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ALPHABETICAL NUMBERING (FROM THE ANTIKYTHERA MACHINE) USED IN MEDITERRANEAN TRADE SINCE THE BRONZE AGE AS A CONNECTING TOOL

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**ALPHABETICAL NUMBERING (FROM THE ANTIKYTHERA MACHINE)
USED IN MEDITERRANEAN TRADE SINCE THE BRONZE AGE AS A
CONNECTING TOOL**

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Summary : The appearance of writing is a subject of controversy. Scientists currently identify three cradles: Egypt, Mesopotamia and the Balkans. We follow the scientists who defend the Balkan hypothesis, because the dating of Tărtăria tablets is the oldest. This earliest writing systems belongs to the Turdaş Neolithic culture (or Turdaş-Vinča culture), dated between 5,500 and 3,500 B.C.E. Its inscriptions have caused an archaeological sensation thanks to Maria Gimbutas (Гимбутас, 2006 : 335-352). She believes it is the oldest form of writing in the world. According to the Gimbutas hypothesis, this system appeared in the first half of the 6th millennium BC, spread between 5,300 and 4,300 years ago and disappeared around 4,000 BC, giving rise to the Cretan script (linear A) and the Cypro-Minoan script. The researcher Sh. Winn (1973) identified 210 writing characters made up of 5 elements and representing a modification of around 30 basic characters. H. Naarmann (1990) found around fifty parallels between this system and the Cretan and Cypriot scripts We see parallels with the first alphabets of the Bronze Age (Greek, Etruscan, Phoenician and others). Some of these symbols are found a thousand years later on one of the two plates of the Antikythera machine. Our article focuses on the one containing 30 symbols¹, representing an alphabetical numbering system (visibly based on linear B). We believe that these symbols derive from the standard alphabet (the ancestor of all European alphabets), which was the fruit of the entire Bronze Age civilization, as it represented a common accounting system linking the various Mediterranean cultures. We also believe that this computing device (the Antikythera machine) is not exclusively Greek, but represents the fruit of the international know-how of its time.

Keywords: Antikythera machine first calculating device, alphabetical numbering, linear A, linear B, ancestor of all alphabets.

**NUMÉROTATION ALPHABÉTIQUE (DE LA MACHINE ANTIKYTHERA) UTILISÉE
DANS LE COMMERCE MÉDITERRANÉEN DEPUIS L'ÂGE DU BRONZE COMME
OUTIL DE CONNEXION**

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Résumé : L'apparition de l'écriture est un sujet à controverse. Actuellement, les scientifiques distinguent trois berceaux : en Égypte, en Mésopotamie et dans les Balkans Nous suivons les scientifiques qui défendent l'hypothèse balkanique, car la datation des tablettes de Tărtăria est la plus ancienne². Cette proto écriture appartient à la culture néolithique Turdaş (ou culture Turdaş-Vinča), datée entre 5 500 et 3 500 B.C.E. Ses inscriptions ont fait sensation sur le plan archéologique grâce à Maria Gimbutas. (Гимбутас, 2006 : 335-352). Elle pense qu'il s'agit la plus ancienne forme d'écriture au monde. Selon l'hypothèse de Gimbutas, ce système

¹ . We have noticed that some of these symbols resemble pictograms from the Turdaş-Vinča culture, whose original function may have been to indicate the value of goods. Indeed, they are found at the bottom of pots, suggesting that they were probably primitive numerals.

