. © *Prehistory Knowledge Project).*

In conclusion, the category of the Danube identifiers pertains to the symbolic code and not to the writing code, although some of them (in particular those employed to symbolize distinct divinities) might constitute one of the roots for the earliest signs of writing utilized by the Danube civilization, as the *serekh* of Predynastic

Egypt (an emblem carved on ivory labels or ceramic potshard attached to trade goods, which was used to indicate the extent of influence of a distinct regime or identify military allegiances) lead to the development of the earliest hieroglyphs, being replaced by the cartouche (Levy, van den Brink, Goren, and Alon 1995: 26-36; Dodson, Hilton 2004).

A wave of scholars maintains that the strange signs incised or painted on the Danube artifacts are some sort of magic-religious symbols (i.e. marks used as conventional representations of something else in sacral or liturgical sphere). Indeed, in the Danube civilization symbolism was a complementary and possibly a more important means for storing and transmitting messages than literacy. One of the still numerous crucial points we have not been comprehended yet is why these early agrarian-stockbreeding communities preferred transmitting packaged of information and even expressing themselves in symbols behind stylized, highly abstract, and difficult to interpret representations. What did they want to communicate covering the surface of vessels with combinations of spirals, meanders, and linear symbols? Why did they employ frequently all kinds of apotropaic motifs, as if asking constantly protection against malevolent forces?

The entire Danube communicative landscape was imbued by the symbolic code. We are custom to associate emblematic and meaningful design to mobiliary art, such as vessels or anthropomorphic figurines, or to rock art. However, symbolic motifs were even applied in architecture as well as designing and constructing furniture. In several dwellings of the Precucuteni-Ariuşd-Cucuteni-Trypillya cultural complex (which developed in the fertile fields of the sylvan-steppe area between the Carpathians and the Dnieper River from c. 5000 BCE to c. 3500/2750 BCE), the extremities of the poles sustaining the fronton were crisscrossing joined, thus forming a kind of consecration horns, with a protecting and fertility function symbolized by the virile force of the bull.

Figure 5. Symbolic consecration horns formed by crisscrossing joined extremities of the sustaining poles on the fronton of a Trypillya dwelling miniaturized model (Ukraine, c. 4000 BCE). (Photo Merlini 2004. Courtesy Platar collection).

Symbols such as nets, spirals or horns were painted or engraved in relief on the walls of dwellings, especially sanctuaries and temples, as in the instance of Kormandin (Republic of Serbia), Parța (Banat, Romania), or Ariușd (southeastern Transylvania). Prominences resembling horns characterize also the backrest of chairs and thrones for divinities as documented by those recovered in miniaturize cultic scene. Typical are the horn-like protuberances exhibited by ten small clay chairs-thrones and a large throne in the sanctuary structure with a porch from Sabatinovka (in the basin of the Southern Bug, Ukraine). The 13 small clay chairs - found in the area of the fireplace in a Precucuteni sanctuary at Isaiia (Iaši County, Romania) together with feminine statuettes and other cultic items - show small horns in the upper part of the backrest. Special attention was given to the representation of horns on pots rendered as protomes, because it was a stylized symbol of virility placed on a recipient representing the feminine emblem.

Figure 6. A Precucuteni figurine from Isaiia (Iaşi County, Romania) is sitting on a chair-throne characterized by symbolic consecration horns positioned at the upper edge (c. 5000 BCE). (Photo Merlini 2007).

The differentiation between the Danube symbolism and the Danube script is very subtle because they can both be finalized for transmitting messages utilizing marks similar for shape. However, in a subsequent paragraph I will present some indications in order to operate a distinction in case of messages made of two or more signs.

Much more generic and unfixed is the concept of "sign" and "sign system", which constitutes the fourth category according to which part of the archaeological literature downgrades the script that developed in Southeastern Europe through the Neolithic and Copper Age time-frame. The notion of "sign" is simply identified applying a method of exclusive (negative) identification as a mark that is neither a decoration, nor a symbol. Its main appeal consists in its elastic indeterminateness.

Henrieta Todorova and Ivan Vajsov, for example, stated that "the *sign system* appeared (italic is mine) during the Early Neolithic. It can be found in the incised ornaments of ceramics or is independently met on pintaderas and lids or bottom of pots. The latter is especially characteristic of the Late Neolithic... The pintaderas are the basic bearers of the Neolithic sign complex... The Neolithic sign complex developed within the VI millennium BC (and) lasted until the end of the existence of the neo-aeneolithic social system... (around) the end of the V millennium BC. The discussed signs and compositions obviously served for 'recording' and transmitting important information of cult or maybe – social matter" (Todorova and Vajsov 1993: 280, 233). According to this undetermined definition, Todorova and Vajsov published a table with a corpus of basic motifs belonging to the Neolithic pintaderas of Southeastern Europe. Unfortunately, it is useless for the task of establishing an inventory of the Danube script, because it mixes decorations (e.g. ns. 3; 17), symbols (e.g. n. 3), seal marks (e.g. ns. 2; 15; 20), and possible numeric marks (e.g. n. 1; 18) without any semantic and typological distinction. The table of these motifs does not include any sign of writing.

"Pre-writing" supporters, "potter's/owner's marks" activists, magic-religious symbols advocaters, or "signs" proponents are anyway scholars aware of the presence of marks that are neither decorations nor scratches in the Danube communicative scenery.

Instead, one of the troubles when trying to detect marks with semiotic value through the published images is due to the incorrect drawings made by the decoration-addicted scholars. Being not capable to perceive the presence of any sign of writing and considering every irregularity in shape and asymmetry in patterns as hesitant decoration due to unskilled potters, they regularized the shape of the signs and symmetrized their original patterns, when making a replica of an inscribed artifact.

Scholarly engagement on the *possibility* that Southeastern Europe was involved into an original experiment with literacy that is dated earlier than generally assigned is at its first steps. Great efforts are made in order to debug various hypotheses and network different researches on semiotic markers and organizational principles of this script starting from some pioneering studies (Gimbutas, Winn, Todorović, Makkay, Haarmann, Lazarovici, Starović, and Merlini). It is also starting from the basics: searching out the inscribed artifacts in

museum collections and storerooms, controlling the published drawings, refining the methodological *instrumentarium*, building a semiotic framework for this script in relationship with the other communicative codes such as symbols, divinity identifiers, astronomic information, inspecting the semiotic infrastructure of it, building a databank on the inscriptions, etc.

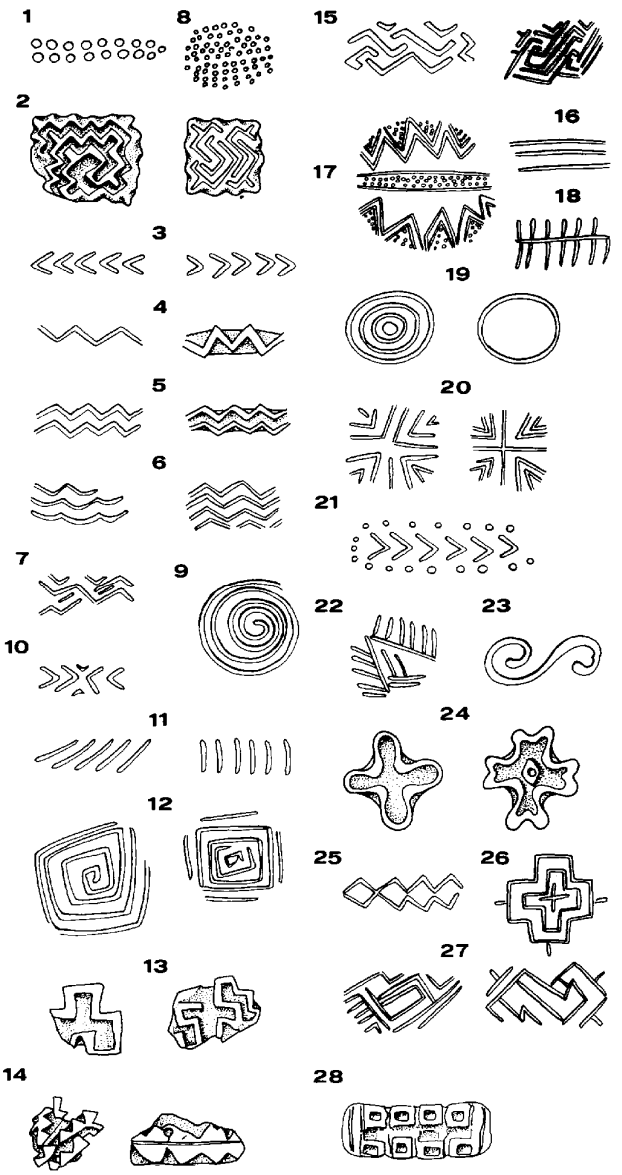


Figure 7. The basic signs from the Neolithic sign systems according to Vajsov and Todorova. (After Vajsov and Todorova 1993: 229, fig. 226).

If the anticipated invention of a European *ars scribendi* is generating controversial and prudent statements in the scholarly field, it is triggering pernicious attention among amateurs and dilettantes who are offering exotic and mass media appealing "readings" based on hazardous associations with other ancient systems of writing. For example, a considerable number of books and articles have been devoted recently to a (para) scientific fiction aimed to "read" the "Vinča documents" as alphabetic texts of this Middle Neolithic culture that had its hub in Central Balkans.
Increasing of the dangerously mythical and romantic attention to a "Neolithic alphabet" rooted in the Balkans is connected to the reinforcing of nationalistic "archaeo-political" pushes in most of the Eastern European countries to create a fictitious past for political ends. The postulated existence of an archaic original script is used in reconstructing the prehistoric past of a golden exclusionary and primordial homeland as crucial resource for addressing contemporary political disputes with other ethnic groups. For example, in the Republic of Serbia Radivoje Pešić is convinced that "the era of the Slavs is coming. For seven decades, the Slav civilization has been living under a heavy pressure, and the world, having accumulated sufferings for so long, could achieve its renaissance for that reason only. Such are the orders of things. The West wanted to throw the East on its knees without any knowledge of the "Slavdom". The Slavdom does not bear humiliations and failure, the Balkans as well" (Pešić 2001b. 28) The starting point of Slavs' renaissance is the acknowledgment that the Middle Danube basin was the epicenter of the early European Civilization and that its "Neolithic alphabet" was one of the main roots of our contemporary alphabet (Pešić 2001a).

Assessing the constitutive features of writing technology

The inspection of the semiotic infrastructure of the sign system developed by the Danube civilization in order to substantiate possible clues of literacy moves in sync with a general reassessment of the essential features of writing technology that distinguish it from other communication channels that employ signs to store and transmit information. According to the author, five essential features define *ars scribendi*. Even if one of these criteria is missing, then one is in presence of another means of communication. They are listened below in sharp synthesis.

A. *The principle of one-to-one equivalence.* A sign stands for a single idea or a sound; an idea or a sound is indicated by a single sign (Merlini 2004a). In pictographic writing, the formula contemplates one iconic sign to render one idea or concept. In syllabic writing, the formula is one sign (iconic as in part of the Mycenaean Linear B inventory or non-iconic as in cuneiform writing) as an equivalent for one syllable of a given language. In alphabetic writing, the formula is one abstract letter representing one sound of a given language (Haarmann 2008a: 24). The most ancient phase of writing technology demonstrates – in Mesopotamian, Chinese and Indus civilizations – the correspondence between a sign and an idea. A sign was not associated with a set of ideas, but with only one.

B. *Writing expresses necessary concepts and only optionally the sounds of a language*. The single idea represented by a sign is not unavoidably the graphic echo of the spoken language; it does not inevitably have a linguistic significance. If the written communication records concepts and not necessarily words, this implies the possibility of reading a text in a visual way, leaving aside its oral translation.

The dismissal of the concept of writing as a mirror of the spoken language, in order to link it to the world of ideas, breaks away from the traditional concept that signs are equivalent to sounds. According to a comparative view of ancient scripts, the earliest experiments with writing were not intended to reproduce the segmental structure of the spoken language (word, syllable, or letter) or to render its grammatical system. The description of writing as a graphic system which replicates the linguistic system is a historically hindsight judgment (Harris 1986).

Even if the elementary principle of writing is not phonetic and assuming that the writer conveys a single concept through a single sign, it is not said that the reader cannot associate that sign to a sound (e.g., a word) of her/his own idiom. In ancient writings, the *representation* can be non-phonetic, but the *reception* can be phonetic. The sender can communicate a nugget of wisdom through signs that express its heart without the necessity to use words. The reader, however, is not mute, conceptualizes ideas while reading, and speaks using language. Concepts communicated by signs can be decoded and articulated according to the reader's orality. Therefore, the sender elaborates and transmits a message in a completely different manner from how the reader can receive and understand it.

If the reader can follow the phonetic principle, why would the writer not have to do the same? Since writing aims to express contents, it is not necessary to employ words and sentences. Signs are directly able to communicate ideas. For example, a pictogram can be used to render the concept of "plow" regardless of the fact that the word for "plow" varies in different languages (*plow/plough* in English, *aratro* in Italian, or *charrue* in French). Similarly, a child understands the concept of mother long before he/she becomes capable to pronounce the word "mom". Consequently, the distinction between "conceptually-oriented writing" (definable as "non-language writing," "visual writing," "pictorial writing," "iconographic writing," or "figurative writing") and "language-related writing" ("language writing," "phonetic writing," or "verbal writing") is neither rigid nor exclusive. In history, human beings – completely uninterested in scholarly categorizations – effectively faced the crucial connection between sounds and signs, inventing systems of writing that combine different types of elements. Neither a 100% logographic, nor a 100% phonetic system of writing existed. Even Western literacy is comprised, not only by fifty-two alphabetic signs, but also by logograms ('whole word' semantic symbols such as +, &, $, £, and so on), numerals and punctuation marks (Robinson 1995: 13). The simple dichotomy of "linguistic" vs. "not linguistic" systems is too abstract to be embedded inside the factual framework of *ars scribendi*. The present work covers a third kind of category where both the logographic and phonetic elements are present: the logographic-phonetic systems. Within this category, one can distinguish among three classes: logographic writing with a marginal phonetic component;

logographic-phonetic systems with a balance between sound and concepts; and logographic-syllabic writing.
In conclusion, the ancient systems of writing originated within a precise cultural and linguistic environment that included, amongst other features, asymmetry according to which the writer mainly represented concepts that could be decoded by the reader into words.
The definition of writing that is detached from its dependence on spoken language has a broad corpus of studies. Linguists like Haas (1976), Cardona (1981; ibidem 1990), Gaur (1984-1992), Twyman (1986), Larsen (1988), Crump (1990), and Haarmann (1995; ibidem 1998a; ibidem 2002c; ibidem 2008b), semioticians like Harris (1995; ibidem 2000) and Rotman (sketching a "semiotic model of mathematics," 1993; ibidem 1995), anthropologists (Aveni 1986; Wrolstad and Fisher 1986), graphic designers (Kress and van Leeuwen 1996), art historians (Elkins 1999; Boone and Mignolo 1994) and scientists (Drake 1986; Owen 1986) are proposing a broader view of writing. This standpoint "focuses more on writing's communicative function and less on its relation to language ... The point being made is that writing should be recognized and studied as graphic communication system rather than solely as a speech-recording system" (Boone 2004).

C. *Writing needs a minimum number of signs*. A single or few graphic elements are not enough to substantiate a system of writing. For example, the discovery in Turkmenistan of four signs on a fragment of ceramic from Gonur (Wilford 2001) and other four on a stamp seal from Annau is still not a sound evidence for the occurrence of a system of writing in the BMAC civilization (Bactria Margiana Archaeology Complex, after the ancient Greek names for the two lands in the region) about 2300 BCE, even if they look like characters of an evolved ancient Chinese (see Mair in Wilford 2001).

D. *Writing is a closed system of signs*. It has a forced systematicity (i.e., signs are associated with different single meanings and are inter-connected) and there is no compositional freedom in the organization of signs. Each type of writing has precise organizational criteria and a set of rules that administers sign use. It has to be noticed that linearity, which is the succession of one sign after another, is not necessary one of these principles. While linearity is often utilized in writing technology, it is not mandatory.

E. *Writing uses an inventory of signs that is limited and defined*. Every system of writing employs a precise and predetermined corpus of characters that are not shaped according to the writer‘s individual expressiveness.

To sum up, writing is a technique for communication that utilizes visual markers for fixing packages of information for reuse independently from any connection with spoken language. Writing is not a means developed toward an abstract optimum to serve the generic universal human need to build a linguistically based script, but a social process of knowledge representation based on human

interaction and historical depth. From an *historical* point of view, it cannot be considered an incidental condition of the early systems of writing either that they represent knowledge in various ways that do not presuppose necessarily the ability to express oral language, or that they were initially used predominantly or even exclusively in specific domains such as to document administrative activities or to communicate with divinities. The use of signs for writing was oriented to the *meaning* of words (not their sounds) and to the distinction between actual ideas and abstract concepts. The restricted context of application, which influenced the formal structure and semantics of the early scripts, is constitutive of their origin. The earliest experiments with *ars scribendi*, when it was utilized to store and transmit ideas rather than the sounds of a language in which ideas were expressed, have to be considered as writing in *statu nascenti* (i.e. in formative stages of development) and not "pre-writing".
In conclusion, the basic requirements by which any form of writing distinguishes itself from other channels aimed to convey information are: a minimum number of signs, each of which corresponds to a single concept, is an unit of an inventory and element of a structured system (i.e. a number N. of signs associated to different single meanings and interconnected). This definitional apparatus is coherent with the acknowledgement that the original writing systems of the ancient world started exclusively or predominantly as logographic scripts.