² . Pour plus de détails, voir nos publications «DES SYMBOLES PICTOGRAPHIQUES ET SCULPTURAUX DE GÖBELKLI TEPE VERS LES PREMIERS ALPHABETS » (<https://shs.hal.science/halshs-04046030>); Les tablettes de Tărtăria bousculent nos aprioris (<https://shs.hal.science/halshs-03892426>).

apparaît dans la première moitié du VI^e millénaire avant J.-C., se répand entre 5300-4300 ans et disparaît vers 4000 avant J.-C., donnant naissance à l'écriture crétoise (linéaire A) et à l'écriture cypro-minoenne. Le chercheur Sh. Winn (1973) a identifié 210 caractères d'écriture composés de 5 éléments représentant une modification d'environ 30 caractères de base. H. Haarmann (1990) a trouvé une cinquantaine de parallèles entre ce système et les écritures crétoise et chypriote. Nous voyons des parallèles avec les premiers alphabets de l'Âge du bronze (grec, étrusque, phénicien et autres). Certains de ces symboles se retrouvent mille ans plus tard sur l'une des deux plaques de la machine Antikythère. Notre article s'intéresse à celui qui contient 30 symboles³, représentant une numérotation alphabétique (basant visiblement sur le linéaire B). Nous pensons que ces symboles descendent d'un alphabet standard (ancêtre des tous les alphabets européens) qui est **le fruit de toute la civilisation de l'âge du bronze**, car il représentait un système de comptabilité commun reliant les différentes cultures méditerranéennes. Nous pensons aussi que **ce dispositif de calcul** (machine Antikythère) n'est pas uniquement grec, mais il **est le fruit du savoir-faire international de son époque**.

Introduction; method and hypothesis

The Antikythera machine is one of the first major discoveries of underwater archaeology: a calculating device. According to some researchers, it was used to determine and predict important astronomical events. Its remains were found at the beginning of the XIX^e century by sponge fishermen near the island of Antikythera. It was probably assembled in a workshop in Rhodes or Syracuse or Asia Minor at the end of the 2^e century B.C. It features a complex mechanism consisting of at least thirty-five cogwheels driven by a handle. It is the oldest known gear mechanism. Its reconstruction includes two plates showing several graduated circles. Our article focuses on one of these circles, which contains 30 symbols, presumably to represent a month in the Egyptian calendar⁴.

In teaching French as a foreign language (FLE), it is common to draw parallels with the mother tongue. We have applied our linguistic methods to archaeology and the disciplines that support it, in order to be able to 'read' an archaeological phenomenon in its anthropological, palaeontological and mythological context. This is how our **systemic and multidisciplinary approach** came about. The innovative aspect of this method is the 'reading' of archaeological objects in their overall context, across space and time. In this article, we put forward the hypothesis that this system the Antikythera machine of applying alphabetical numbering is not uniquely Greek, but that it is the fruit of international know-how from this period, when trade took on an 'international' dimension and a common accounting system had to be invented so that the whole world could agree on exchanges in a single system.

We know that the wreck where this mysterious machine was found was a Roman galley, dated to before 87 BC, whose main cargo consisted of several bronze and marble statues⁵. It

³ . Nous avons remarqué que certains de ces symboles ressemblent à des pictogrammes de la culture Turdaş-Vinča, dont la fonction originelle était peut-être d'indiquer la valeur des biens. En effet, on les retrouve au fond des pots, ce qui suggère qu'il s'agissait probablement de chiffres primitifs.

⁴ . L'année de ce calendrier comporte 3 saisons ; chaque saison a 4 mois, chaque mois a 3 décades (semaines) de 10 jours chacune = 30 jours. The year in this calendar has 3 seasons; each season has 4 months, and each month has 3 decades (weeks) of 10 days each = 30 days.

⁵ . This fact was established right from the start, in 1901 (Kabbadias, 1901). This was the very first scientific expedition that saw the birth of underwater archaeology. Pieces of six to eight bronze statues, along with more than 30 marble statues, are now preserved in the National Archaeological Museum in Athens.)

should also be noted that the most likely hypothesis is that the mechanism itself was manufactured in Syracuse⁶ (one of the provinces of present-day Italy).