Hits to a Balkan-Danube script from the comparative history of ancient scripts

The proposed conceptual assessment of *ars scribendi* is not a theoretical utterance, but a historical observation on cultural processes that grounds on a comparative viewpoint. A plethora of historical examples on the genesis of the *homo scribens* can be condensed in eight fundamentals that discard some of the prevailing opinions for a long time.

A. *An invention that matured in thousands of years vs. an ex nihilo act*
The long path towards the innovation of writing and how it was scheduled by gradual progression in signs systems over millennia interrupted by cognitive jumps is documented by occurrence of, at least, computational systems based on tokens dating back 8000 BC, early mark-notch based counting or recording devices, symbolic code inherited from Palaeolithic and Mesolithic imagery, communicational capability of linear decoration that evolved into script signs, and marks employed to transmit information of tribal affiliation or family identity since the Upper Palaeolithic.
Historical evidence makes no longer current today the conventional standpoint according to which the achievement of writing was a sudden, unique, freeing act of discontinuity (although not unexpected) with a long static past; a jump that altered radically the world in a single human lifetime without having examples of "what" people were building (Diamond 1997; Gould 1999: XXII; Michalowski quoted by Wilford 1999; Houston 2004: 6). According to the extreme point of view of Powell, the sudden explosion of signs was the achievement of a single

genius, a citizen of the city Uruk, the "Literatus Sumericus Urukeus" (Powell 1981).

B. *The multi-localized birth of homo scribens vs. a single incubating region (Mesopotamia)*

Even if it is hard to die the belief on the Fertile Crescent as uterus of *homo scribens*, Egyptian writing may have predated the earliest Mesopotamian writing with proto-hieroglyphics from Abydos (Dreyer 1998: 113-145, tables 27-35; ibidem 1999; Mitchell 1999; Davies and Friedman 1998: 35-38; Baines 2004) and Gebel Tjauti (Darnell J.C. and Darnell D. 1998; Darnell J.C., D. Darnell, Friedman, and Hendrickx 2002). Specimen of writing originated independently or partially independently in the Harappa civilization from the Indus valley (Wilford 1999). C. 4,000 years ago the nowadays desert area between northern Afghanistan and Uzbekistan was the cradle of a blooming civilization that acted as intermediary between West and East and archaeologists are now discovering clues of a possibly "Bactria Margiana script" (Wilford 2001). Any dependence of Chinese writing on Near Eastern stimulus is highly unlikely due to the occurrence of signs in Neolithic China at Jiahu (Rincon 2003; Xueqin, Harbottle, Zhang, Wang 2003: 31), Dadiwan, Shuangdun, Banpo (Guo 1972; Li 1974; Boltz 1986; Woon 1987; Keightley 1989), Jiangzhai (Woon 1987), Damaidi, Yangshao, Dawenkou (Woon 1987; Trigger 2004: 50), Chengziya-Longshan, Liangzhu. Evidence of a "Proto-Iranian" script appeared in Halil River Valley (Iran) (Madjidzadeh 2003; ibidem 2007). The emerging of a script in Mesoamerica (in the third millennium p.t.) has to be considered a local conquest (Cahn and Winter 1993; Pohl, Pope, von Nagy 2002; Houston 2004; Saturno, Taube, and Stuart 2005: 41-48; Saturno, Stuart, Beltrán 2006). Formative mechanisms of early literacy in several ancient civilizations indicate that it has been invented *several times,* in *a number of* regions, as an *autonomous* and *independent* innovation in response to *local needs* (concerning Sumer, Egypt, China and Maya see Michalowski 1994: 53).

The multi-localized birth of *homo scribens* questions the canonical viewpoint according to which this innovation was a brilliant idea developed once under lucky conditions in a single region (Mesopotamia) and then copied over and over again under cross-cultural influences (Gelb 1952: 212-220; ibidem 1963; Baumgartel 1955; Frankfort 1956: 129-32; Diringer 1962: 47; Saggs 1989: 72; Spencer 1993: 61-62; Postgate 1995: 56). As underlined by Trigger (2004: 42), the diffusionist scenario concerning writing corresponded with more general Eurocentric beliefs that, while western civilization had begun in Middle East, it had been perfected in Europe (Montelius 1899; Childe 1925), idealized Greece as a font of cultural perfection, and equated major cultural achievements with Aryan, or Indo-European peoples (Bernal 1987).

The Mesopotamian model of civilization was certainly successful and the achievements included the invention of a related writing technique. Nevertheless, it was only *one* of the models historically created and not *the* original model followed by any else civilization. Even other populations were the holders of an original expertise concerning writing and reading.

As a result, it would make sense to focus the analysis on *circumstances* and *internal mechanisms* of the repeated emergence of this technique and not on the supposed *transfer procedure* that induced the variety of different systems of writing emerging one after the other from a hypothetical unique, solitary cradle centre.

C. *Writing technology as a conquest of Near Eastern Neolithic cultures vs. a Bronze Age achievement*

Sign systems discovered in the Fertile Crescent at Early Neolithic sites are significantly different modes to store and transmit information from visual-symbolic representation developed in the Upper Palaeolithic. Notable signs of this type have been recovered at Qermez Dere in Northern Iraq, Nevali Çori, Göbekli, and Çayönü in Southeastern Anatolia (Huebsch 2001), Jerf el Ahmar (Stordeur, Jammous 1995: 129-130; Cauvin 1994: 10-11; Talon, Van Lerberghe 1998: 10, fig. 2, 187, notes 1-2; Stordeur 1999; Aurenche, Kozlowski 1999: 45, pl. 2-7, pl. 2-12; Glassner 2000: 119-121; Marangou 2001: 23), Djaadé, Tell Qaramel (Mazurowski, Jammous 2001, fig. 8 in the middle; Mazurowski 2002; ibidem 2003; Badisches Landesmuseum Karlsruhe 2007: 107), and Mureybet in Syria (Cauvin 1994: 43, fig. 7.1; Schmandt-Besserat 1998: fig. 12; Hansen I 2007: 58; ibidem II fig. 7.4), as well as Kfar ha-Horesh in Israel (excavation lead by Prof. Nigel Goring-Morris of Hebrew University, Institute of Archaeology). Archaeological evidence compels backdating the roots of the earliest experiments with literacy to the phase of transition from hunting to farming, from foraging to agriculture and from nomadic to partially sedentary life. Under certain aspects, the Neolithic revolution in the method to acquire food was preceded by a mental transformation based on new beliefs and religious symbolisms, in addition to the advent of experiments with an incipient writing technology.

Recent discoveries and re-examination of conditions and circumstances that produced the earliest texts lead to a modification of the traditional canon according to which only the autocratic and mercantile Bronze Age societies of the Near East (Mesopotamia and Egypt) become "literate" *motu proprio* thanks to a sudden and brilliant act that happened in discontinuity with the past.

D. *Literacy from civilizations organized as network vs. tool for state bureaucracy*

The absence of statehood and centralized political authority and, instead, the presence of a considerable social equality and corporate political power in the Indus Civilization, as well as in others where original systems of writing appeared, challenge the most favored version among scholars of writing research according to which the genesis of this technology has to be connected necessary to the bureaucratic needs of centralized authoritarian city-states administered by a powerful king who was surrounded by elite of ministers and priests and supported by administrative bureaucracy (Crawford 1991: 48 ff.; 193 ff.).

E. *Development of the written code exploited two "engines" (magic-religious beliefs/liturgies and economic-administrative needs) vs. literacy driven exclusively by budgetary necessity*

Sumerian, Egyptian, Cretan, Chinese (oracular bones), Tibetan, and Mesoamerican ancient experiments with writing technology evidence that a magic-religious matrix for them stood beside or foremost the economic-administrative matrix. Some of the earliest written texts record sacred and ideological information rather than administrative one: a way to create and describe the world as the religious elite of the time wanted it to be. The narrations about a supposedly mythic divine origin of writing was used by ancients to highlight the fact that it was, amongst other things, the vehicle of communication with the gods or at least the test paper of the supernatural origin of the power of the monarchs (who in general did not know how to write or read).
Conversely, the traditional canon restricts to a categorical and exclusive must for writing technology: storing and organizing economic-administrative data – such as accounting and accountability, recording income, disbursement, and transfers - under the requests placed from the monarch, the bureaucratic authority, merchants, landowners and the clergy elite who managed the temples (Chiera 1938; Bernal J.D. 1954: 119; Toynbee 1958; Margueron 1965; Goody 1987; Coulmas 1989: 9; Cooper 1989; ibidem 2004: 72; Schmandt-Besserat 1992a and 1992b; Nissen, Damerow, Englund 1993: chapter 4; Pittman 1993; Pollock 1999: 172; Englund 2004).

F. *Visible concept vs. visible speech*.
As stated above, ethnological and historical evidence documents that a written representation fixes necessary thought and optionally sounds, whereas the standard interpretation reduces writing to a sequence of signs aimed to faithfully reproduce the sounds of a spoken language (de Saussure 1915; Bloomfield 1933; Coulmas 1989; Daniels, Bright 1996: 8), as reflected in the title of DeFrancis' (1989) book: *Visible Speech: The Diverse Oneness of Writing Systems*. The term 'true writing' is used as synonymous of 'writing language' in order to draw a clear boundary line between strictly language-related 'writing' and 'proto-writing'. However, it is an awkward term since its opposite would be ‘false writing’ (Haarmann 2008b: 21). The traditional neglect the cognitive and social significance of writing to propagate the spoken language as primary code of communication on one hand is theoretical, abstract and a-historical, on the other hand is historically rooted in the westerns’ penchant to alphabet considering to have developed the *optimum* system of writing.
Even in the Sumerian “prototype”, scribes did not attempt to render the language phonetically correct, exactly as it was spoken, still after the introduction of the cuneiform technology of writing (c. 2700 BC) (Thomsen 1984: 20). Throughout the period of Sumerian literacy, writing was never predominantly phonographic. On the contrary, the use of logographic signs abounded constituting 60.3% - 42.8% of the *montant global* of signs (Civil 1973: 26). Scribes redacted texts according to the “catchword principle”, writing the key words of a sentence and often ignoring even vital grammatical elements and syntactic markers that native speakers could supply from context (Bottéro 1992: 80; Cooper 1996: 37, 43; ibidem 2004; Nissen, Damerow, Englund 1993: 123; Sampson 1985: 50). If the later history of writing in Mesopotamia had its hub in a gradual process of

reconciling sign sequences with the sound sequences of Sumerian (Haarmann 2008a: 22), Cooper highlights a paradox: Sumerian is an agglutinative language in which nouns take suffixes and verbs both prefixes and suffixes. No trace of these affixes can be found in the early archaic texts. They began appearing after 2900 BC, but in a selective way lacking in detail and this skeletal technique endured for centuries. Curiously, they started to be fully expressed only in the early second millennium, when Sumerian was probably extinct and spoken only in the scribal schools (Cooper 1996: 43).

In the other ancient scripts too, early graphic representations were simple signs recalling units of a conceptual whole that the reader/narrator knew by heart (Février 1948: 17). Everything expected to be known by the reader was omitted (Nissen, Damerow, Englund 1993: 20). Therefore, in the beginning, the written messages did not correspond exactly to the forms of speech language and could be 'read' in several different ways, even in several languages (Gelb 1963: 14; Marangou 2001: 24). Only in a second phase, the graphic representation merged with the sound structure of a given language (Damerow 1999; Trigger 2004: 47).

G. *Pictographic and abstract roots of writing vs. descriptive-figurative starting point*.

In Neolithic and Copper Age of Southeastern Europe, mnemonic devices and magic-religious symbols were two major incubators of writing. They were based mainly on abstract geometries, contradicting the traditional approach according to which writing technology followed an evolutionary trajectory starting from the figurative language and proceeded from an ever-growing stylization-simplification of elementary iconic drawings.

Manuals still now popular among researchers on writing follow the late nineteenth century proposal of Isaac Taylor regarding an evolutionary trajectory of *ars scribendi* in five steps: from pictorials to pictograms, to logography as first verbal forms, to syllabicity and, finally, to the absolutely efficiency of alphabet (Taylor 1883: I: 5-6; Gelb 1952; ibidem 1963: 205, 252; Goody 1987). According to this assumption, the itinerary of the Sumerian script is “exemplar”, evolving from painting of “things” (more or less realistic or essential), to embedding abstract concepts and, finally, to putting oral language in writing. This linear path towards writing is extended to other geographic areas and different periods. It is more or less directly inspired by the semiotic of Aristotle according to which an object conveys a concept, which gives rise to an oral sign, which produces a written sign, which is by necessity derived from the categories of imitation (pictogram/ideogram) or convention (abstract sign).

The descriptive-figurative starting point for writing is evidently inspired by a minimalist definition of this technology as a mere derivative graphic transcription of oral utterances and by the misconception that “primitives” can only imitate nature. Concerning the first point, it is difficult today to accept the approach founded on a reductive perception of *ars scribendi* as an essentially not creative tool, i.e. as “a disguise". (Ferdinand de Saussure), “a dead trail" (Claude Hagège), "a dead letter" (Jacques Derrida), "a tracing" (Anne-Marie Christin), "a purely passive instrument of the pronounced word" (Eric A. Havelock), or even "a by-

product of orality" (Marcel Detienne) (collection in Glassner 2000: 54). Jack Goody has stressed with sufficient force the cognitive function of writing and its capacity to create and develop means of communication in a conscious and thoughtful manner that serves not only to elaborate an original cultural order, but also to enlarge systematically human intelligence (Goody 1977).
Concerning the traditional supposition that primitive mind is incapable of abstract thought and to conceive abstract shapes, only Greeks are credited to be the origin of abstract mind with the invention of philosophy and meditation on language. Sumerians, who came out of a long prehistoric night and being still "primitive", could only have been ignorant of such concerns. Their language lacked terms to express concepts; they did not have a noun to indicate, for instance, animal as a general term. "Innocence" and poverty of mode of thinking were two linked cognitive features of these primitive Sumerians and limited their capability to replicate what they saw. According to this view then, the first written signs were necessarily sketches that imitated forms, beings or real objects that surrounded them. The primitive signs could only have their foundation in nature. An example from Glassner is sufficient to contradict the presumed Mesopotamian inability to express concepts and abstractions. It is the expression *me.nì.nam.ma*, "quality intrinsic in every state," which indicates the universality of the concept *me*, i.e. the essence of objects and beings, their ability to act as translation and effects of the powers of the gods (Glassner 2000: 8, 55-56).
The theoretical postulate concerning the inevitable pictographic origin of *ars scribendi* and its progressive evolution into a phonological system has become increasingly criticized since the 1960s (Leroi-Gourhan 1964: 268 ff.; Harris 2000). However, it is so deep rooted that still now it produces unexpected short circuits. For example, the Neolithic inscriptions from the Chinese site of Banpo (Yangshao culture 4770-4085 BC) are not pictographic, but rectilinear in shape. This evidence contradicts the traditional principle according to which writing characters are derived only from pictographs. Therefore, some scholars prefer to liquidate Banpo signs as mere marks or symbols (Boltz 1986; Keightley 1989), instead to conclude reasonably that the postulated theory is not always applicable to Chinese writing, which characters have dual origins: one pictographic, and the other ideographic, especially with respect to abstract counting (Lu 2004).

H. *The beginnings of writing and alphabet do not coincide and the alphabet is only one of the many written codes vs. the triumph of the alphabet as tool for thought par excellence and historical fulfillment of writing technology*.
Writing preceded the alphabet by thousands of years and cannot be reduced to its recent alphabetical phase. Paul Bouissac arrives to propose that even the Upper Palaeolithic parietal and mobiliary art could actually encode articulate language rather than form loose symbolic configurations. According to him, it the plausible that at least some Palaeolithic engraved and painted graphisms could be early forms of scripts, that is, systematic representations of verbal messages (Bouissac 2007). Besides, the alphabet is not the benchmark to evaluate and classify the other (judged imperfect and limited) forms of writing (Cardona 1981).

Conversely, the mechanically evolutionistic paradigm narrates the development of literacy as a universal process ordered along a path of growing perfection from a crude representation of words through pictures to the more efficient representation of words dismembered into phonemes through syllabic signs and, finally, to the alphabetic approach (Sethe 1939; Gelb 1952). Often the terms "writing" and "alphabet" are used as synonyms.
However, there is no sense in creating a hierarchy of writing systems giving to them the titles of "more or less evolved", because each society generates directly or adopts from the outside the types of writing that are considered suitable and necessary. The amount and the variety of the messages are not in relation to the intrinsic richness or poverty of a script, but of what it is considered important to transmit.

In conclusion, accumulated phenomenological evidence and recent studies discard the pillars of the traditional vision on how, when and why writing came out. They put forward for consideration an approach rooted in the history of writing and based on a comparative view of the ancient scripts that allows exploring the *possible* existence of the *Danube homo scribens*. It had original apparition in Neolithic time, employed an inventory of mainly logographic abstract signs, and was triggered by magic-religious communicational needs emerging from a society characterized by networking and semi-equality paradigms. This possible ancient system of writing is called *Danube script*.

Archaic traits of the Danube script and difficulties in distinguishing it from other communicational codes

Writing technology did not emerge and function in isolation in any incubator region. It played within a cultural milieu that was based on a complex and historically determined communication system consisting – script apart - of gestural code, spoken language, symbols of identification (e.g. divinity marks, household logos), magic-religious symbolism, emblematic decoration, numerical systems (e.g., calendrical notation, measures and weights), and sign systems devoted to specific uses such as, for example, the musical notation. The networking of the channels belonging to the communication system was the common means to construct and convey culture. The distinctive profile of the channels and their interactively operate individualize communication systems and cultures throughout human history.
The changeover from a culture without writing technology to one with writing technology is an intricate and long transitional process. Having the Danube script pre-dated the other ancient scripts by up to two millennia and having been "frozen" at an early developing stage by the collapse of the Danube civilization, it is a laboratory case of this socially dramatic and semiotically unlinear landing to literacy.
A script can be identified in terms of operational technology even without and before being deciphered. The history of research on writing aligns several prominent cases of scripts whose nature of writing system was not disputed before

the crack of their codes (Haarmann 2008a: 14; viz. Pope 1975 and Robinson 2002 for the analysis of successful decipherments). It is the instance of ancient Aegean scripts such as the Linear B prior to Michael Ventris' decipherment and the Linear A, even if the decipherment is not yet complete. The Mayan graphemes acquired the status of writing system even before Michael Coe's decipherment and establishment that it was a logographic script with a syllabic component (Coe 1992). The ancient Indus script is generally acknowledged as a form of writing, although its decipherment has not yet achieved success, despite initial progress (Parpola 1994), and the reserves maintained by some scholars about the nature of its signs (Maisels 1999: 343; Farmer 2003a; ibidem 2003b; ibidem 2004).