Preliminary studies of the three engraved dials and their operation were carried out in 1905 and 1959 (De Solla Price, 1959). In 1975, an in-depth study concluded that one of the mechanisms corresponded to a lunar cycle used in Babylon, comprising the 12 months (De Solla Price, 1974/1975). Let's have a look at the so-called 'Greek' inscriptions on one of the circles, which includes 30 symbols representing an Egyptian month.

Contenu Content

Before embarking on our studies, however, it should be noted that this bronze object turned out to be largely incomplete. The assemblage recovered comprises 82 fragments, representing barely a third of the complex mechanism. For decades, scientists have been trying to piece together a real jigsaw puzzle in the hope of understanding how this machine and its gears worked (Ehrenberg, 2014). In 2021, a team from the University College of London (UCL) presented its cosmological model (Freeth & al. 2021), on which we base our studies (more precisely on 'figure 7' of the 3D reconstruction of the Antikythera machine presenting an elegant mechanical Cosmos).



Image courtesy <https://www.nature.com/articles/s41598-021-84310-w>

⁶ . The identity of the designer is debated, but some of the people who could have made this device include Archimedes of Syracuse himself or one of his disciples, mentioned by Cicero in his 'Treatise on the Republic' (Cicero, De Re Publica I, 14 (22)). [Cicéron : TRAITÉ DE LA RÉPUBLIQUE : livre I \(bilingue\) \(remacle.org\)](#)

Let's take a look at the 30 so-called 'Greek' symbols. In our opinion, these are letters belonging to a certain standard alphabet which, in the Bronze Age, formed the basis of the Greek, Etruscan, Phoenician, Celtiberian and other alphabets. We assume that it was known in all the regions around the Mediterranean that were involved in 'international' trade (Egypt, Greece, Asia Minor, Crete and the Near East, and perhaps even beyond). This hypothesis is based on traces of taxes found on bureaucratic tablets in Egypt and Mesopotamia. We know, for example, that as early as the fourth millennium BC, the Mesopotamians were importing copper from Oman, lapis lazuli from Afghanistan and ivory, gold and silver from the Indus Valley. Luxury objects from distant countries, found in the tombs of representatives of power in various Mediterranean regions, also support our hypothesis of the existence of an international trade network throughout the Bronze Age. A business needs accounting, and accounting needs symbols to calculate: symbols like the alphabetical numbering on the Antikythera machine.

It should be noted that at the time of these first intense exchanges (the Bronze Age), the Greek alphabet (more precisely: Mycenaean) used a linear B. But long before linear B (now written 'LB') there was linear A (now written 'LA'), which was specific to the Minoan culture. The 'LA' is attested between 1850 and 1450 BC by archaeological evidence provided mainly, but not exclusively, by the island of Crete⁷. Interestingly, the island of Crete provides a remarkable illustration of the evolution of writing. Hieroglyphics can be found there long before 'LA'. These are not linguistic elements, but a kind of rebus. However, this system was used for accounting purposes during the Ancient Minoan (AM) period and coexisted with 'LA' on Crete for a time, only to disappear during the AM period (after 1700 BC). We cannot say whether hieroglyphic served the same language as 'LA', but it is certain that there are links⁸ between these two Cretan scripts, even if it is impossible to specify them. Following the hypothesis of Maria Gimbutas (Гимбутас, 2006: 335-352), we believe that 'LA' is a descendant of the earliest Balkan writing systems: the oldest form of writing in the world, which we will discuss in more detail later.

Let's return to our hypothesis of the standard alphabet. In our view, this alphabet developed well before the collapse of the Bronze Age and mixed symbols from 'LB' and 'LA' as well as Sumerian, Egyptian and other symbols. Its appearance was triggered by new human activities (agriculture and livestock breeding) that provided more food than the tribes needed to survive, prompting them to trade. It probably appeared during the period of the first intense commercial interactions (between 4,000 and 3,000 BC). This led to the emergence of new skills for quantifying, negotiating and exchanging surplus production. Writing was thus born out of agrarian activity, initially in the service of accounting and religious cults (ensuring that these new human activities were profitable). When trade took on an 'international' dimension, a common accounting system had to be invented so that the whole world could agree on exchanges in a single system. In this sense, the archaic Greek alphabet of the late II^e century BC⁹ was a late version of this standard alphabet. Moreover, it should be pointed out that this

⁷ . Objects bearing the linear A, most often clay tablets, have been found throughout much of the Mediterranean, evidence that the Minoans traded with islands such as Rhodes, Thera and the Cyclades (Молчанов & al., 1988).