When inspecting the internal structuring of the communication conveyed by the Neolithic and Copper Age communities from Southeastern Europe, evidence of a sophisticated semiotic system becomes noticeable. The *Danube Communication System* was comprised by ritualistic markings, emblematic decorations, symbols, divinity identifiers, schematic but naturalistic representations of objects, structures or natural events, calendric and chronographic annotations, sky atlases, representations of constellations and motions of celestial bodies (sun, moon, and planets), terrestrial maps, household identification marks, lineage recognition or community affiliation logos; and markings representing bio-energetic points of the human body. Within the Danube Communication System, clues of a system of writing are apparent, too.

The Danube Communication System was composed of several channels. Even the decorative canon did not function as pure aesthetic ornament, but carried a symbolic meaning and transmitted messages. "In the time before the alphabet, the pottery ornamentation was a main visual channel to hand out the tradition (specially speaking)" (Nikolov and Karastoyanova 2004: 174). "The whole world outlook of prehistoric farmers was expressed in the ornament: the Land and Underground World, the Sky, the Sun, the Moon, the Stars, the Plants, Animals and People… Observant people can see complete 'texts' composed in ornaments: it is raining, the grain is falling on the ground, it is sprouting..." (Videiko 2004).

As mentioned above, the entire communicative landscape was informed by the symbolic code. If the Danube civilization employed both symbolism and writing technology, the two modalities of treating information did not possess equal salience and value. Even if our modern literate mind is excited from the discovery of such an ancient European writing, this communicative channel was less important and less frequently used than the symbolism to the point that, in the occurrence of a single mark, it is more probable that it has to be framed within "the figured language of the symbols" rather than within the Danube script.

Having the Danube script been frozen *in statu nascenti,* sign outlines and organization of the reading space are not always confidently distinguishable from marks and spatial arrangement of the other communicational means. I am focusing below on three possible fonts of equivocation: a) some signs of the script share the same geometrical roots (at times, employing alike outlines) with ritual marks, decorations, symbols, divinity identifiers, chronographic representations, and astral renderings; b) can coexist on the same artifact with them; and c) can have similar space exploitation.

I will discuss below these points, in order to illustrate how difficult is settling writing technology in an archaic cultural milieu to the point that many scholars do not recognize it. However, although characterized by primitive traits, among which a weak association with phonetics, the Danube script should not be confused with other informative channels used by the Danube civilization. After the exploration of how subtle are the confines between a written text and marks from other informative codes in case of this archaic and uncracked script, I will provide some semiotic guideline in order to make the distinction achievable.

Concerning the first source of misunderstanding, depending on the semiotic context some marks can be either units of the inscriptions or elements of other communicational codes (Gimbutas 1991). In particular, a number of signs show the same outlines of sacred symbols because they had origin as elements of the religious-mythical frame and share the same silhouettes of the geometrical and abstract symbols from which they had derived.

This close relationship between symbolic system and writing system could originate uncertainty into the researchers employed to catch the semiotic code and possibly to decipher the Danube script. However, it witnesses at the some time that signs of this system of writing have their origin from the sacred language of symbols.

Secondly, signs of writing could co-exist on the same object with marks from other informative codes. Sometimes more than one channel of communication was in use at the same time on the same vase, figurine, or spindle whorl. A standing flat statuette of a bird from Hlebozavoda (a site westwards from Nova Zagora, Bulgaria) (Kynchev 1981; Todorova and Vajsov 1993: 200 fig. 181/2a-2b) is a case of study because it puts simultaneously on play three communicative channels: symbolic, written and decorative. Symbolic marks occur on the head: tri-lines instead of the eyes, tri-zigzags over the temples, and four horizontal lines on the neck. Then looking downward one can note two inscriptions arranged horizontally. The text under the neck is made-up of five aligned signs and divided in two reading areas by a diagonal line. The other text is incised on the chest. It is composed of at least 13 discernable signs (their script nature is much more detectable from the photo than from the published drawing). Afterwards there are two ornamental layers: vertical lines aligned to compose a belt-like and a garment design based on vertical zigzags. It is significant that symbols and ornaments are comprised of linear motifs exploiting the same geometric roots of the units of the script. The decorative nature of the two lower patterns is revealed by the symmetric arrangement of the marks that have also identical size, equal silhouette, and tendency to saturate completely the available space. The zoomorphic figurine is considered a “clay idol” in Bulgarian literature (Kynchev 1981: 84) and belongs to the Karanovo IV-Kalojanovec culture (5300 – 4800 BCE).

In the Danube civilization, the script was fixed (alone or associated with other communicational channels) not on rectangular, white, smooth, “odorless and tasteless” leafs of paper, but on highly symbolic objects made of clay and bone (human statuettes, seals, anthropomorphic pots, etc.) and their emblematic parts (vulvas, chests, buttocks, etc) (Winn 1973; ibidem 1981; Merlini 2004a). In general, the signs have been engraved when the clay was still wet. Therefore, the

intentional positioning of signs on a distinct object and in a specific location of it was an important element of the communicative act. This was not a technical choice, but an essential phase of the writing process. The emblematic objects themselves, on which signs were engraved (e.g., miniaturized altars – offering tables, dwelling models, ritual vessels, seals, zoomorphic statuettes, and human figurines), functioned as essential components of the messages as well as the position of the signs on the mail-artifact (legs, transition leg-wall, wall, upper surface concerning miniaturized altars, and so on).

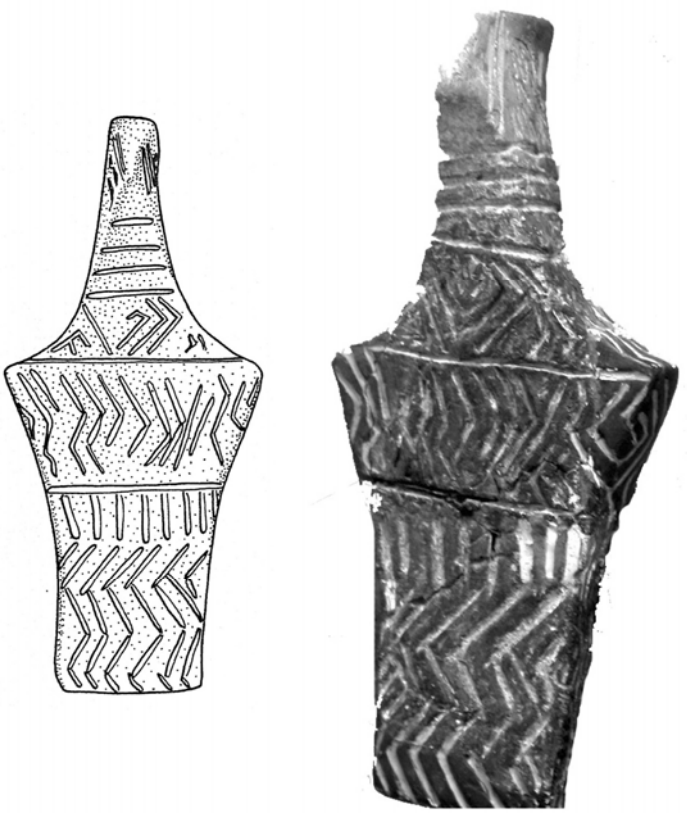


Figure 8. Symbolic, written and decorative codes are simultaneously on play on the body of a statuette in shape of a bird from Hlebozavoda (Bulgaria). (After Todorova and Vajsov 1993: 200, fig. 181/2a on the left; photo Merlini M. 2005 on the right).

When the writer decided to communicate a certain package of information, she/he selected an appropriate artifact — such as a human statuette — with a specific typology (e.g., female/male/androgynous/without evident gender; young/mature/old, naked/dressed, etc.). Inscriptions were made only on the anatomical areas considered "strategic" for the targeted message (e.g., the vulva,

belly, buttocks, throat, and forehead). The particular silhouette of a figurine, a special necklace or garment, a distinct design on the dress or an anatomical peculiarity (such as "divine eyes," for example) were additionally significant elements to the meaning of the signs.

It is not for a case or due to absence of available reading space that the potter decided to incise a long inscription around the belly and hips of a Vinča C (Late Neolithic) corpulent and pregnant anthropomorphic statuette from Vinča (Republic of Serbia). It has possibly an apotropaic meaning connected to the gestational condition of the personage. The V around the neck, the bi-lines on the shoulders and the three long horizontal lines at the end of the attire have a decorative nature. Was it a special garment utilized for birthing? The perforations on the shoulder indicate that the statuette has been conceived to be suspended. Was it utilized as amulet during the giving birth to a child?

Figure 9. The potter decided to incise the long inscription around the belly and hips of a Late Neolithic pregnant anthropomorphic statuette from Vinča (Republic of Serbia).

The delivery of a message utilizing contemporaneously a range of informational channels is not an antiquate and primitive feature when writing technology was not yet entirely separate from the symbolic code and in some ways still subordinate to it. It was an effective communicational method as documented, among the others, by a fragmented figurine from Rast (Dumitrescu 1980: 64, Fig. LXVIII), a Karanovo VI cylindrical four-sided figurine from Bereketskaja Mogila (Stara Zagora, central Bulgaria) (Gimbutas 1989: 68. fig. 108), a Trypillya B female statuette from Aleksandrovka (Ukraine) (Pogoževa 1985: P. 142, Abb. 85,

88; Lazarovici C.-M. 2005: 148, fig. 4.7), and a statuette in shape of a bird from Chlebosavoda (Bulgaria) (Todorova and Vaisov 1993: 200 fig. 181/2a-2b).
A holistic communication employing writing in association with other communicative codes is widespread in the history, being powerful, complete, and able to cope with nuances. Some examples from different periods and cultural milieu can help us to comprehend the mind of the Danube literates.
A tablet from Knossos has the depiction of six horse heads two of which are without manes. The Minoan world "polo" (resembling the same classical Greek word) was added on the left of the maneless pictograms to make clear that they are foals and not adult animals. The merge between iconic and script codes evidences that the Minoans spoke and wrote an archaic form of Greek and conveyed Ventris' decipherment of Linear B (Robinson 2002: 83).

Figure 10. Tablet from Knossos after Evans with the drawings of two foals and the term "polo" (foal) in Linear B.

A Southern Netherlands wool arras of 1500-1530 BC hold at the MET Museum of New York depicts a shepherd couple entertaining themselves with music while their flock frolics in the *millefleurs* background. On the left side, the shepherdess holds up a sheet of music with the phrases she is singing (Let's sign, on the grass / with your bagpipe / a tune for two). The shepherd plays a bagpipe and responds with a verse sprouting out from the instrument (When she signs / her voice is fair / but I do the work). The arrangement of written poetry and iconography is essential to understand the sexual double sense of the action.

Figure 11. The arrangement of written poetry and iconography conveys the sexual double sense of a shepherdess and a shepherd making music in a flowers and leaves scenario.

Any angel on the bridge of Castel Sant'Angelo at Rome - used to expose the bodies of the executed - holds a specific instrument of the Passion added by a distinct written caption ("In flagella paratus sum", "Potaverunt me aceto", etc.), in order to make indubitable what it represents.

Figure 12. An Antonio Raggi's angel on the bridge of Castel Sant'Angelo at Rome holds the Column of the Passion added by a distinct written caption in order to make certain what it represents. (Here, "Tronus meus in columna", i.e. "My throne is upon a column"). (Photo Merlini 2007).

In 1930, the logo of *Le Cyclo* was composed depicting a bicycle. It recalls the technique of the Arabic calligraphy that - coping with the Islamic tradition of cautioning against the "representation of living beings" (Schimmel, Islamic 11) - uses the composition of a bird shape, specifically a stork, to incorporate the *Basmalah* ("*Bismillah al-Rahman al-Rahim*" = "In the name of God, The Compassionate, The Merciful"). In these instances, letterform, figurative appearance, ornamental configuration and symbolic content merge. Any boundary between writing and not-writing floats.

Figure 13. The logo of *Le Cyclo*, 1930.

A famous photo of captain Fabio Cannavaro holding the Soccer World Cup won by the Italian national team in 2006 shows the name of his son tattooed in Gothic looking font on the inside of his upper right arm: “Andrea”. The name of the other son “Christian” is tattooed, with the same characters, behind the back. His right forearm is marked by "Daniela" (his wife) in Gothic, too. The name of the daughter “Martina” is tattooed on the right ankle in Chinese ideograms. The Tattoo Man exploits his skin to be surrounded by all the family during the long travels around the world for matches. As the Neolithic figurines, has he associated a message (the name of a specific relative) with a part of his body? Is the selection of the writing fonts not for a case, but fitting his feeling with the different members of the family?

The name of kinfolks engraved on the body, wife and children, is actually a fixation for the transgressive, but family-driven, Italian soccer players. Marco Materazzi has tattooed “Daniela I belong” (the wife) on the right wrist, along with a butterfly (which symbolizes the idea he has of her). The names of the children are imperative also for him: “Anna” (on the neck); “David“ and “Gianmarco“ on the left arm, positioned next to a tattoo with “Lion” and his birth date in Roman numerals. Materazzi has indelibly marked both arms with his philosophy of life "If a problem can not be solved, that need to worry?”

Antonio Cassano is unmarried. Waiting for wife and children, he has tattooed his own name on right arm. This is a Chinese ideogram, which is very fashionable nowadays and has to help him never to forget how he is called.

For apotropaic reasons, calf and thigh are the areas usually filled by the soccer players for the first. The messages marked on them are personal, confidential, not made to be viewed by other people, being covered by shorts and knee sock. The indelible signs assure protection without any need to be “read”, but though good luck power.

Figure 14. The soccer Cannavaro exploits his skin to have all the family with him during the long journeys around the world for matches.

The third reason for the not always easy distinction between the Danube script signs from marks belonging to other communicational channels is that they are not inevitably arranged in linear sequence, whereas sometimes decorations, symbols and calendrical marks are. Most of the inscriptions are aligned along a horizontal row. Other inscriptions arrange the signs into a column, into a circle or diagonal bands. However, the linear order of the signs is not a mandatory criterion.

Our Western-acculturated inclination to associate writing with signs that follow a sequential organization is wrong-footed by the acknowledgment that the Danube script can arrange signs haphazardly, whereas decorations or symbols can bee aligned in succession (divinity identifiers can be positioned along a line according to the divinities hierarchical position, bioenergetic marks can appear according to symbolic patterns able to render the progressively stimulating energy and life, etc.).

A potshard from the upper body of a vessel, belonging to the Turdaş culture and recovered at the eponymous site, provides evidence for the presence of writing. It bears the following signs: ✕ , ⁄ , ⊤ , ⩚ , and § . Some of them are connected by ligature. However, their organization lacks any linear order (Torma *Notebook* tab 30.4; Winn 2004a online, fig. 9b).

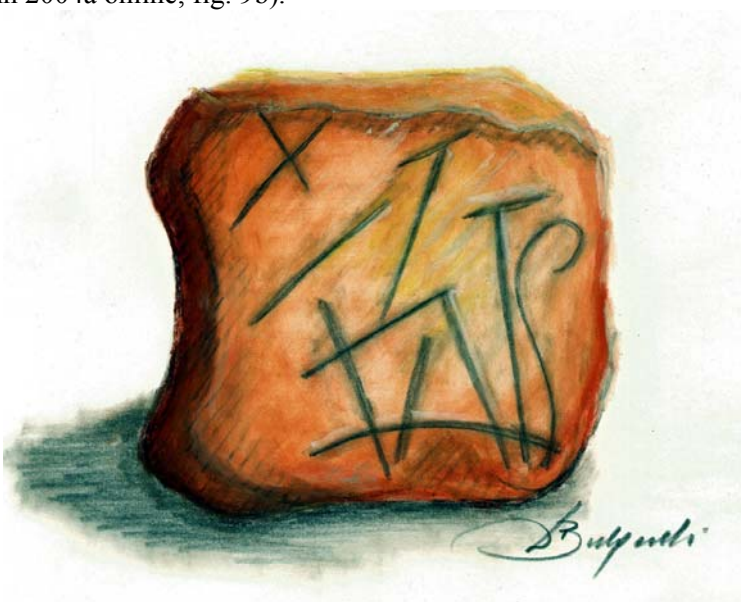


Figure 15. Signs are unsystematically arranged in on a Turdaş potshard from the eponymous settlement.
(D. Bulgarelli, *Prehistory Knowledge Project* © 2007).

Contrariwise, symbols can be aligned in linear sequence when this arrangement is part of the meaning. An unpublished little figurine from Cucuteni A culture (dated circa 4300-4200 BC) hold by the Botoşani museum (Northeastern Romania, next to Iaşi) is incised through a design of symbolic marks progressively stimulating energy and life. They are a couple of opposing spirals contained within a series of Λ on the legs, a double belt over the waist which is surrounded by Vs connected to a giant triangle holding a cross in high relief within, Λ chevrons, triangular motifs that remark the silhouette of the clavicle, and asymmetric marks of evident symbolic nature punched on an emblematic mask. On the figurine, symbols are clearly placed following a linear, logical, and energetic sequence from bottom to top.