⁸ . Note that these links are less obvious between 'LA' and 'LB'.

⁹ . At that time (the Iron Age), the Greek alphabet had evolved considerably compared with the Mycenaean alphabet of the Bronze Age, which was essentially syllabic - the links between 'LA' and 'LB' are less obvious.

Greek alphabet was insufficient to provide the entire alphabetic numbering system, which is why we note the appearance of three ‘added’ letters: digamma (or stigma); koppa and sampi. They therefore lacked THREE LETTERS for this numbering system to work, which confirms our hypothesis: this alphabetic numbering cannot be attributed solely to the Greeks.

To support our hypothesis, let's take another alphabet that we now call the ‘Cyrillic alphabet’. It is generally accepted that this alphabet is derived from the Greek alphabet, but it has 49 letters, whereas Greek only has 24. In linguistics, it is accepted that a simple alphabet can rarely be the origin of a more complex alphabet (Иванов, 1990; Кондратов, 1975). In each case, the difference is limited to 3 or 4 extra letters. Between 24 letters (Greek alphabet) and 49 letters (Slavic alphabet), the difference exceeds 100%. It is therefore legitimate to assume that the so-called ‘Cyrillic’ alphabet is derived from this famous standard alphabet, and perhaps that it is a more complete version of it.

РУССКАЯ БУКВИЦА с образами и числовыми значениями букв						
А 1 Азъ (а) Бог, живущий и сотворяющий на Земле. Я.	Б 2 Бог (б) Множество Богов; Божественное; превосходящее.	В 3 Вѣди (в) Мудрость на Земле и Небесах ведаю.	Г 4 Глаголи (г) Передача мудрости; движение; истечение; поток, направление.	Д 5 Довро (д) Развитие; досток; накопление; полнота; преславание.	Е 6 Есть (е) Пять элементов жизни; форма жизни; бытие.	Є 7 Єсмь (ѣ) Связка; определение; разнообразие.
Ж 200 Животь (ж) Жизнь многогранная; зародки; эволюция; рост; преобразование.	З 300 Зѣло (з) Неизведанное; сверх; очень; весьма; не познанное нами.	З 400 Земля (з) Земля (небесное тело); почва; форма жизни.	И 500 Иже (и) Соединение; единство; равновесие; истина (бытийная).	І 600 Іжен (и - ровное) Истина (Вселенская); уравнивает.	І 700 Інитъ (и - полукраткая) О б щ и н а ; истина (общинная).	Ѡ 800 Ѡгерь (Ѡ, ѡ) Грегориано; необычное; душевное.
К 20 Како (к) Объединение человека со Вселенной; объёмность; объём.	Л 30 Людѣ (л) Объединение миро мыслителей; общность; сопереживание объём; движение; ступенчатость.	М 40 Мыслить (м) мыслить; мысль; видость; древо; обзор; движение; ступенчатость.	Н 50 Нашъ (н) то, что было известно нами; Прокс; то, что высвободилось (лице).	О 70 Онъ (о - датель) Бог; нечто; нечто; самостоятельная форма; структура.	П 80 Покои (п) Бездействие; неподвижное состояние; покой; гармония; разграничение.	Р 100 Рѣщи (р) Рѣчь; соречение; течение; сила (энергия); разграничение.
С 200 Слово (с) Мысль троичностная; поток; соединительная форма.	Т 300 Твѣрдо (т) Утверждение свыше; указание; определённая форма; утверждение.	У 400 Укъ (у) Зов; послание; взаимодействие; воззвание; оконч; форма призывания.	Ѣ 500 Ѣукъ (ѡу) Чувственность; у с т о и ; определённая форма.	Ф 500 Фѣртъ (ф) Гордость; благородство; значимость.	Х 600 Хѣръ (х) Мировое равновесие; переключение; определённые значения; гармония.	Ѡ 800 Ѡтъ (ѡт) До сей поры; окончательный результат; по в д ѣ л.
Ц 900 Цѣн (ц) Целеустремленность; цель; высшая структура; определяющая цель.	У 90 Уервалъ (ч) Красный; красивый; грань; рубец; черта.	Ш Ша (ш) Тишина; простор; ширь; объёмное распространение.	Щ Щта (щ) Плотность; разнообразие; незаделанное состояние; зашита форма.	Ъ Ѣръ (ѡ - краткое) Твердость; сотворение в процессе развития; работа.	Ы Ѣры (ы - мягкое) Единство; соединение; множество; множественное действие.	Ь Ѣрь (ѡ - краткое) Существующая жизнь; Богом данная; законченное творение.
Ѣ Ять (ѣ) Божественная связь; взаимосвязь; небесный замысел; ступенчатость.	Ю Юнъ (ю, ѥ) Соприкосновение; взаимосвязь по касательной.	Ѧ Ѧръ (ѧ - краткая, ѧ) Образ одного рода; однообразная структура.	Ѧ Ѧдо (ѧ - краткая, ѧ) Приложение к целому; форма познания.	Ѧ Ѧмъ (ѧ, ѧ - мягкая) Слияние; создание.	Ѧ Ѧнъ (ѧ - носовое) Оп; структура; определяющая восходящая образ.	Ѧ Ѧдь (ѧ - носовое) Богатство; передавание по наследству.
Ѧ Ѧтъ (ѧ - краткое носовое) Познания (указующая форма).	Ѧ Ѧтъ (ѧ - краткое носовое) Неприятие чего-либо.	Ѧ Ѧи (ѧ) Дух; духовность; ДУХОВНОЕ.	Ѧ Ѧи (ѧ) Душа и всё, что к ней относится.	Ѧ Ѧи (ѧ - мягкая) Единство духа; природа; слияние.	Ѧ Ѧи (ѧ, ѧ, ѧ, ѧ) Давление; гармоничное состояние; благость.	Ѧ Ѧи (ѧ) Мера времени; краткость.

As you can see, this alphabet includes all the letters needed for alphabetical numbering to work.

буквица славянская (Old Slavonic alphabet)

А¹ В² Г³ Д⁴ Є⁵ S⁶ Z⁷ И⁸ Ѡ⁹ і¹⁰ К²⁰ Л³⁰

The circle on the Antikythera mechanism representing ‘a month’ can therefore be fully decoded using this Old Slavonic alphabet.

¹⁰ . Image from the public domain. <https://zna4enie.ru/chisla/staroslavjanskaja-azbuka-49-bukv-znachenie-i.html> Image provient du domaine public

$$i^{10} a^1 = 11 ; i^{10} \text{⚡}^9 = 19 ; K^{20} \Gamma^3 = 23 ;$$

We draw your attention to the letter ‘Ж’: the second letter following the vertical (or 8th character in the table). There is an astonishing similarity between the first ‘open women’ (image n°3) of the Sahara (Van Albada, 1996 :8-10), the Egyptian hieroglyph (engender, give birth : see the Ramses cartouche ‘Rè gave birth to her’) and this Slavic letter which in Russian has several meanings : 1) Животъ – womb, 2) жизнь во всем своем многообразии жизненных форм – life manifested in every existing creature.