Figure 16. On an unpublished Cucuteni figurine from Moldavia (Romania) symbols are placed following a linear, logical sequence ascending from bottom to top. (Photo Merlini M. 2005).

A Matrix of semiotic rules and markers for inspecting the sign system of the Danube civilization and checking evidence of a script

Although the Danube script was frozen by the collapse of the related civilization when it was still in an archaic phase and probably had a weak association with phonetics, it should not be mixed up with the other communicational channels composing the Danube Communication System. However, for the above-synthesized reasons the distinction is not always evident. Coping with this complexity, the author propones a "Matrix of semiotic rules and markers for inspecting the sign system of the Danube civilization". It is acknowledged of the high communicative skills of these ancient populations, attested by the presence of a sophisticated semiotic system (the Danube Communication System), and plays in accord with a conceptual and historical revision of the definition of what "writing" is and which its origins are throughout a comparison with the other scripts of the ancient world. The matrix is intended:

a) To investigate the internal structuring of the sign system developed in Neolithic and Copper Age time-frame in Southeastern Europe to verify the possibility that these cultures might have expressed an early form of writing, i.e. the Danube script.

b) To distinguish inscriptions of the Neolithic and Copper Age system of writing composed of two or more signs, of course without knowing what each of them stands for, from compound marks associated with other communicational channels utilized by the Danube civilization. In the present phase, the matrix

includes the distinctive criteria for ritual markings, decorations, symbols, and divinity identifiers. In progress is its improvement concerning: schematic but naturalistic representations of objects, structures or natural events; calendric and chronographic annotations; sky atlases, constellations and motions of celestial bodies (sun, moon, and planets); terrestrial maps; family identity, lineage recognition or community affiliation; and markings representing bio-energetic points of the human body.
c) To establish organizing principles that the Danube script shares with other ancient scripts as well as distinct proprieties, even if it is far to be deciphered.
d) To input into the databank *DatDas,* developed by the author, inscribed artifacts, inscriptions, and signs that have got through the filter of the Matrix.
On other occasions, versions in progress of the "Matrix of semiotic rules and markers" have been published (Merlini 2005b). An extended edition concerning the distinguishing guidelines between signs/inscriptions of the Danube script and decorative motifs/patterns is available (Merlini 2007a). The "Matrix" was tested according to a number of facets (typology of inscribed objects; category of marks; geographical patterns, cultural subdivision) in order to improve its reliability. Up to now, it was tested on marks from the core area of the Danube civilization (Merlini 2005b; 2007a; 2008b; 2008c), the Turdaş culture (Merlini 2008c; forthcoming), the Precucuteni, Ariuşd, Cucuteni, and Trypillia cultural complex (Merlini 2007b; 2008c; in press), and some icons of the Danube script such as the Gradešnica platter (Merlini 2005a; 2006a; 2008c) and the Tărtăria tablets (Merlini 2004a; 2004b; 2006d; 2008c).
The achieved result is fixing the fundamentals to settle the Danube script within the Danube communication system. Of course, instructions and indicators of the Matrix are in progress and under continuous test. It will be possible to distinguish without errors when a sign or a combination of signs is unit of a written message or, alternately, is a ritual marking, a decoration, a symbol, a divinity identifier, etc. only when we will be capable to read the script. However, it will not even be possible to read the script if we are not able to isolate its signs from the others. It is really a loop that needs to be broken step by step and by progressive approximations.

Semiotic guidelines to discern between ritual marks and Danube script signs

The first distinction established by the "Matrix of semiotic rules and markers" is between Danube script signs and ritual marks: incisions or paintings not necessarily associated with recognizable specific meanings, but with the energy and emotion of cultic actions and magical purposes, including divine manifestations or interventions. The ritual marks appearing on objects or in rock art are connected to an emotional or mystical experience that is at the foundation of a liturgy or has surfaced during it. They do not necessarily express a "literary" message, which aim is to transmit structured packages of information. Another indispensable distinction is between these marks, which are output of liturgies, and erratic graffiti by confused artists, desecrating scratches, and fortuitous lines made after firing.

In the Neolithic and Copper Age time-scale, ritualistic marking were differentiated into four distinct modes: *empathic action-graffito, psychogram, repeated testimony,* and *writing-like copy*. They are correlated to diverse spiritual moods and sketched during religious or magical acts of completely different types.

The empathic action-graffito is the most frequent category of graphic depiction within an emotional context. In fact, emotional outbursts are very compelling. Most of the ceremonies are centered on words and gestures (not only prayers and invocations, but also curses, viz. Draşovean 1997). Therefore, the energy that arose from these liturgical acts was much more important than the distinctive marks generated by them on an artifact, the wall/floor of a shrine or the wall of a cave. As "derivate" mark, the "empathic" graffito has often indefinite and confusing shape, since it fixes a graphic burst of energy, a private drawing that carries pure desire, an emotion, acts of adoration, a promise, or other strong spiritual feelings. An empathic action-graffito does not transmit packages of information to either divine or human beings, nor does it guarantee a contact with divinity. Rather it fulfills precise psycho-emotional and spiritual needs emerging during ecstatic devotional acts and is a part of that activity.

Figure 17. An empathic action-graffito on a fifth millennium BC statuette unearthed at Grădiştea-Coslogeni (Romania). (After Neagu 1998: 221, Pl. 16; 1999, fig. 9).

After having examined a series of Neolithic and Copper Age empathic action-graffiti incised on artifacts from Gomolava-Hrtkovci, Vinča-*Belo Brdo*, Petnica, Vršac-*At*, Potporani Kremenjak (Republic of Serbia), Cerje-Govrlevo (F.Y.R.O.M.), Gradešnica, Obreshta and Tsarevets (Mezdra, Bulgaria), Isaiia (Romania), the author proposes a semiotic matrix to distinguish between this kind of ritual marks and signs of the Danube script. Guidelines are hinged on the acknowledgment that an inscription attempts to express an intelligible message,

whereas an empathic action-graffito is the concrete result of ecstatic religious activities. The matrix can be synthesized as follows.

Contraposition	**Signs of writing**	**Empathic action-graffiti**
Global and social vs. local and private	The script and its inventory were in use in numerous sites over a wide area.	An empathic action-graffito is unique.
Distinctness vs. indistinctness in shape	An inscription might be executed imprecisely and carelessly, but the silhouettes of the signs are distinct and identifiable.	The graphic elements assembled to create an empathic action-graffito are in general quite indistinct.
Following a geometric code vs. free from any geometrical code	Geometric, abstract, high schematic, linear, and not very complex signs could belong to the script framework and in fact, in many cases they do.	The shape of empathic action-graffiti does not follow any geometric code.
Occurrence of an inventory vs. absence of any standardized set of marks	Signs of writing can be collected in a precise and systematic inventory.	Empathic action-graffiti cannot be gathered in a repertory being each of them unique.
Homogeneity vs. heterogeneity in depth of incision	The signs of an inscription in general are incised with a homogeneous grade of pressure.	Empathic action-graffiti are usually incised or too hesitantly or too vigorously.
Techniques and restrictions in modifications	Signs of writing can be modified applying to them diacritical markers such as small strokes, crosses, dots and arches as well as duplicating-multiplying them or reversing them as in a mirror, inverting them, reversing and inverting them at the same time.	*Empathic action-graffiti* are not subjected to the technique of the multiple variations.
Use of naturalistic depictions vs. their absence	An inscription can mix both abstract and naturalistic signs.	*Empathic action-graffiti* are motifs that never directly derive from or imitate real life or nature.
Speed of	Signs of an inscription are	Empathic action-graffiti are always

execution	made sometimes quickly and sometimes slowly.	made rapidly.
Space organizational principles	Signs of writing compose an inscription through an asymmetric co-ordination and preferable linear alignment, even if a sequential arrangement is not an absolute prerequisite of a writing system.	In general, the graphic elements comprising an empathic action-graffito are arranged without any order and often overlay one another.
Superimposition of scratches and fingerprints	Inscriptions are only *sometimes* superimposed by scratches or maker's fingerprints.	Empathic action-graffiti are *normally* superimposed by scratches or maker's fingerprints.
Presence of ligatures vs. their absence	Signs of writing can be combined by ligatures (compound signs formed from the merger of two or more elementary signs).	Ligatures are absent in the field of the empathic action-graffiti in which graphic elements can be overlaid, mingled, scrambled.
Presence of dots and vertical strokes vs. their non-appearance	The use of dots and vertical strokes to separate signs or groups of signs is strong evidence of an inscription.	Dots and vertical strokes generally are not utilized in an empathic action-graffito; in the remote case of their appearance, they are not employed to separate marks or groups of marks.
Independent of firing vs. after firing	A text is often incised before firing, but it might also be made after firing.	In general, an empathic action-graffito is scratched after firing.

In conclusion, semiotic indicators rotate around an axis according to which an inscription of the Danube script attempts to *express* an intelligible message that has often a magic-religious meaning, whereas an empathic action-graffito is the concrete *result* of ecstatic liturgical activities.

Therefore, usually empathic action-graffiti appear shapeless or misshapen, made of indistinct graphic elements assembled without an evident order and/or overlapping even if sometimes they seem to have script-like shape at a first glance. They are hurriedly made and scratched too vigorously or too irresolutely. In fact, this kind of marks has been made not to broadcast information to a divinity or to human beings, but as output of distinct psycho-emotive and devotional feelings. Empathic action-graffiti are output of ceremonies where words, gestures, feelings, and energetic actions play a much more important role than scratches derived from them on a statuette, an altar or the wall of a cultic dwelling.

Cases where sacred incisions and even liturgical artifacts have been made very rapidly, probably during a highly emotional ritual are key test for the section of the "Matrix of semiotic rules and markers" that distinguishes between script signs and *empathic action-graffiti*. It is the instance of a human-zoomorphic altar discovered at Tărtăria (Transylvania, Romania), composed of the body of a four legs animal and a human face. The cultic hybrid is not very well done, not finished and with a not very polished surface. The right side is broken. Similarly, the signs are not careful made, even if their selection and arrangement appear to be full of meaning: a double V under the neck, a bi-line inserted into a V on a hip, a triple and a quadruple V on the side, and a little chevron on the shoulders. The "writer" wanted to trace a V on the neck. Therefore, started to move a sharp tool in diagonal from the left, but he/she changed mind and incised a new diagonal. Regarding the sign on the hip, the "writer" closed a V with two vertical strokes engraving a sign very close to a hand with three fingers. The tree-V is composed by a V above a close bi-V. Scrutinizing the piece, it is easy to image a ceremony centered on invocations and gestures – among which the incision of a sacred inscription - that arose devotion, emotion and energy that were associated – and perhaps much more important - than the distinctive signs generated by them on the cultic artifact (Merlini, Lazarovici Gh. 2008). Literacy had the role to fix permanently and precisely the sacred formula.
The archaeo-semiotic analysis of the inscribed miniaturized altar shows that it bears an inscription of the Danube script and not an *empathic action-graffito*.
Signs are intentional and, even if executed imprecisely and carelessly, have distinct and identifiable silhouette according to the expression of a meaning.
Signs are geometric, abstract, high schematic, linear, and elementary.
Signs can be collected in the inventory of the Danube script, which was in use in numerous settlements over a wide area.
Signs are incised with a homogeneous grade of pressure.
Signs are modified applying to them diacritical markers as well as duplicating-tripling them.
Signs show an asymmetric co-ordination and a linear alignment.
Signs have been made before firing.

In conclusion, even if the ritual action to model the artifact and engrave sacred signs was in a rush and more important that the aesthetic and the clear rendering of the inscription as well as the skilful finishing of the object, the human-zoomorphic altar from Tărtăria does not bear an amorphous and personal *empathic action-graffito,* but a still undecipherable text of the Danube script.

Figure 18. An emblematic, inscribed human-zoomorphic altar discovered at Tărtăria is incised with a rapidly and puzzling inscription of the Danube script and not with an *empathic action-graffito*. (Photo Merlini 2005).

Contrasting ornamental motifs with the Danube script signs

The second series of guidelines established by the "Matrix of semiotic rules and markers for inspecting the sign system of the Danube civilization" is to distinguish between signs/inscriptions of the Danube script and decorative motifs/patterns. If the Danube writing possesses peculiarities that differentiate it from ornament, when working on the field the dividing line is not always confident. To accomplish the task, a distinct matrix of semiotic guidelines can be summarized as follows. As one can note, inscriptions and ornamentations have different purposes, rule of composition and organizational principles.

Contraposition	**Signs of writing**	**Decorations**
Inventory of the script vs. corpus of the ornamental motifs	If one sets apart for a moment the exception of the ambivalent signs that can be involved in writing messages as well as in ornamental design, signs of writing can be collected in a precise and systematic inventory.	If one sets apart momentarily the exceptionality of signs that can be inserted in an ornamental design as well as in a writing message, artistic marks can be gathered in a specific corpus.
Sign outlines	Geometric, abstract, high schematic, linear, and not very complex signs belong, with more probability, to the script framework.	When dealing with geometric, abstract, high schematic, linear, and uncomplicated signs one is with less probability inside the decorative framework.

Techniques and restrictions in modifications	Signs of writing can be modified applying to them diacritical markers such as small strokes, crosses, dots and arches as well as duplicating-multiplying them or reversing them as in a mirror, inverting them, reversing and inverting them at the same time.	The decorations are in general not subjected to the technique of the multiple variations. They can be varied – and not often anyway - only by duplicating-multiplying them or turning them round as in a mirror, turning them upside down, turning them round and upside down at the same time.
Balance between isolation and grouping vs. inclination to grouping	Signs of writing occur singly as well as in groups.	Ornaments occur preferably in groups.
Linear alignment and asymmetric co-ordination vs. symmetrical gravitation and rhythmic repetition	When in groups, signs of writing prefer a linear alignment (even if a linear alignment is not an absolute prerequisite of the Danube script) and show an asymmetric co-ordination producing visually random compositions. Sometimes they are positioned along different registers, in columns or in lines.	An ornamental element is in general arranged with others in order to capture the symmetrical balance able to exalt the aesthetic value of the object. The rhythmic and symmetrical repetition of a geometrical motif in picture friezes is the principal feature of the Danube decorative system.
Presence vs. absence of ligatures	Signs of writing can be combined by ligatures.	Ligatures are absent in the field of decoration.
Functionality/ aesthetics	An inscription assembles signs in a functional way (although signs of writing are sometimes positioned in an aesthetic way).	The main purpose of the decorations is aesthetic as exemplified by the use of slight variations in the framework of general homogeneity.
Dots and vertical strokes	The use of dots and vertical strokes in separating signs or groups of signs is a strong marker of the occurrence of an inscription.	In a decorative design, dots and vertical strokes are in general not used to separate signs or groups of signs. If so, they are positioned in a symmetric way.
Abstract and	An inscription can mix both	In general, in

naturalistic mix	abstract and naturalistic signs.	ornamentation there is no mix between abstract and naturalistic motifs.
Horror vacui	Signs of writing never saturate the entire available space, because they carry a specific message.	It is non infrequent that a decoration saturates the entire available space.

To sum up, the system of artistic motifs and the system of writing were viewed as separate codes in the mind of the Danube literates, even if strictly connected. Observing in-group marks that are disposed in order to capture the symmetrical balance able to exalt the aesthetic value of an object, have the tendency to saturate the entire available space, are not modified by diacritical marks and are not connected by ligatures, one has high probabilities of dealing with a decoration and not with an inscription. Artistic signs can also be gathered in a specific corpus. Contrariwise, observing geometric, abstract, high schematic, linear and not very complex signs that have been modified by diacritical marks, are joint by ligatures and are organized in an asymmetric way, one has high probabilities to be within the script framework.

One can note clues of the Danube script, applying the "Matrix of semiotic rules and markers" to an Early Neolithic cylinder from Parța (Romania), which belongs to the Banat IB cultural group that developed between ca. 5400-4900 BCE.

The engraved signs are all insertable within the inventory of the Danube script signs.

Geometric, abstract, high schematic, elementary, linear, and not ornamental signs occur as representative of a script.

Concerning the organization of the inscription, signs are assembled in a functional way and not in an aesthetic way. Signs appear in groups. Signs are organized according to a linear alignment. Within any cluster, they show a spatial asymmetric co-ordination producing a visually random composition that is antithetical to a harmonious design, but is functional to store and transmit messages. Signs are organized at least in two different groups as to express different packages of information. Finally, signs do not saturate the entire available space, because they have not a decorative function, but carry a specific message.

Briefly, the signs engraved on the Early Neolithic cylinder belong, with more probability, to the writing framework than to the ornamental framework, because they are consistent with most of the indicators related to the occurrence of the Danube script.

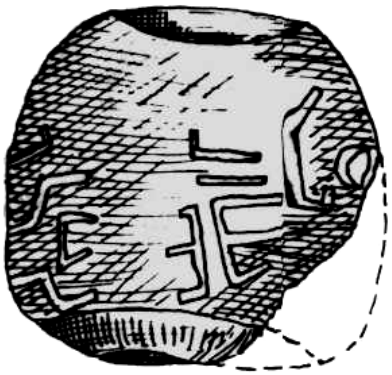


Figure 19. Clues of the script occur on an Early Neolithic cylinder from Parța (Romania).

Distinguishing symbols and Danube script signs

A distinct matrix of semiotic guidelines is provided to discern between Danube symbolism and Danube writing system in case of messages made of two-more signs. Being the symbolism often a blend language to express the visible unreality of the sacred sphere, it was more important and frequently used than the script. However, it had a natural and close association with the script being the main source in shape as well as in significance of it, to the point that some marks have the possibility to be a symbol and a writing unit as well, depending on the context. The matrix can be synthesized as follows.

Contrapositions	**Signs of writing**	**Symbols**
Inventory of signs vs. repertoire of symbols	There are signs that are used solely in the Danube script. Therefore, one can build an inventory of signs exclusively employed in the written messages.	There are marks that are used only in symbolic messages. For that reason, one can build a repertoire of pure symbols.
The identification of the nature of the marks that can be both writing units and symbols	When "ambivalent signs" (those which can be script units or symbols as well) are associated with signs of writing, one is dealing with an inscription.	One is confident enough to assume to be outside the symbolic framework when signs of writing are associated with "ambivalent signs" (those that can be script units or symbols as well).
Accuracy in making	Sign of writing can be scratched.	Symbols are in general accurately made.

Divergent inclination regarding the location on objects	Signs are not necessarily in prominent position.	Symbols are often in prominent position.
Different role associated to the inscribed/painted artifact or its parts	In several instances, there is a restrictive utilization of the signs on distinct typology of artifacts and their portions.	Symbiotic relationship between symbols and an object and/or a strategic part of it, because the former can melt with them and even become a substitute of them.
Not emphatic vs. oversized shapes	The signs of the Danube script have outlines that are modest in size.	The symbols are outsize oriented.
Techniques and restrictions in outline modifications	Signs of writing can be modified applying to them diacritical markers as small strokes, crosses, and arches.	Symbols do not vary their basic outline.
Ligatures	Signs of the script can be combined from ligatures.	Ligatures are absent in the symbolic communication.
Abstractness	Abstract signs of writing are in greater numbers than abstract symbols.	Naturalistic symbols are much more than signs of writing with a picture-like character.
Spatial rules vs. possibility of a haphazard arrangement	A text arranges the signs according to spatial rules aimed to organize its readability.	It is not infrequent that a compound symbol disposes haphazardly its units
Systematization of the space and linearity	A linear sequence of the signs, when it occurs, is voted to organize the process of reading. In the Danube script, this instance is much more frequent than in the Danube symbolism.	In case of a group of symbols, their linear arrangement, when it occurs, is aimed to express a logical progression or hierarchy. In the Danube symbolism, this instance is much more frequent than in the Danube script.
Dots and vertical strokes	The presence of dots, horizontal lines and vertical strokes in separating signs or groups of signs is a strong indicator of the occurrence of an inscription.	In the symbolic language dots, horizontal lines and vertical strokes are not employed to separate signs or groups of signs.

Independent of firing vs. before firing	A text is often made before firing, but it might also be made after.	In general, symbols are made before firing, very rarely after.

In brief, the symbolic language and the system of writing were considered distinct informative channels, even if composing strictly connected key codes of the Danube Communication system. Observing in-group marks on an artifact, at first one has to check if they belong to the repertoire of pure symbols or to the inventory of the Danube script signs. If an answer is not practicable, there are more probability that the marks under scrutiny belong to the symbolic channel than to the system of writing if they do not present any variation of their basic outlines; are not connected by ligatures; are deeply incised with well rendered shape; have a prominent position on the object; have oversized outline; show a naturalistic root; are not separated by dots, horizontal lines and vertical strokes; and are arranged haphazardly or according to a logical progression or hierarchy. It is not required the simultaneously presence of the whole range of indicators to state the presence of a compound symbol; the co-occurrence of three or four markers is in general enough.

Contrariwise, one has more probability to be within the framework of the Danube script if the marks under analysis show a simple, abstract silhouette, have small shape, are modified applying to them diacritical marks, are incised on a peripheral location, and are organized according to spatial rules aimed to convey their readability (a linear alignment in sequence, the division of a text in different sub-inscriptions through dots, horizontal lines, or vertical strokes, etc.). As in the case of compound symbols, it is not necessary the concurrently occurrence of all the indicators to maintain the presence of a written text.

A clay spoon from Kisunyom-Nàdasi (County Vas, Hungary) can test, among other inscribed artifacts, the section of the "Matrix of semiotic rules and markers" that points out difference between Danube symbols and Danube script signs. It belongs to the western group at the end of the Lengyel II–Early Lasinja culture (mid-fifth millennium BC) and was found in 1981 in a pit in association with other fragmented finds inscribed with signs.

The discoverers maintained the written and not ornamental nature of the incised signs due to their distinctive shapes and aligned order (Kàrolyi 1992: 24, 29; ibidem 1994: 105; Makkay 1990: 72, who considered it to be the only piece bearing signs of writing from the late Lengyel culture). The spoon is bigger than the ones utilized in daily life and exhibits a peculiar shape having a round oval handle with a wide opening and a flat bottom. A circular chain of signs has been incised before firing on the leveled surface of the bottom, all around the hole. Unfortunately, the writing sequence is not complete, but seven signs are identifiable: five are compound signs and two are basic elementary signs. It is significant to note that *all* of the five composite signs are arranged by juxtaposing, interweaving, or merging elementary signs through the writing technique of the ligature. All of the signs are present in *DatDas* inventory of the Danube script.

Some signs occur repeatedly: one sign (X) recurs three times in the inscription and another sign ( ) reappears twice. This is a strong indicator of the existence of early literacy in the Danube basin.
Other semiotic indicators evidencing the occurrence of the Danube script and not the symbolic code on the Hungarian spoon are the following.
Signs are intentional, identifiable, highly stylized, elementary in form, not ornamental, similar in size, standardized according to a model.
These signs are employed exclusively in the written messages of the Danube script, not in other communicational codes.
Sign are scratched and not accurately incised as symbols are.
Signs are not in outstanding position, but on the bottom.
Signs are not only combined from ligatures but also modified applying to them diacritical marks as small strokes, crosses, and arches.

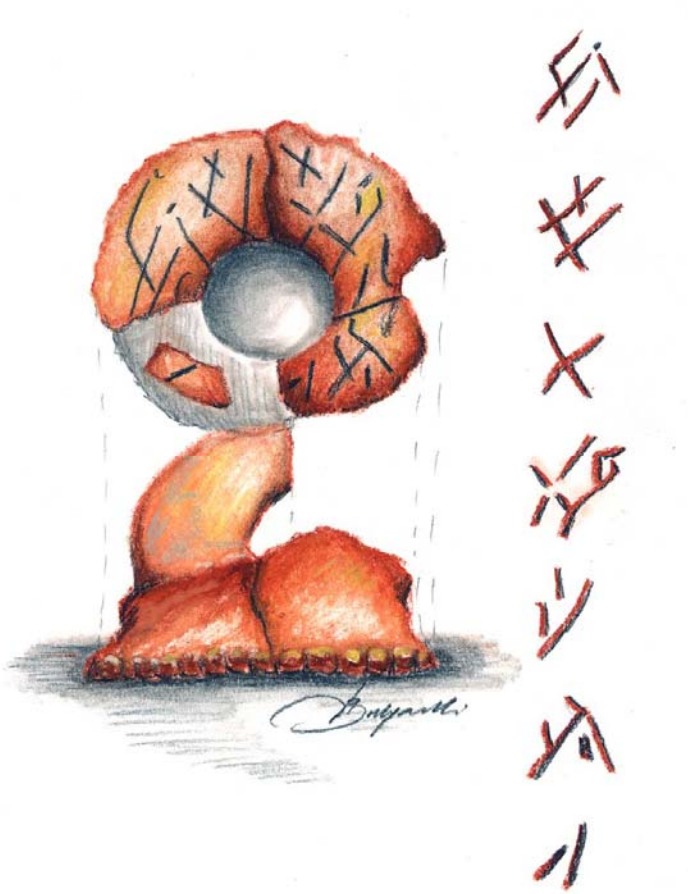


Figure 20. The inscribed Lengyel II spoon from Kisunyom-Nàdasi (County Vas, Hungary) and its inscription. (D. Bulgarelli, *Prehistory Knowledge Project* © 2007).

Addressing the Danube civilization and the Danube script

According to *DatDas* evidence, the earliest experiments with literacy started around 5900-5800 BC - at Starčevo-Criş (Körös) IB, IC horizon - some two thousand years earlier than any other known writing. The Danube script quickly spread along the Danube valley northward to the Hungarian Great plain, southward down to Thessaly, westward to the Adriatic coast, and eastward to Ukraine (Merlini 2001; ibidem 2004a). A later, related script developed in Precucuteni-Cucuteni-Trypillya area (Merlini 2004b; ibidem 2007c). The experiment with writing technology developed up to about 3500-3400 BC, when a social upheaval took place: according to some, there was an intrusion of new populations, whilst others have hypothesized the emergence of new elites. At that time, the Danube script eclipsed and was later to be lost.

As mentioned above, the term "Danube Civilization" refers to the Neolithic and Copper Age societies of Southeastern Europe that flourished from c. 6400 BCE to c. 3500-3400 BCE. This terminology is coherent with the acknowledgment that the Danube River and its tributaries favored the emergence of an institutional, economic, and social network of developed cultural complexes, cultures, and cultural groups that shared several key features over a wide territory.

They were characterized by extended subsistence agrarian economy and lifestyle, urbanism, refined technologies (particularly in weaving, pottery, building and metallurgy), long distance trade involving also status symbols artifacts, complex belief system, sophisticated patterns of religious imagery, and an effective system of communication using tallis, marks, symbols and signs (the Danube Communication System) that included writing technology. The origin of writing was evidently linked to the quantitative growth of the information that had to be recorded and transmitted in the dynamic societies that comprised the Danube civilization (Merlini 2005a; ibidem 2008b).

The term "Danube Civilization" is consistent also with the challenge to demonstrate that "early civilization" status can no longer be limited to the regions which have long attracted scholarly attention (i.e., Egypt-Nile, Mesopotamia-Tigris and Euphrates, the ancient Indus valley), but has to be expanded to embrace the Neolithic and Copper Age civilization of the Danube basin and beyond (Merlini 2004a; Haarmann 2008a: 11).

The Danube civilization was organized as networks of nodes (central settlements and regional cultures) linked by common cultural roots, exchange relationships of mutual political advantage and shared socio-economic interests. It was a complex society characterized by semi-equality in social relations and lack of evidence for hereditary social ranking. However, it was increasing hinged on segmented social relationships as documented by the layout of settlements (subdivided into smaller and discrete social units of quite independent houses and groups of houses) and the social ranked organization of burial practices at various sites. The Danube civilization is also characterized by rise of urbanism and limited necessities of defense structures, although there was a substantial and time-resources consuming investment in systems of surrounding ditches and walls that

may have served not only as fortifications for defense, but also as symbolic boundaries that separated the site from its hinterland.

Most socioeconomic activities - from subsistence practices to pottery making - seem to have been carried out by the members of individual households. The family circle composed the vital social unit of the community. A "domestic and communitarian mode of production" was on play, typical of tribal societies, within which social status and political power usually are based not on inherited relationships (ascribed ranking), but on the proven ability of each potential leader to earn that status (achieved ranking) within a communal and inclusive network

In the present author's view, the "Danube Civilization" is not a synonymous with the term "Old Europe" coined by Marija Gimbutas, because she identified under this blanket-expression an extended area that she described as the common home of an ensemble of pre-Indo-European cultures (Gimbutas 1974-1982; 1989; 1991; 1999). Sometimes, "Old Europe" expanded from the islands of the Aegean and Adriatic, as far north as Czechoslovakia, southern Poland, the western Ukraine (Gimbutas 1974-1982: 17). Other times, it enlarged "from the Atlantic to the Dnieper" (Gimbutas 1989: XIII). However, Gimbutas broadly documented the richness of these cultural traditions, which included writing technology as one of the major resources.

The development of an original script is an important mark of the high status of the civilization that flourished in the Neolithic and Copper Age of Southeastern Europe. In its comprehensive meaning, the term "Danube script" indicates the original successful experiment with writing technology of these ancient populations. The over-arching terminology of "Danube script/Danube signs" includes what has been called the "Vinča script" and "Vinča signs" which has to be strictly limited to the Vinča culture that developed in the Middle Neolithic in the core area of the great Danube basin (Winn 1973; 1981, 2008: 126; Merlini 2004a: 54). The connection of the inscribed signs with the Vinča culture has a reasonably long history. However, it categorizes only a specific period of the Neolithic and Copper Age time-frame, has provincial boundaries and does not evoke a clear geographical region. The Danube script has to be extended in time (from Early Neolithic to Late Copper Age) and in space (embracing the whole Southeastern Europe).

Other scholars use "Danube script" as synonymous with the "Old European script," coined by Gimbutas (Gimbutas 1991; Haarmann 2002: 17 ff.; ibidem 2008a: 12; Haarmann and Marler 2008: 1). However, this designation is based on the vague concept of "Old Europe" conceived by the same author (Gimbutas 1974-1982; ibidem 1991) and elicits a distinct connection with Southeastern Europe. In particular, the area involved by the Danube script extends in Southeastern Europe from the Carpathian Basin south to the Thessalian Plain and from the Austrian and Slovakian Alps and the Adriatic Sea east to the Ukrainian steppe. It includes (in order of contribution to the experiment with writing), the modern-day countries of the Republic of Serbia, Romania, Bulgaria, Greece, Hungary, Republic of Macedonia (F.Y.R.O.M.), Ukraine, Czech Republic, Albania, Kosovo, Germany, Slovenia, Slovakia, Bosnia and Herzegovina, Republic of Moldova, Croatia, Montenegro and Austria. This macro region forms

a relatively bounded and cohesive unit although the geographic layout, consisting of several small and discrete micro-regions that exploited a distinct set of local resources encouraging regional differentiation among the early farming societies (as well as among the lexicon and interpretations of the archaeologists).

"Danube script" is an operational term that does not designate the unity of literacy that lacks documentary evidence. Further investigation is required to reach the needed critical mass of information for *DatDas*, in order to evaluate the blanket term "Danube script" and to deal with distinct paths within the cultural institution of writing in the regional traditions of the Danube civilization. Although Owens refers to the occurrence of "Balkan scripts" (Owens 1999), his statement has to be demonstrated based on the understanding of the interconnections of sign use in the different cultural regions. Up to now, regional and cultural subdivisions were successfully, although prototypically, tested by the author creating some sub-databanks. *DatTur* is established from the signs utilized by the Turdaş culture (Merlini 2008c; forthcoming); *DatVinc* registers data on writing in the Vinča culture; *DatPCAT* records inscribed finds and inscriptions from the Precucuteni-Cucuteni-Ariuşd-Trypilla cultural complex evidencing a late script related to the Danube script (Merlini 2007c; in press).

The inventory of the Danube script signs

The presence of an inventory of signs is one of the five essential elements of any system of writing which distinguish *ars scribendi* from other communicational channels, such as calendars, symbols, accounting systems, heraldic markings, etc. An inventory is a precise corpus of standardized signs and not a list of marks drawn according to the writer's individual expression. Every system of writing employs a catalogue of signs that is distinct, defined, and limited.

The presence of an inventory is a key element for the script that developed in Southeastern Europe during the Neolithic and Copper Age time-frame, too. Signs were not invented "on the fly", but shaped according to a model that was shared and utilized for a long period over a wide area. The reoccurrence of the same signs and groups of signs on artifacts of the Danube civilization evidences that they included precise standard outlines and that scribes may have made use of a common inventory. Though this system of writing is now lost and it is unlikely it will ever be possible to decipher it, one can try to identify some elements of its semiotic code and particularly shapes and typological categories of signs.

Therefore, a preliminary step in deciphering an ancient writing system as the Danube script is to compile a catalogue of all the apparently different characters occurring in the texts, and to identify the variations each character may undergo. If one takes an article of a newspaper printed in English, it would be a straightforward matter, through careful study and comparison of the thousands of characters in the text, to work out that they could be classified into a set of signs. However, in ancient scripts a text was incised on irregular surfaces of clay, rocks, or bone which rough and restricted surfaces conditioned and limited the graphic expression. The task of isolating and detecting the signs is made far more difficult

by the penmanship variability and the possibility to represent the same sign in dissimilar ways as allographs, which are the alternative forms of a letter in an alphabet or another unit in a different writing system (Hawthorn 2000).

Signs were also joined up by ligatures and positioned in spatial association with symbols or other kinds of marks. A key challenge for the decipherer - who cannot be sure in advance that different-looking signs are in fact allographs of the same sign - is how to distinguish signs which are genuinely different (such as 'I' and '1') from signs which are probably allographs (for example,  ,  are all variations of an X due to different fonts*),* without knowing the conceptual or phonetic values of the signs under examination.

Based on practice in known writing systems, the Danube script may contain several allographs of the same basic sign. Unless epigraphers became able to distinguish the allographs with a fair degree of confidence, generally comparing their contexts in many very similar inscriptions, they can neither correctly classify the signs in the Danube script in order to build an inventory of them; neither establish the total number of the signs. However, in decipherment the number of signs utilized by a script can be a clue to establish its type without revealing the phonetic or conceptual values of the signs. Based on the number of Linear B signs, Michael Ventris was convinced that it was a syllabic script, rather than an alphabet or a logosyllabic script, which was an important historic step for decipherment.

The in-progress inventory of the signs employed by the Danube script is provided by *DatDas* statistics. It lists 286 sign types. Emerging from a catalogue of 4,509 actual signs, it means that each inventoried sign has an average frequency of nearly 16 times. The inventory of the Danube script is in a manageable form and is conceived to permit the reader to have a rapid overview of it.

The inventory of the abstract signs is articulated in two sections: abstract root-signs + variants and abstract unvaried signs. Concerning the first section, the opening column is devoted to lists the root-signs, which are displayed according to a decreasing order of frequency.

The subsequent columns are devoted to the derived signs, if any, of the root-sign, which are divided into positional variants, variants from multiplication, and diacritic variants.

The positional variants are sub-divided into rotated variants, reverse variants, specular variants as in a mirror, and reverse and specular variants.

The derivations of root-signs are split up into simple diacritic single variants (basic forms modified by a single auxiliary marker) and complex diacritic variants (basic forms modified by manifold additions).