This similarity confirms our hypothesis : this alphabet (known as ‘Cyrillic’) has everything it takes to be the most complete version of the ‘ancestor’ alphabet at the origin of all alphabets (Greek, Etruscan, Phoenician and others). Note that the letters corresponding to the numbers ‘3’, ‘6’, ‘7’ and ‘60’ bring to mind the symbol of **divine power**¹¹ : the serpent. Let’s take a look at the cultural horizon of this symbol through space and time :

- It is found in abundance at Göbekli Tepe in sculptural and graphic versions (Шмит, 2011) and in the rock art of the Sahara Desert (Mostefai, 2013) ;



Images 1 and 2, Artefacts from Göbekli Tepe (c. 6000 BC) : carving of the stone head with a snake and engraving of an ‘open woman’ (woman giving birth) with a snake’s head (Photo courtesy of Vincent J. Musi).

Image 3, The Libyan engraving by Messak (circa 4000 BC, photo reproduced with the kind permission of its author (Van Albada, 1996 :10) clearly shows a snake in place of a hand.

- This symbol very often adorns and is even an essential element of the headdresses of Egyptian pharaohs and their gods (Guilhou & Peyré, 2014); it is usually in the shape of an ‘L’, but sometimes in a ‘U’.



¹¹ . The main subject of our work with archaeologists (EAA) in Northern Ireland last year was ‘*The secrets of the very first tattooed people*’ (Tyaglova-Fayer, 2023).

Image 3, The goddess Hathor welcomes SETI I (1294 to 1279 BC; Paris, Musée du Louvre; <https://www.photo.rmn.fr>); **Image 4**, Emblem of the goddess Hathor (Paris, Musée du Louvre; <https://www.photo.rmn.fr>), N.B, it is not clear whether she has a snake or horns on her head.

- It travelled thousands of years and miles to appear among the Minoans (see the statuettes from Knossos; Evans, 1906).



5)



6)

Images 5 and 6, Statuettes from Knossos (photos mythagora.com) dated around 1600 BC.

These series of images associated with the snake can help us to understand the evolution of this concept which, through time and space, migrated northwards, where the so-called ‘Cyrillic’ alphabet was born.



7)



8)



9)

Image 7, Minoan pendant ‘Mistress of the Animals’ found on the island of Aegina (British Museum, 1700-1500 BC, [photo.rmn.fr/achats](https://www.photo.rmn.fr/achats) R6NORD24767). N.B. It includes 4 snakes and two birds. **Image 8**, Tombstone, 400-600 CE (Photo: Gotlands Museum (CC BY 4.0), ‘open woman’ holding two snakes, topped by a crown of horns). **Image 9**, Scythian goddess¹², 300 BC (Photo: Kerch Museum, public domain).

These last images can also help us to understand why the complete version of the ‘ancestor’ alphabet is found in the north among the Scythians and then among the Slavs: the worshippers of the Great Goddess¹³.

In fact, at the dawn of the Neolithic (Mesolithic) period, Palaeolithic beliefs linked to the cult of the Great Goddess, still visible at Göbekli Tepe (images 1 and 2), began to change as hunter-gatherers became the first ‘farmers’ with the advent of livestock rearing and

¹² . In 1704, Leibniz placed the region of origin of the Scythians in the Pontic steppe, making them the ancestors of the Slavs (Demoule, 2015: 27). Today, genetic analyses in part confirm this..

¹³ . For more details, see the trilogy by Marija Gimbutas (Gimbutas: 1974, 1978, 2005). In our opinion, during the Christian era, this adoration was transferred to the Virgin Mary (Mother of God).

agriculture in the 'Fertile Crescent'. Indeed, at the time, Mesopotamia, with its favourable climate and abundant natural water resources, was the ideal place for the birth of agriculture.

These new human activities led to social stratification, creating a hierarchical pyramid in which the most productive farmers were the best placed. This social stratification was no longer compatible with the beliefs associated with the Great Goddess. It should be noted that the funerary inventory specific to these beliefs shows that the worshippers of the Great Goddess lived in rather egalitarian societies (Gimbutas, 2005).

While in the Palaeolithic hunter-gatherers took what the land and nature gave them, remaining totally dependent on their generosity, in the Neolithic the land lost its sacred character and became a source of covetousness for humans: it was the strongest who won the right to cultivate its best plots. Beliefs then evolved, as did funeral rituals.

We note a change in the posture of the deceased: the foetal position (obviously linked to the belief in reincarnation in the 'womb' of the Great Goddess Mother Earth)¹⁴ is replaced by the supine position (surely linked to the new beliefs in resurrection).

It is important to note that among the objects found alongside all the deceased (folded up or lying on their backs), **pots** have been an essential part of the funerary inventory since the Palaeolithic. Given that this is a common element that has withstood even the transformation from hunter-gatherer to farmer, we can analyse it by applying our systemic approach (paralleling pots belonging to different prehistoric cultures) to the analysis of the symbols engraved on this obligatory object of the funerary inventory over the millennia.

The oldest symbols engraved on the funerary pot belong to the Neolithic Balkan Turdaş (or Turdaş-Vinča) culture. We believe that the original function of these symbols may have been to indicate the value of goods. Indeed, **they are found at the bottom of pots, suggesting that they were primitive numerals.**

It is worth noting that the Turdaş-Vinča culture has been dated to between 5,500 and 3,500 BC and is considered by some scientists to be proto-civilisation (Гимбутас, 2006; Winn, 1973; Haarmann, 1990). It is also important to note that this culture is distinguished not only by its earliest writing systems, but also by the oldest production of bronze objects in the world (Radivojević & al., 2013). It is possible that it was this culture that triggered the Bronze Age.

Could an advanced and prosperous civilization have existed a few millennia before the world's oldest civilizations (Sumerian and Egyptian)? The commonly accepted historical chronology has been called into question by three clay tablets found in 1961 by archaeologist Nicolae Vlassa in Tărtăria (Romania). Although the discovery remained under scrutiny for some time, recently, several experts declared that there was no reason to discredit it. In fact, the latest analyses, carried out in 2005, confirm that the Tărtăria tablets date back to more than 5,000 BC (Lazarovici, & Merlini, 2005).

We believe that there is a very simple explanation for putting these three cradles of civilization (the Balkans, Egypt and Mesopotamia) on an equal footing. We believe that they have the same starting point: Anatolia, with a cultural centre at Göbekli Tepe.

¹⁴ . When the Bronze Age collapsed, there were no longer any adherents of the ancient beliefs on the shores of the Mediterranean: funerary rites changed (foetal position of the deceased, objects accompanying him or her, presence of ochre. N.B.: In our opinion, the colour ochre symbolized blood by representing the 'atmosphere of the womb' of Mother Earth for a « good reincarnation of the deceased »).

Thanks to their new skills, the first farmers in Anatolia experienced a demographic explosion and migrated in all directions in search of new farmland (between the 9th and 7th millennia BC).

The similarity between the female statuettes of the Turdaş-Vinča culture (with their elongated heads and stretched eyes) and those of the Obeid culture (6,500 - 3,75 BC, Mesopotamia) also finds a simple explanation within the framework of our hypothesis.

Similarly, we can explain a certain similarity between the pictograms found on pottery and female statuettes from the Nagada culture¹⁵ (Graf, 2008) and the pictograms from the Turdash-Vincha culture found on objects accompanying a deceased person in the foetal position. Note: the position of the deceased is the same in these two Neolithic cultures. It should be noted that the position of the deceased was a very conservative element of the funeral ritual and only evolved at the last moment. Egypt is a good illustration of this. This embryonic pose is found among the dead of the Nagada culture (Graf, 2008: 170) and also among those who died at the beginning of the dynastic period¹⁶.

Conclusions

Our systemic approach (analysis of parallels) shows that the emergence of new skills (animal husbandry and agriculture) shaped a new societal and religious structure where, between the 9^e and 4^e millennia, the first 'farmers', invented new tools (alphabetical numbering among others) and beliefs¹⁷ compatible with their new way of life, creating a basis for future Neolithic civilizations.