Building an inventory of the signs, their shapes (incised or painted on artifacts) of the Danube civilization have not been forced, by rebuilding them at the computer according to a normalized outline and aligning them along an abstract space. *DatDas* rendering simply follows the conventional and standardized silhouette of basic sign types according to which writers incised the markings. 'Writers' conformed the production and transmission of packages of information to a precise repertory of signs and definite organizational rules that

had to deal with lack of space, constraint from the material or, sometimes, simply inexperience.

The benchmark would be to identify the signs of the Danube script with the same precision of Emmett Bennett jr., student of Blegen at the University of Cincinnati, for the Linear B. Coping with thousands of text characters in the Pylos tablets written by many different scribal hands and still unable to read them, he produced a list of 87 signs figuring out which of them were actually different and which were mere idiosyncratic variations of the same sign. Core signs - presumably (but not yet provably) phonetic in function - and allographs have been logically distinguished by Bennett one from the other and from a second class of signs, pictographic/iconic, which were apparently used as logograms. Bennett's list is almost definitive and identical to the one used today.

The main partition of the 286 inventoried signs is between 197 abstract signs, 50 pictograms/ideograms, and 34 numerical signs. The categories of signs operate in an integrated way. The boundaries of the tri-partition are in progress. Since the Palaeolithic assemblage, there is evidence of the human capacity to produce figurative images (depicting natural phenomena, living beings and objects in representational style) as well as abstract signs and geometrical motifs such as rows of dots and grids. Concerning the Danube script, *DatDas* categorizes as abstract signs the basic geometric forms that lack any recognizable visual association with natural or artificial objects and phenomena (V, X, Y, lozenge, triangle...). *DatDas* identifies as pictograms/ideograms signs depicting occurrences resulting from natural forces, living creatures or objects that can be recognized in association with the figurative sense of that time and although the high degree of stylization (e.g., the depiction of a sledge or a flag). The author does not exclude the possibility that the refining of the analysis in light of the tendency of the Danube civilization toward the stylization of sign forms will lead to a reevaluation of some signs from the abstract field to the pictographic/ideographic field, or reversely.

The proportions of abstract signs that render information outnumber iconic signs. Abstractness and schematization of sign shape are among the prominent features of the Danube script, in tune with the marked propensity toward abstraction and stylization in symbolism and decoration. The culturally specific sense of abstractness poses questions concerning the nature and function of the Danube script. Messages transmitted by a system of writing with plenty of pictograms and ideograms can be in a relevant part understood also by illiterate people. Even in the Aegean Linear A and Linear B, it was enough to be familiar with the decimal system and the meaning of the ideograms depicting objects, products, animals and human beings to catch most of their information. The high number of abstract and arbitrary signs belonging to the Danube script identifies literacy for an elite or a shared elevated educational level. This figure is apparently incongruent with the widespread distribution of the script. However, it developed according to a model of civilization far from the traditional state-bureaucratic political centered prototype, being based on a network of nodes composed of settlements and micro-regions that exchanged relationships for

economical and political mutual advantage, sharing the same milieu with different level of authority.

Crossing territorial and chronological data, *DatDas* provides documentary evidence that in the Neolithic and Copper Age of Southeastern Europe a civilization emerged which was organized as a network of nodes along political-institutional, socio-economic and cultural spheres. The Danube script envisages also a historical situation similar to the Harappa one in the ancient Indus valley, for which Maisels utilizes the term *oecumene* in order to define a kind of society as opposite to "territorial state" and synonymous with commonwealth in the sense of an "economically integrated commerce-and-culture area." The qualification of *oecumene* as consisting of "disparate, overlapping and interactive sphere of authority: economic, political, religious and, only derivatively, territorial" (Maisels 1999: 236-7, see also 224, 226, 252 ff.) could be applied to the Danube civilization. Haarmann was the first to utilize this concept for the Danube civilization (Haarmann 2003: 154 ff.; ibidem 2008a: 26-7). In particular, the network or *oecumene* model of the Danube civilization, as appearing from the standpoint of the script, centers on features of: a) a political ranking web of urban centers and micro-regions; b) a socio-economic integrated commerce-and-culture area (Maisels 1999: 236-7, 224, 226 for the general concept); and c) a common cultural koine.

The abstract signs are organized in 31 root-signs (or font-signs), which are subjected to the technique to vary the basic forms for creating 162 derivative signs. The root-signs express most of the fundamental geometric outlines that are subjected to formal variations (V, Λ, <, >, X, y, Π, Y, +, Δ...), but not to the extent that one sign becomes confused with another. Only four abstract signs are invariable.

The root-signs can be varied in three ways to enlarge their repertory (see Winn 1981: 60 ff.; Gimbutas 1991: 309; Haarmann 1995: 38 ff.; Merlini 2001; 2002b; 2003c; 2004a; 2008c). First, they can be rotated (Rotated variant), turned upside down (Reverse variant), turned round as in a mirror (Specular variant), and turned round plus upside down at the same time (Reverse and specular variant). According to this variational rule, a root-sign such as  can be turned round to become  or a  , reversed as  , mirrored as  , and reversed and mirrored as . In the section of the abstract signs of the Danube script, the positional variants of the root-signs are 60.

Second, the root-signs can be duplicated or multiplied. These derivative signs are 17.

Third, the root-signs can be varied by the application of diacritical markers (auxiliary markers added to a basic sign), such as small strokes, crosses, dots, and arches. Based on the last technique (multiple variations), a V can be transformed, for example, into a V+, a V/ or into a \I/. There are 54 simple variations (when applying only one diacritical mark to the root-sign). The complex variations (when applying simultaneously two or more diacritical marks to it) are 31.

The sophisticated technique of systematic variations of basic signs using diacritical markers characterized other archaic systems of writing such as the

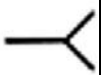
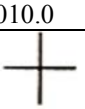
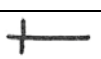
Indus script, but it was used for the first time in the Danube script (Haarmann 1998b). Although less recognizable, it is at work also in the ancient Sumerian pictography and in the Proto-Elamite script (Haarmann 2008a: 33).

ABSTRACT ROOT-SIGNS							
Root-sign	***Positional variant***				***Variant from multiplication***	***Diacritic variant***	
	Rotated variant (A in a).	Reverse variant (A in a).	Specular variant as in a mirror (A in a).	Reverse and specular variant (A in a).		**Simple diacritic Variant**	**Complex diacritic variant**
 DS 001.0					 DS 001.1	 DS 001.4	 DS 001.13
					 DS 001.2	 DS 001.5	 DS 001.14
					 DS 001.3		 DS 001.15
						 DS 001.6	 DS 001.16
						 DS 001.7	
						 DS 001.8	 DS 001.17
						 DS 001.9	 DS

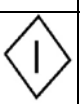
							001.18
						 DS 001.10	
						 DS 001.11	 DS 001.19
						 DS 001.12	 DS 001.20
							 DS 001.21
 DS 002.0					 DS 002.1	 DS 002.4	 DS 002.12
					 DS 002.2	 DS 002.5	
					 DS 002.3	 DS 002.6	 DS 002.13
							 DS 002.14
						a  **b**  DS 002.7	 DS 002.15

						 DS 002.8	 DS 002.16
						 DS 002.9	 DS 002.17
						 DS 002.10	 DS 002.18
						 DS 002.11	 DS 002.19
 DS 003.0					 DS 003.1	 DS 003.3	 DS 003.6
					 DS 003.2	 DS 003.4	
						 DS 003.5	
 DS 004.0					 DS 004.1	 DS 004.3	
					 DS 004.2	 DS 004.	

						4	
 DS 005.0						 DS 005. 1	
						 DS 005. 2	
						 DS 005. 3	
						 DS 005. 7	
						 DS 005. 4	
						 DS 005. 5	 DS 005.6
 DS 006.0		 DS 006.1					 DS 006.2
 DS 007.0	 DS 007.1	 DS 007.3	 DS 007.4	 DS 007.5		 DS 007. 6	
							

	DS 007.2					DS 007.7	
 DS 008.0	 DS 008.1					 DS 008.2	
 DS 09.0	 DS 09.1	 DS 09.3			 DS 09.4	 DS 09.5	
	 DS 09.2					 DS 09.6	
						 DS 09.7	
 DS 010.0	 DS 010.1		 DS 010.2				
 DS 011.0						 DS 011.1	 DS 011.2
						 DS 011.3	
 DS 012.0	 DS 012.1	 DS 012.3					
	 DS						

	012.2						
 DS 013.0	 DS 013.1	 DS 013.3			 DS 013.4		
					 DS 013.8		
	 DS 013.2				 DS 013.5		
					 DS 013.6		
					 DS 013.7		
 DS 014.0				 DS 014.1			
 DS 015.0	 **a**  **b** DS 015.1		 DS 015.3			 DS 015. 4	
	 **a**  **b** DS 015.2					 DS 015. 5	
						 DS 015. 6	
							

						DS 015.7	
 DS 016.0	 DS 016.1	 DS 016.4	 DS 016.5	 DS 016.6		 DS 016.7	
	 DS 016.2						
	 DS 016.3						
 DS 017.0	 DS 017.1	 DS 017.3					
	 DS 017.2						
 DS 018.0					 DS 018.1	 DS 018.2	 DS 018.5
						 DS 018.3	 DS 018.6
						 DS 018.4	

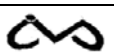
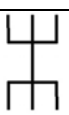
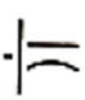
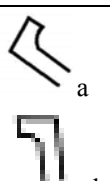
 DS 019.0	 DS 019.1		 DS 019.3			 DS 019. 4	 DS 019.7
	 DS 019.2					 DS 019. 5	 DS 019.8
						 DS 019. 6	
 DS 020.0	 **a**  **b** DS 020.1					 DS 020. 2	 DS 020.3
 DS 021.0			 DS 021.1		 DS 021.2		
 DS 022.0	 DS 022.1	 DS 022.4	 DS 022.5	 DS 022.6		 DS 022. 7	
	 DS 022.2						
	 DS 022.3						
 DS	 DS	 DS				 DS 023.	 DS 023.4

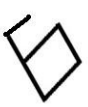
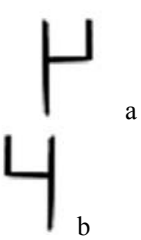
023.0	023.1	023.2				3	
 DS 024.0		 DS 024.1					
 DS 025.0		 DS 025.1	 DS 025.2				
 DS 026.0	 DS 026.1	 DS 026.3	DS 026.4	 DS 026.5			
	 DS 026.2						
 DS 027.0	 DS 027.1		 DS 027.4	 DS 027.5			
	 DS 027.2						
	 DS 027.3						
 DS 028.0		 DS028. 1					
 DS 029.0		 DS 029.1				 DS 029. 2	 DS 029.5
						 DS	

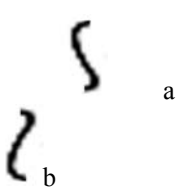
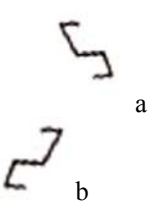
						029.3	 DS 029.6
						 DS 029.4	
						 DS 029.7	
 DS 030.0		 DS 030.1					
 DS 031.0	 DS 031.1						
 DS 032.0						 DS 032.1	 DS 032.2
							 DS 032.3
ABSTRACT UNVARIED SIGNS							
 DS 033.0	 DS 034.0	 DS 035.0	 DS 036.0				

Figure 21. The list of the abstract signs of the Danube script.

Pictograms and ideograms employed by the Danube script are not "schematic drawings," but distinct signs of the writing system. Pictograms are not stylized and simplified pictures of things, animals or natural phenomena as well as ideograms are not representations of abstract ideas through iconic outlines. Both are not draft images schematized by the arbitrary inventiveness of a "scribe", but signs that, even representing real objects and phenomena, have three properties: i) show silhouettes in accordance with a standard; ii) are inserted in a precise inventory of writing signs; and iii) have definite meanings. In conclusion, pictograms and ideograms are not simply "images", but *those* distinct images that settle in the inventory of the Danube script as signs of writing with a naturalistic root. *DatDas* subdivides the typology of pictographic/ideographic signs as depicting: animals; human beings and parts of the body; plants; tools, utensils, implements with different functions, vehicles; dwellings and structures; natural phenomena; S-shapes; Meanders; and Miscellanea.

<table>
<tr><td colspan="5">ICONIC SIGNS</td></tr>
<tr><td colspan="5">Pictographic/ideographic signs depicting animals</td></tr>
<tr><td> 
DS 040.0</td><td> 
DS 041.0</td><td> 
DS 042.0</td><td> 
DS 087.0</td><td></td></tr>
<tr><td colspan="5">Pictographic/ideographic signs representing human beings and parts of the body</td></tr>
<tr><td> 
DS 043.0</td><td> 
DS 044.0</td><td> 
DS 045.0</td><td> 
DS 046.0</td><td> 
DS 047.0</td></tr>
<tr><td> 
DS 048.0</td><td> 
DS 049.0</td><td> 
DS 050.0</td><td></td><td></td></tr>
<tr><td colspan="5">Pictographic/ideographic signs rendering plants and trees</td></tr>
</table>

 DS 051.0	 DS 052.0			
Pictographic/ideographic signs depicting tools, utensils, implements with different functions, vehicles				
 DS 053.0				
 A B DS 054.0	 DS 055.0	 DS 056.0	 A B DS 057.0	 D S 058.0
 A B DS 059.0	 DS 060.0	 DS 061.0	 DS 062.0	
 a b DS 063.0				

 DS 064.0	 DS 065.0			
 DS 066.0				
 DS 067.0	 DS 068.0			
Pictographic/ideographic signs related to dwellings and structures				
 DS 069.0	 DS 070.0			
Pictographic/ideographic signs connected to natural surroundings or phenomena				
 DS 071.0	 DS 072.0	 DS 073.0	 DS 074.0	 D S 075.0
S-shape				
 a b	 a b	 DS 078.0		

DS 076.0	DS 077.0			
Meanders				
 DS 079.0	 DS 080.0	 DS 081.0	 DS 082.0	 DS 083.0
 DS 084.0				
Spirals				
 DS 087.0				
Miscellanea				
 DS 085.0	 DS 086.0	 DS 088.0		

Figure 22. The list of the pictograms/ideograms of the Danube script.

Statistical evidence leads to identify some sign that functioned as numerals, although the detection is still rather putative. The inventory of the signs that may be assumed to function as numerals is sub-divided in five categories: vertical lines, diagonal lines, horizontal lines, strokes, and dots. If these shapes have a high probability to be signs representing quantities, future semiotic research has to test if also other signs with shape not intuitive as numeral express arithmetical values (as for example O = 1 hundred in the Linear B).

Under investigation is also the question if the above-presented signs are units of a number system or if they have only a numerological value. Having the inventory listed up to six vertical lines and up to eight horizontal lines (but with nine "on bench" being a singleton), one can hypothesize that there was a simple

numeral system. Is it decimal as the Linear B? If the Danube scrip possesses a numbering system, the distinction between the numerical system and the system of measurement will be necessary as well as the explication how the system of measurement worked.

POSSIBLE NUMERIC SIGNS

Vertical lines			**Diagonal lines**		**Horizontal lines**		**Strokes**	**Dots**
DS 100.0	DS 100.1	DS 100.2	DS 106.0	DS 106.1	DS 111.0	DS 111.1	DS 119.0	DS 123.0
DS 101.0			DS 107.0	DS 107.1	DS 112.0		DS 120.0	DS 124.0
DS 102.0			DS 108.0	DS 108.1	DS 113.0		DS 121.0	DS 125.0
DS 103.0			DS 109.0	DS 109.1	DS 114.0		DS 122.0	
DS 104.0			DS 110.0	DS 110.1	DS 115.0			
DS 105.0					DS 116.0			
					DS 117.0			
					DS 118.0			

Figure 23. The list of the possible numeric signs of the Danube script.

This systematic structuring of the signs of the Danube script documents that nearly two hundred literate settlements shared an organizational asset of the inventory characterized by signs that were conventionally conceived, standardized, applied, typologically organized in a systematic way (with outlines not haphazardly selected and developed), and applied according to accepted conventions coherently designed for readability. This organizational infrastructure alone would be enough as a benchmark to classify the Danube script as a writing system.

It is also noteworthy that, despite the high occurrence of mono-sign inscriptions, longer texts comprised of two-more signs prevail and most of them align several signs (in one instance 45 signs).

Due to the wide geographic area and long period under investigation, the recorded inscriptions and inscribed artifacts are not definitive enough to complete the inventory of signs. However, only a small number of new signs are expected to be found. In particular, the discovery of new inscriptions will allow the insertion into the databank of signs that now are kept out as being singletons (i.e. signs that appear just once). If the critical mass of information gathered by *DatDas* is not enough to attempt a decipherment of the script based on a computerized statistical analysis of the signs, it is definitely as much as necessary to determine that it was actually a system of writing. For example, a statistical test concerns the quota of singletons and very rare signs over the total number of known signs (n/N). Even with the mentioned limitations, the critical mass of information gathered by *DatDas* is enough to determine that the ratio of singletons over the total number of known signs (n/N) is decreasing. As the number of known inscriptions grows (N), the percentage of singletons and very rare signs diminish (n). This statistical test provides a challenge to the critics who argue that the Danube script is not a linguistic system of writing at all, claiming that the percentage of singletons and very low-frequency signs is going up, not down, over time – something that is inconsistent with any known writing system (Farmer 2003a: 17; 2003b: 39 referring directly to the Indus script and indirectly to the Danube script). Conversely, the figure evidences that even if the Danube script is mainly non-linguistic in nature, it has some phonetic elements at least marked marginally or occasionally

The same feature of a logographic system with some phonetic components is evidenced by the number of the inventoried signs. All ancient scripts are composed of a high number of signs (from hundreds to thousands of signs), because the logographic principle of writing demands individual signs for rendering individual concepts or ideas. In a comparative view, the more than 300-350 signs of the Danube script, documented in the inventory, are much less than the 760 individual signs of the Egyptian hieroglyphic in the second millennium BC, the 770 signs operated by the Ancient Sumerian pictography (of the Uruk III and IV periods) or the nearly 1000 signs belonging to the repertory of the Proto-Elamite script. The analogous number of signs listed by the Danube script and the ancient Indus (410) is not a coincidence, but indicate similar functions according to a networking oecumene society.

The amount of signs employed by the Danube script poses the question of the function and developing path of this system of writing. Was the relatively low number of signs due to the specialized nature of the script as a sacral tool mainly utilized in liturgies? Alternatively, are they in limited figures because the system of writing was "frozen" by the collapse of the Danube civilization when it was in transition from a primarily logographic system, which neglected the sound sequences of spoken words in favor of the transmission of concepts?

In conclusion, the inscriptions are composed in terms of a logically coherent system of signs targeted to the readability of the text, although in a very archaic and rudimentary way. Metabolizing and summarizing semiotic information from the corpus of inscribed artifacts, according to the *DatDas* databank, the traits of an archaic script become apparent.

References

Aurenche O., Galet P., Regagnon-Caroline E., Evin J., "Proto-Neolithic and Neolithic Cultures in the Middle East-the Birth of Agriculture, Livestock Raising, and Ceramics: a Calibrated 14C Chronology 12,500-5500 cal BC", in *Radiocarbon*, Vol. 43, 3, Arizona, 2001: 1191-1202.

Aveni A.F., "Non-Western notational frameworks and the role of anthropology in our understandings of literacy", Wrolstad in M.E., and D.F. Fisher (eds.), *Toward a new understanding of literacy*, Praeger, New York, 1986: 252-280.

Badisches Landesmuseum Karlsruhe, *Vor 12000 Jahren in Anatolien. Die ältesten Monumente der Menschheit*, Karlsruhe, 2007.

Baines J., "The Earliest Egyptian Writing: Development, Context, Purpose", in Houston (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004: 150-189.

Baumgartel E.J., *The Cultures of Prehistoric Egypt*. I, Oxford University Press, Oxford, 1955.

Bernal J.D., *Science in history*, Watts, London, 1954.

Bloomfield L., *Language*, Holt, New York, 1933. Revised from 1914 edition.

Boltz W.G., "Early Chinese Writing", in *World Archaeology*, Vol.17, n. 3, 1986: 421-36.

-, *The Origin and Early Development of the Chinese Writing System*, American Oriental Society, 1994.

Bonev Al., "Glinena chashka sys znaci ot slishtnata mogila da s Ovcharovo, Tyrgovishtki okryg", in *Arheologija*, 3-4, 1982: 32-34.

Boone H.E., "Introduction: Writing and recording knowledge", in Boone H.E., Mignolo W.D. (eds.), *Writing Without Words: Alternative Literacies in Mesoamerica and the Andes*, Duke University Press, Durham, 1994: 3-26.

-, "Beyond Writing", in Houston (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004: 313-348.

Bottéro J., *Mesopotamia, Writing, Reasoning, and the Gods*, University of Chicago Press, Chicago, 1992.

Bouissac P., "Art or Script? A Falsifiable Semiotic Hypothesis", in *Semiotica*, 100, 2-4, 1994: 349-367.

-, "The Question of Palaeolithic Scripts", in Reddy P.C. (ed.), *Exploring the Mind of Ancient Man: Festschrift to Robert G. Bednarik*, Research India Press, New Delhi, 2007.

Cahn R., Winter M., "The San José Magote Dancer", in *Indiana,* 13, 1993: 39-64.

Cardona G., *Antropologia della scrittura*, Torino, 1981.

-, *I linguaggi del sapere*, Bari, 1990.

Cauvin J., *Naissance des divinités, Naissance de l'agriculture,* CNRS éditions, Paris, 1994.

Chiera E., *They Wrote on Clay: The Babylonian Tablets Speak Today*, Chicago, 1938.

Childe V.G., "A Gold Vase of Early Helladic Type", in *The Journal of Hellenic Studies*, Vol. 44, Part 2, The Society for the Promotion of Hellenic Studies, 1924: 163-165.

-, *The Dawn of European Civilisation, 1925.*

Chohadzhiev S., *Slatino Prehistoric settlements*, Faber, Veliko Turnovo, 2006 (second edition).

Civil M., "The Sumerian Writing System: Some Problems", in *Orientalia* NS 42, 1973: 21-34.

Coe M., "A Triumph of Spirit: How Yuri Knorosov Cracked the Maya Hieroglyphic Code from Far-off Leningrad," in *Archaeology*, September/October 1991.

Cooper J.S., "Writing", in Erik Barnouw et al. (ed.) *International Encyclopedia of Communications*, Vol. 1, Oxford University Press, New York, 1989: 321-331.

- , "Sumerian and Akkadian", in Daniels and Bright (eds.), *The world's writing systems*, Oxford-New York, 1996: 37-57.

-, "Babylonian beginnings: the origin of the cuneiform writing system", in Houston (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004: 71-99.

Coulmas F., *The Writing Systems of the World*, Blackwell, 1989.

Crawford H., *Sumer and the Sumerians*, Cambridge University Press, Cambridge-New York-Port Chester-Melbourne-Sydney 1991 (second ed. 2004).

Crump T., *The Anthropology of Numbers*, Cambridge University Press, Cambridge, England, 1990.

Damerow P., *Abstraction and Representation: Essays on the Cultural Evolution of Thinking*, Kluwer Academic, 1995.

-, "Prehistory and Cognitive Development", in Langer J & Killen M. (eds.), *Piaget, Evolution and Development,* New Jersey, 1998: 247-269.

-, "The Origins of Writing as a Problem of Historical Epistemology", *Symposium the multiple origins of writing,* University of Pennsylvania, Center for Ancient Studies, March 26-27, 1999: 26-27.

Daniels P., Bright W. (eds.), *The world's writing systems*, Oxford-New York, 1996.

Darnell J.C., "Die frühalphabetischen Inschriften im Wadi el Hôl," in Seipel W. (ed), *Der Turmbau zu Babel, Ursprung und Vielfalt von Sprache und Schrift 3A: Schrift,* Vienna and Milan, 2003: 165-171

Darnell J.C., Darnell D., "The Theban desert road survey", in *1995-96 Annual report*, Oriental Institute, of Chicago, 1997.

-, "The Theban desert road survey", in *1996-97 Annual report*, Oriental Institute, Chicago, 1998.

Darnell J.C., Darnell D., Friedman R., Hendrickx S., *Theban Desert Road Survey I: The Rock Inscriptions of Gebel Tjauti in the Theban Western Desert, Part 1, and the Rock Inscriptions of the Wadi el Hôl,* Part 1, Chicago, 2002.

Darnell J.C., Dobbs-Allsopp C- et al., *Two Early Alphabetic Inscriptions from the Wadi el-Hol: New Evidence for the Origin of the Alphabet from the Western*

Desert of Egypt, Annual of the American Schools of Oriental Research, 59/2, 2006.

Davies V., Friedman R., *Egypt Uncovered*, Stewart Tabori & Chang, New York, 1998.

DeFrancis J.. *The Chinese Language: Fact and Fantasy*, University of Hawaii Press, Honolulu, 1984.

-, *Visible Speech: The Diverse Oneness of Writing Systems*, University of Hawaii Press, 1989.

de Saussure F., *Cours de linguistique générale*, Paris, 1915.

Diamond J., *Guns, Germs, and Steel: The Fates of Human Societies.* W.W. Norton & Company, New York, 1997.

Diringer D., *Writing*, *its Origin and History*, Thames & Hudson, London, 1962.

Dodson A., Hilton D., *The Complete Royal Families of Ancient Egypt*, Thames & Hudson, 2004.

Drake S., "Literacy and scientific notations", in Wrolstad M. E., and Fisher D.F. (eds.), *Toward a new understanding of literacy*, Praeger, New York, 1986.

Draşovean F., "Vinča figurines and their black magic", in *International Symposium on the Problems of the Transition from Middle to Late Neolithic in the Middle Danube Region*, Timişoara, 1997

Dreyer G., "Umm el-Qaab I, Das prädynastische Königsgrab U-j und seine frühen Schriftzeugnisse", AV 86, Mainz 1998.

-, "Abydos, Umm el-Qaab", in K.A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, Routledge, London/New York, 1999: 109-114.

Dumitrescu Vl., "The Neolithic Settlement at Rast", in *BAR - British Archaeological Reports*, *International Series,* 72, Oxford, 1980.

Elkins J., "Art History and Images That Are Not Art", *Art Bulletin*, LXXVII, (4), December 1995.

Englund R.K., "The state of decipherment of proto-Elamite", in Houston (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004: 100-149.

Farmer S., "Five cases of 'Dubious Writing' in Indus Inscriptions", in *Fifth Harvard Indology Roundtable*, 10 May 2003a.

-, "Writing or Non-Linguistic Symbols? The Myth of the Literate Indus Valley", in *Long Beach State International Conference on the Beginnings of Civilization on the Indian Subcontinent*, 18 October 2003b.

-, **"**Mythological functions of Indus inscriptions", in *Sixth Harvard Indology Roundtable*, 8-10 May 2004.

Février J., *Histoire de l'écriture*, édition Payot, Paris, 1948.

Frankfort H., *Cylinder Seals,* London, 1939.

Garašanin M., "Pontski i stepski utikaji u Donjem Podunavlju i na Balkanu na prelazu iz neolitskog u metalno doba", in *Glasnik Zemalskog Mezeja u Sarajevu*, 15-16, 1960-1961.

-, *Praistorija na tlu Srbije*, SKZ, Belgrade, 1973.

Gaur A., *History of Writing,* London, 1984; Cross River Press, New York, 1992.

Gelb I.J., *The Foundations of Grammatology,* London, 1952.

-, *A Study of Writing,* University of Chicago Press, Chicago, 1952 (I ed.), 1963 (II ed.).

Gimbutas M., *The Gods and Goddesses of Old Europe: 6500–3500 B.C.,* Berkeley and Los Angeles: University of California Press, 1974 *[*1982 republished as *The Goddesses and Gods of Old Europe]*.

-, *The Language of the Goddess*, Harper & Row, San Francisco, 1989.

-, *The civilisation of the Goddess. The World of Old Europe*, HarperSanFrancisco, San Francisco, 1991.

-, *The Living Goddesses*, edited and supplemented by M. R. Dexter, University of California Press, Berkeley/Los Angeles, 1999.

Glassner J.J., *Ecrire à Sumer l'invention du cunéiforme,* Paris, 2000.

Goody J., *Culture and Communication: The Logic by which Symbols are Connected. An Introduction to the Use of Structuralist Analysis in Social Anthropology*, Cambridge University Press, Cambridge, 1976.

-, *The Logic of Writing and the Organization of Society*, Cambridge University Press, Cambridge, 1986.

-, *The interface between the written and the oral,* Cambridge University Press, Cambridge, 1987.

Gould S.J., "Introduction: The Scales of Contingency and Punctuation in History", in J. Bintliff (ed.), *Structure and Contingency: Evolutionary Processes in Life and Human Society*, London, 1999: IX-XXII.

Guo M.R., "The Development of Ancient Chinese Characters" (Chinese), in *Archaeology* n.3, 1972: 2-13.

Haarmann H., *Early Civilization and Literacy in Europe. An Inquiry into Cultural Continuity in the Mediterranean World*, Mouton de Gruyter, Berlin-New York, 1995.

-, "Writing technology and the abstract mind", in *Semiotica*, 122, 1998a.

-, "On the Nature of Old European Civilization and its Script", in *Studia Indogermanica Lodziensia*, vol. II, Lódź, 1998b.

-, "Modelli di civiltà confronto nel mondo antico: la diversità funzionale degli antichi sistemi di scrittura", in Bocchi e Ceruti (eds.), *Origini della scrittura - Genealogie di un'invenzione*, Bruno Mondadori, Milan, 2002a.

-, "On the formation process of Old World civilizations and the catastrophe that triggered it", in *European Journal for Semiotic Studies*, Vol. 14 (3, 4), 2002b.

-, *Geschichte der scrift*, Monaco, 2002c.

-, *Geschichte der Sintflut,* Monaco, 2003.

-, "The Danube Script and Other Ancient Writing Systems: A Typology of Distinctive Features", in *The Journal of Archaeomythology*, Volume 4, Number 1, Winter Issue 2008, 2008a.

-, "A Comparative View of the Danube Script and Other Ancient Writing Systems", in Marler (ed.) *The Danube Script: Neo-Eneolithic Writing in Southeastern Europe*, Institute of Archaeomythology and National Brukenthal Museum, Sebastopol, California 2008: 11-22, 2008b.

Haarmann H., J. Marler, "Reflections on the Origins of the Danube Script and its Role in the Neolithic Communities of Southeastern Europe", in Marler (ed.)

The Danube Script: Neo-Eneolithic Writing in Southeastern Europe, Institute of Archaeomythology and National Brukenthal Museum, Sebastopol, California 2008: 3-9.

Haas W., "Writing: the basic options", in Haas W. (ed.) *Writing without letters,* Manchester University Press, Manchester, 1976: 13-28.

Hansen S., "Kleine Körper, große Ideen - Statuetten aus der kupferzeitlichen Tellsiedlung Măgura Gorgana bei Pietrele an der Unteren Donau", in Tasić N., Grozdanov C.(eds.), *Homage to Milutin Garašanin*, Serbian Academy of Sciences and Arts, Belgrade, 2006: 433-447.

-, *Bilder vom Menschen der Steinzeit. Untersuchungen zur antropomorphen Plastik der Jungsteinzeit und Kupferzeit in Südosteuropa*, Archäologie in Eurasien Band 20, Verlag, Mainz, 2007.

Harris R., *The Origin of Writing,* Duckworth, London, 1986.

-, *Signs of Writing*, Routledge, London, 1995.

-, Rethinking *Writing*, Athlone Press, London, 2000.

Houston S.D., (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004.

Huebsch T., *Cayonu Tepesi*, Minnesota State University, 2001.

Kammerzell F., "Defining and Describing Non-Textual Marking Systems", in *Non-textual markings systems, writing and pseudo script from prehistory to present times*, Humboldt-Universität Zu Berlin • Institut Für Kultur- Und Kunstwissenschaften Seminar Für Archäologie Und Kulturgeschichte Nordostafrikas, International conference, Berlin, December 2007.

Kàrolyi M., *A korai rézkor emlékei Vas megyében*. [*The early copper age in county Vas*]. (Öskorunk 1), Vas Megyei Múzeumok Igazgatósága, Szombathely, 1992.

-, "Die Funde der spätesten Phase der Lengyel-Kultur in Westtransdanubien", in *Internationales Symposium über die Lengyel-Kultur 1888-1988,* 3-7/10/88, Brno-Lódź, 1994: 104-111.

Keightley D.N., *Sources of Shang History: The Oracle-Bone Inscriptions of Bronze Age China*, Berkeley, 1985.

-, "The Origins of Writing in China: Scripts and Cultural Contexts", in Senner W. (ed.), *The Origins of Writing*, University of Nebraska Lincoln, NE, 1989.

Kress G., T. van Leeuwen, *Reading Images: The Grammar of Visual Design*, Routledge, London, 1996.

Kynchev M., "Izkustvoto na praistoricheskiia chovek spored materialite ot kysno neolitnoto selishte zapadno ot Nova Zagora", in *Izkustvo*, 1981: 9-10, 82-84.

Larsen C.S., *Dioarchaeology: interpreting behavior from the human skeleton*, Cambridge University Press, Cambridge, 1997.

Lazarovici C.-M., "Pre-writing signs on neo-eneolithic altars*",* in L. Nikolova *(*ed.) *Early Symbolic System for Communication in Southeast Europe*, *BAR - British Archaeological Reports*, *International Series*, 1139, Vol. I, Oxford 2003: 85-96.

-, "Anthropomorphic statuettes of Cucuteni–Tripolye: some symbols and signs", in *Documenta Praehistorica* XXXII, Department of Archaeology, Faculty of Arts, University of Ljubljana, Ljubljana, 2005: 145-154.

Lazarovici C.-M., Lazarovici Gh., *Arhitectura Neoliticului şi Epocii Cuprului din România, vol. I Neoliticul*, Editura Trinitas. Bibliotheca Archaeologica Moldaviae IV, Iaşi, 2006.

-, *Arhitectura Neoliticului şi Epocii Cuprului din Romănia, vol. II Epoca Cuprului*, Iași, 2008.

Lazarovici Gh., *Neoliticul Banatului*, Cluj-Napoca, Bibliotheca Musei Napocensis, 1979.

-, "Casiopea - de la simbolurile neolitice la mitologia astronomică", in *Dava international*, 5, 2002.

-, "Sacred Symbols in Neolithic Cult Objects from the Balkans", in Nikolova L. (ed), *Early Symbolic System for Communication in Southeast Europe*, *BAR - British Archaeological Reports*, *International Series*, 1139, Vol. I, Oxford, 2003: 57-64.

-, Simboluri sacre pe obiectele de cult. Semnificații. in *Festschrift für Florin Medeleț zum 60. Geburstag,* Muzeul Banatului Timişoara - Secția de Istorie - Bibliotheca Historica et Archaeologica Banatica, Editura Mirton*,* Timişoara, 2004: 17-59, 2004a.

-, "Database for spiritual life, signs and symbols", in *Signs of civilization: international symposium on the Neolithic symbol system of southeast Europe,* The Institute of Archaeomythology and the Serbian Academy of Sciences and Arts, Novi Sad, 2004, 2004b.