In our opinion, **Göbekli-Tepe¹⁸ is the '0 point' where nomads** (gatherers and hunters) **begin to transform themselves into sedentary people** (farmers). Under favourable climatic conditions, they experienced a demographic explosion and migrated in all directions in search of new exploitable lands where they developed their know-how (conceived in Anatolia) in different ways in the Balkans, Mesopotamia and Egypt. We believe that they continued to trade with each other : the spread of bronze technology suggests this, but the arrival of cattle breeders from the steppes¹⁹ changed the political and economic situation around the 3rd millennium BC).

We believe that these new arrivals unbalanced the existing exchange system, causing the collapse of the Bronze Age and the simplification of the ancient accounting system. In our view, a standard alphabet (which is the origin of all European alphabets known today) emerged between 3^e and 2^e millennia BC first to serve a new common accounting system so that the whole world could agree on exchanges in a single system. This system was known as **alphabetical numbering²⁰** and can be found in the Iron Age on one of the circles of the Antikythera machine.

¹⁵ . The Nagada culture (3,900 - 3,150 BC.) is the most important prehistoric culture in Egypt. It developed over a period of around 750 years in Upper Egypt. The population went from being hunters and stockbreeders, with a few domesticated crops, to a hierarchical society of cereal growers, grouped together in cities and dominated by chiefs, then by rulers who fought each other to become a pharaoh and unite the whole of Egypt under his rule. N.B. It was during this final period that Egyptian writing first appeared.

¹⁶ . One example is the tomb of Sabu: [The Tomb of Sabu and The Tri-lobed "Schist" Bowl \(bibliotecapleyades.net\)](http://bibliotecapleyades.net). He was a high-ranking nobleman who ruled a city or perhaps even an entire province in 3100-3000 BC. He is thought to have been the son of Pharaoh Anehib (5th ruler of the First Dynasty of Ancient Egypt). Walter Brian Emery discovered his tomb on 10 January 1936 on the edge of the North Saqqara plateau, about 1.7 km north of the Step Pyramid of Djoser. The curiosity of his mastaba is a disc of a strange shape that has given rise to all sorts of speculation to this day. It should be noted that this disc occupied a central place in the burial chamber, placed right next to the wooden coffin containing the skeleton of Sabu folded on itself (Emery, 1949, p.98).

¹⁷ . For more details, see the trilogy by Marija Gimbutas (Gimbutas: 1974, 1978, 2005) and my most recent contributions : Tyaglova-Fayer, 2024 <https://shs.hal.science/halshs-04527141> in <https://cv.hal.science/svetlana-tyaglova-fayer>

¹⁸ . Before leaving, they took care to bury their ancient temples at Göbekli Tepe.

¹⁹ . A vast and complicated subject that deserves an article of its own.

²⁰ . It should be noted that the Romans adopted this principle and their numbering system is known to this day: I, II, V, etc..

This machine was probably assembled in a workshop in Rhodes or Syracuse or Asia Minor at the end of the 2^e century BC. One of its circles uses a device applying alphabetical numbering that cannot be attributed solely to the Greeks because of the three ‘added’ letters: digamma (or stigma); koppa and sampi.

Our initial hypothesis holds true: this calculating device is not uniquely Greek, but is the **fruit of the international know-how** of an era marked by radical changes: social, religious, cultural and industrial. It was a time when an initial (standard) alphabet formed the basis of a common accounting system, so that the whole world could agree on exchanges within a single system. Later, it gave rise to multiple versions serving different languages. This alphabet was an **indispensable connecting tool in the Bronze Age** and later became a common alphabet for all the languages of the great European nations of the future. It is therefore the **fruit of the entire civilisation of the Bronze Age**, even if we admit that Greek civilisation played an important role.

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