-, "Database for Spiritual Life: Signs and Symbols", in *The Journal of Archaeomythology*, Volume 4, Number 1, Winter Issue 2008.

Leroi-Gourhan A., "Le symbolisme des grande signes dans l'art pariétal paléolithique", in *Bulletin de la Société Préhistorique Française,* 1958a.

-, "Répartition et groupement des animaux dans l'art pariétal paléolithique", in *Bulletin de la Société Préhistorique Française,* 1958b.

-, *Les religions de la préhistoire*, Presses Universitaires de France, Paris, 1964.

Levy T.E., E.C.M. van den Brink, Y. Goren and D. Alon, "New Light on King Narmer and the Protodynastic Egyptian Presence in Canaan", in *Biblical Archaeologist* 58, 1995: 26-36.

Lu W., "Chinese writing systems and preliminary counting relationships", in *Accounting History*, 2004.

Luca S. A., *Catalog,* in *Cultura Vinča în România*, Timişoara, 1991.

-, "A new special discovery from Turdaş", in *Banatica*, 12, 1993: 21-24.

- "Die Vinča-Siedlung aus Rumess. Die A-Phase der Vinča-Kultur in Siebenbürgen", in *Sargetia*, 26, 1995-1996: 45-62.

-, "Aşezări neolitice pe valea Mureşului (I). Habitatul turdăşean de la Orăştie–Dealul Pemilor (punct X2)", in *Bibliotheca Mvsei Apulensis,* 4, Alba Iulia,1997: 147-152.

-, *Liubcova-Ornița. Monografie arheologică*, Târgovişte, 1998.

-, "Aşezări neolitice pe valea Mureşului (II). Noi cercetări arheologice la Turdaş-Luncă. I. Campaniile anilor 1992-1995", in *Bibliotheca Musei Apulensis*, 17, Editura Economică, Bucarest, 2001.

-, *A Short Prehistory of Transylvania (Romania)*, Bibliotheca Septemcastrensis XVI, Institutul pentru Cercetarea Patrimoniului Cultural Transilvanean în Context European (IPTCE), University of Sibiu, Sibiu, 2006a.

-, "Aspects of the Neolithic and Eneolithic Periods in Transylvania (II)", in Tasić N., Grozdanov C. (eds.), *Homage to Milutin Garašanin*, Serbian Academy of Sciences and Arts, Belgrade, 2006: 341-366, 2006b.

-, "The Neolithic and Aeneolithic Periods in Transylvania", in Marler (ed.) *The Danube Script: Neo-Eneolithic Writing in Southeastern Europe*, Institute of Archaeomythology and National Brukenthal Museum, Sebastopol, California 2008: 23-38.

Madjidzadeh Y., *Jiroft: The Earliest Oriental Civilization,* Teheran, 2003.

-, "I segreti dell'Halil Rud", interview in *Archeo*, n. 274, December 2007.

Makkay J., *A tartariai leleteck*, Akadémiai Kiadó, Budapest, 1990.

Maisels C., *Early Civilizations of the Old World*, Routledge, London-New York, 1999.

Marangou C., "Figurines et miniatures du Néolithique Récent et du Bronze Ancien en Grèce", in *BAR - British Archaeological Reports*, *International Series*, 576, Oxford, 1992.

-, *Evidence for counting and recording in the Neolithic? Artefacts as signs and signs on artefacts*, in

Margueron J.- C., *Mésopotamie,* Genève, 1965.

Mazurowski R., "Tell Qaramel: Excavations, 2002", in *Polish archaeology in the Mediterranean* vol. 14, 2002: 315-330.

-, "Tell Qaramel: Excavations, 2003", in *Polish archaeology in the Mediterranean* vol. 15, 2003: 355-370.

Mazurowski R., Jammous B., *Tell Quaramell. Excavations 2000*, 2001.

McArthur J. K., "The Textual Evidence for the Location of Place-names in the Knossos Tablets" in *Minos,* 17, 1981: 147-210.

Michailidou A. (ed.) *Manufacture and measurement Counting. Measuring and Recording Craft Items in Early Aegean Societies*, Athens, 2001: 9-43.

Masson E., "L'écriture dans les civilisations danubiennes néolithiques", in *Kadmos,* 23, 1984: 89-123.

Merlini M., "Signs, inscriptions, organizing principles and messages of the Balkan-Danube script", in *Prehistory Knowledge Project*, 2001, http://www.prehistory.it/scritturaprotoeuropai.htm.

- "On the Origins of Old European Writing", in *World IFRAO Congress 2002*, Skopje, 2002a.

-, "A Neolithic Writing System in Southestern Europe", in *World IFRAO Congress* 2002, Skopje, 2002b.

-, "Quando la Grande Dea ci insegnò a scrivere", in *Hera,* 39, 2003: 80-85.

-, *La scrittura è nata in Europa?*, Avverbi editore, Rome, 2004a.

-, "Challenging some myths on the Tărtăria tablets, icons of the Danube Script", in *Signs of civilization: international symposium on the Neolithic symbol*

system of southeast Europe, The Institute of Archaeomythology and the Serbian Academy of Sciences and Arts, Novi Sad, 2004, 2004b.

-, "The 'Danube Script' and the Gradešnica Platter. A Semiotic Study based on most recent autopsy of the Bulgarian item", in Nikolova L. & Higgins J. (eds.*),* in *Prehistoric Archaeology & Anthropological Theory and Education. RPRP 6-7,* International Institute of Anthropology*,* Salt Lake City – Karlovo, 2005: 57-76, 2005b.

-, "The Gradešnica script revisited", in *Acta Terrae Septemcastrensis* V, University of Sibiu, 2006: 25-78, 2006a.

-, "The Neo-Eneolithic gold ring shaped amulets as a best-seller design", Karlovo Conference, 2006b.

-, "A semiotic matrix to distinguish between decorations and signs of writing in the Danube civilization"*,* in *Acta Terrae Septemcastrensis* VI, University of Sibiu, Sibiu, 2007, 2007a.

-, "Did Southeastern Europe develop a rudimentary system of writing in Neo-Eneolithic times?", in *EAA's* 13th Annual Meeting in Zadar, Croatia, 2007b.

-, "Segni e simboli su oggetti della ceramica Precucuteni e Cucuteni", in *Cucuteni Tesori di una civiltà preistorica dei Carpazi, Accademia di Romania in Rome*, 18 October 2007, 2007c.

-, "Challenging Some Myths about the Tărtăria Tablets Icons of the Danube Script", in *The Journal of Archaeomythology*, Volume 4, Number 1, Winter Issue 2008, 2008a.

-, "Evidence of the Danube Script in Neighboring Areas: Serbia, Bulgaria, Greece, Hungary, and the Czech Republic", in Marler (ed.) *The Danube Script: Neo-Eneolithic Writing in Southeastern Europe*, Institute of Archaeomythology and Brukenthal National Museum, Sebastopol, California 2008: 53-60, 2008b.

-, "Writing on Human Skin Made of Clay", in Marler (ed.) *The Danube Script: Neo-Eneolithic Writing in Southeastern Europe*, Institute of Archaeomythology and Brukenthal National Museum, Sebastopol, California 2008, 2008c.

- *Neo-Eneolithic Literacy in Southeastern Europe: An Inquiry into the Danube Script*, PhD Thesis, University "Lucian Blaga," Faculty of Istorie Şi Patrimoniu "Nicolae Lupu", Sibiu, 2008, 2008d.

Merlini M., Lazarovici Gh., "Settling discovery circumstances, dating and utilization of the Tărtăria tablets", in *Acta Terrae Septemcastrensis 7*, Sibiu, 2008: 111-196.

Michalowski P., "Writing and Literacy in early States: A Mesopotamian Perspective", in D. Keller-Cohen (ed.), *Literacy: Interdisciplinary Conversations*, Cresskil, NJ, 1994: 49-70.

Mitchell L., "Earliest Egyptian Glyphs", in *Archaeology*, Vol. 52, 2, March/April 1999.

Montelius O., *Der Orient und Europa*, Konigliche Akademie, Stockholm, 1899.

Neagu M., "La plastique anthropomorphe néolithique au Bas Danube et certaines pratiques magico – rituelles", in *Préhistoire européenne,* vol. 12, 1998:195-234.

-, ”La plastique anthropomorphe néolithique au Bas Danube et certaines pratiques magico – rituelles”, in *Living Past,* 1, 1999. (http://www.cimec.ro/Arheologie/livingpast/nr1/neagu/plastique/htm).

Nikolov V., Karastoyanova D., “Painted Pottery Ornamentation as a Communication System between Generations (Based on Evidence from the Early and Middle Neolithic Layers at Tell Kazanlak)” in Nikolova L. (ed.), *Early Symbolic Systems For Communication In Southeast Europe,* Vol. 1-2, British Archaeological Reports, International Series vol. 1139, 2003: 173-179.

Nissen H.J., P. Damerow, R.K. Englund, *Archaic Bookkeeping. Writing and Techniques of Economic Administration in the Ancient Near East*, Chicago, 1993.

Owen C.L., “Technology, literacy and graphic systems”, in in Wrolstad M.E. Fisher D.E. and (eds.), *Toward a new understanding of literacy,* Praeger, New York, 1986: 156-187.

Owens G.A., "Balkan Neolithic Scripts", in *Kadmos* 38, 1999: 114-120.

Parpola A., “The Indus Script: as Challenging Puzzle”, in *World Archaeology*, 17, 1986.

-, *“*Religion reflected in the iconic signs of the Indus script: penetrating into long-forgotten pictographic messages”, in *Visible Religion*, Vol. 6, 1988.

-, *Deciphering the Indus script*, Cambridge University Press, Cambridge, 1994.

Pešić R., *The Vincha script*, Pešić i sinovi, Belgrade, 2001a.

-, *I accuse the silence*, Pešić i sinovi, Belgrade, 2001b.

Pittman H., “Pictures of an administration: The Late Uruk scribe at work”, in Frangiane M., Hauptmann H., Liverani M., Matthiae P., and M. Mellink (eds.), *Between the Rivers and Over the Mountains: Archaeologica Anatolica et Mesopotamica Alba Palmieri Dedicata*, Gruppo Editoriale Internazionale, Rome, 1993: 235-245.

Pogoževa A.P., “K voprosu o tekhnologii izgotovlenija rannetripol’skikh statuetok”*,* in *KS 134,* 1973.

-, *Antropomorfnaya plastika Tripolina*, 1983.

-, “Die Statuetten der Tripolje-Kultur*”,* in *Beiträge zur allgemeinen und vergleichenden archäologie, Band 7,* Bonn, 1985: 95-242.

Pohl M., Pope K., von Nagy C., “Olmec Origins of Mesoamerican Writing”, in *Science,* Vol. 298, 5600, 2002: 1872-1874.

Pollock S., *Ancient Mesopotamia*, Cambridge University Press, Cambridge, 1999.

Pope M., *The Story of Decipherment: From Egyptian Hieroglyphic to Linear B*, Thames and Hudson, London, 1975.

Postgate J.N., *Ancient Mesopotamia: Society and Economy at the Dawn of History,* London, 1995.

Powell M.A., “Three Problems in the History of Cuneiform Writing: Origins, Direction of Script, Literacy”, in *Visible Language* 15, 1981: 419-440.

Rincon P., “'Earliest writing' found in China”, in *BBC News Science*, 17 April, 2003.

Robinson A., *The Story of Writing: Alphabets, Hieroglyphs and Pictograms*, London, 1995.

-, *Lost languages*, Mc Graw-Hill, New York, 2002.

Rotman B., *Ad Infinitum ... the Ghost in Turing's Machine: Taking God Out of Mathematics and Putting the Body Back In*, Stanford, Stanford University Press, 1993.

-, "Thinking Dia-grams: Mathematics, Writing and Virtual Reality", in *The South Atlantic Quarterly*, 94 (2), 1995: 389-415.

Saggs H.W. F., *Civilization before Greece and Rome*, Yale, 1989.

Sampson G., *Writing Systems: A Linguistic Introduction,* Stanford University Press, Stanford, 1985.

Saturno W.A., Stuart D., Beltrán B., "Early Maya Writing at San Bartolo, Guatemala", in *Science* 5, 2006.

Saturno W.A., Taube K., Stuart D., "The Murals of San Bartolo, Guatemala, Part I: The North Wall", in *Ancient America*, 7, Barnardsville, 2005.

Schmandt-Besserat D., "Vom Ursprung der Schrift", in *Spektrum der Wissenschaft*, December 1978a: 5-12.

-, "Two Precursors of Writing: Plain and Complex Tokens," in Senner W. M. (ed.), *The Origins of Writing*, University of Nebraska Lincoln, NE, 1989: 27-42.

-, *Before writing. From Counting to Cuneiform*, Vol 1, University of Texas, Austin, 1992, 1992a.

-, *Before Writing*. *A Catalog of Near Eastern Tokens* Vol. 2, University of Texas, Austin, 1992, 1992b.

-, "Oneness, Twoness, Threeness", in *The Sciences* 27, 1987: 44-48. Reprinted (with much more appropriate figures) in Swetz F. (ed.), *From five fingers to infinity*, Open Court, 1994.

-, "The Earliest Precursor of Writing", in *The Scientific American*, June 1978b: 20.

-, *How Writing came about*, University of Texas, Austin, 1996.

Sethe K., *Vom Bilde zum Buchstaben: Die Entstehungsgeschichte der Schrift*, Hinrichs, Leipzig, 1939.

Spencer A.J., *Early Egypt. The Rise of Civilisation in the Nile Valley*, British Museum Press, London, 1993.

Starović A., "Contextual analysis of the Vinča signs in Serbia: Symbols of Neolithic spoken Language", in *Signs of civilization: international symposium on the Neolithic symbol system of southeast Europe,* The Institute of Archaeomythology and the Serbian Academy of Sciences and Arts, Novi Sad, 2004.

Stordeur D., "Organisation de l'espace construit et organisation sociale dans le Néolithique de Jerf el Ahmar (Syrie, X-IX millénaire avant J.-C.)", in Braemer F., Cleuziou S., Coudart A. (eds.), *Habitat et Société, XIX Rencontres internationales et d'archéologie et d'histoire d'Antibes*, Antibes, 1999, 1999a.

- "Nouvelles découvertes à Jerf el Ahmar, Syrie, X^{e}-IX^{e} millénaires avant J.-C.", in *CNRS-Info* n. 370, 1999: 9-10, 1999b.

Stordeur D., Jammous B., "Pierre à rainure à décor animal trouvée dans l'horizon PPNA de Jerf el Ahmar (Syrie)", in *Paléorient* 21(1), 1995: 129-130.

Talon Ph. and K. Van Lerberghe (eds.), *En Syrie, aux origines de l'écriture*, Catalogue of the exhibition in Brussels, Essays by A. Suleiman, T. Wilkinson, E. Gubel, E. Rehm, V. Verardi, Turnhout, 1998.

Taylor I., *The alphabet: an account of the origin and development of letters*, Vol. 1: Semiticalphabets; Vol. 2: Aryan alphabets, Kegan Paul, London, 1883.

Thomsen M.-L., *The Sumerian Language. An Introduction to its History and Grammatical Structure*, Copenhagen, Akademisk Forlag, 1984.

Todorova H., I. Vajsov, *Novokameniata epoha v Bulgaria*, Nauka i izkustvo, Sofia, 1993.

Torma Z., *Notebook*, Manuscript.

Toynbee A., *A Study of History*, Oxford University Press, London, 1958.

Trigger B.G., "Writing systems: a case study in cultural evolution", in Houston (ed.) *The First Writing: Script Invention as History and Process*, Cambridge Press, Cambridge, 2004: 39-68.

Tringham R., D. Krstić, *Selevac. A Neolithic Village in Yugoslavia*, The Institute of Archaeology, University of California, Los Angeles, 1990.

Twyman M., "Articulating graphic language: a historical perspective", in M. E. and D.E. Fisher (eds.), *Toward a new understanding of literacy,* Praeger, New York: 1986: 188-251.

Videiko M., "Glinyanye znaki-symvily tripol'skoi kul'tury", in *Aktual'nye problemy istoriko-arkheologicheskikh issledovanii. Tezisy dokladov VI respublikanskoi konferencii molodych arkheologov,* Kyiv, 1987: 32-33.

-, *Trypillian Civilization vol. I and vol. II,* Kyiv, 2004.

Wilford J., "Who Began Writing? Many Theories, Few Answers", in *New York Times*, April 6, 1999.

-, "In Ruin, Symbols on a Stone Hint at a Lost Asian Culture", in *New York Times*, May 13, 2001.

Winn S., *The Signs of the Vinča Culture: an Internal Analysis; Their Role, Chronology and Independence from Mesopotamia*, Ann Arbor, Michigan, University Microfilms, 1973.

-, *Pre-writing in Southeastern Europe: The Sign System of the Vinča Culture ca. 4000 BC*, Western Publishers, Calgary, Alberta, 1981.

-, "A Neolithic Sign System in Southeastern Europe", in Le Cron Foster M., Botscharow L. (eds.), *The Life of Symbols*, Westview Press, Boulder, San Francisco-Oxford, 1990.

-, "The Old European Script. Further evidence, Economic and religious stimuli", in *Prehistory Knowledge Project*, Rome, 2004a on line, http://www.prehistory.it/ftp/winn.htm.

-, "The Danube (Old European) Script", in *The Journal of Archaeomythology*, Volume 4, Number 1, Winter Issue 2008: 126-141.

Woon W.L., *Chinese Writing: Its Origin and Evolution*, Macao, 1987.

Wrolstad M.E., D.F. Fisher (eds.), *Toward a new understanding of literacy*, Praeger, New York, 1986.

Xueqin L., Harbottle G., Zhang J., Wang C., "The earliest writing? Sign use in the seventh millennium BC at Jiahu, Henan Province, China", in *Antiquity* 77, 295, 2003: 31-45.