

The poster boys of antiquity's 'capitalism' shunning money?
The spread of the alphabet in the Mediterranean as a function of a
credit-based, maritime trade

Os garotos-propaganda do 'capitalismo' da antiguidade evitando dinheiro?
A difusão do alfabeto no Mediterrâneo como
função de um comércio marítimo baseado em crédito

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Abstract: Advances in research on the origins of monetisation in the Mediterranean have shown that even with state-controlled currency circulating, (coinage-less) credit economies existed in parallel, using written documents for transactions well into the Roman period. The current paper documents that a credit economy facilitated the Phoenician commercial expansion in the Mediterranean (9th-7th c. BCE), becoming the vehicle by which the Phoenician 'alphabet', a West Semitic abjad, was rapidly adopted and adapted into various phonetic and syllabic scripts in the Mediterranean. This led to the rapid spread of literacy in societies that had reverted to full illiteracy by then, such as the Greeks one, or that had never developed literacy. In contrast with previous explanations that saw the spread of literacy in the Mediterranean as a corollary to international trade, the present study postulates that literacy played a functional role within the credit economies that grew with international commerce, thereby providing the impetus for the spread of literacy, given that it offers documentation that substantiates this hypothesis. In essence, the study links the rapid spread of literacy to the institutional role of the script within the context of monetised commercial transactions, utilising archaeological evidence from both ends of the Mediterranean, and interpreting it within its historical context.

Keywords: Credit economy; Alphabet; Coinage; Phoenician; Aramaic.

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δεινοὶ γὰρ, ὡς ἔοικεν, ὑπῆρξαν οἱ Φοῖνικες ἐκ
παλαιῶν χρόνων εἰς τὸ κέρδος εὐρεῖν¹
Diodorus Siculus (V, 38, 3)

A number of seemingly intractable problems still surround the introduction of the Greek alphabet some time around the middle of the eighth century BC, after more than four centuries of Greek illiteracy. [...] Of these problems, perhaps one of the most intractable is that of why it happened when it did.
Susan Sherratt (2003: 238)

Introduction

The monetisation of Iron Age Mediterranean economies has been a topic of discussion left for too long to the exclusive attention of ancient historians

and numismatists. Anthropological and archaeological data have not always been given the attention that they deserve. The ill-understood sweeping spread of literacy in the 1st millennium BCE Mediterranean at the onset of monetisation in the Mediterranean has been treated as a phenomenon independent of the latter. In parallel, Near Eastern history makes it plain that several forms of money circulated in the Near East for millennia. The present study documents the causal relationship between the origins of monetisation in the Mediterranean and the popularisation of literacy, which occurred within the so-called Phoenician expansion of coastal Levantine peoples (Fig. 1) in the Mediterranean and Atlantic (Fig. 3), which preceded and overlapped with the Euboean expansion in the Levant, Aegean and Italy (Fig. 2).

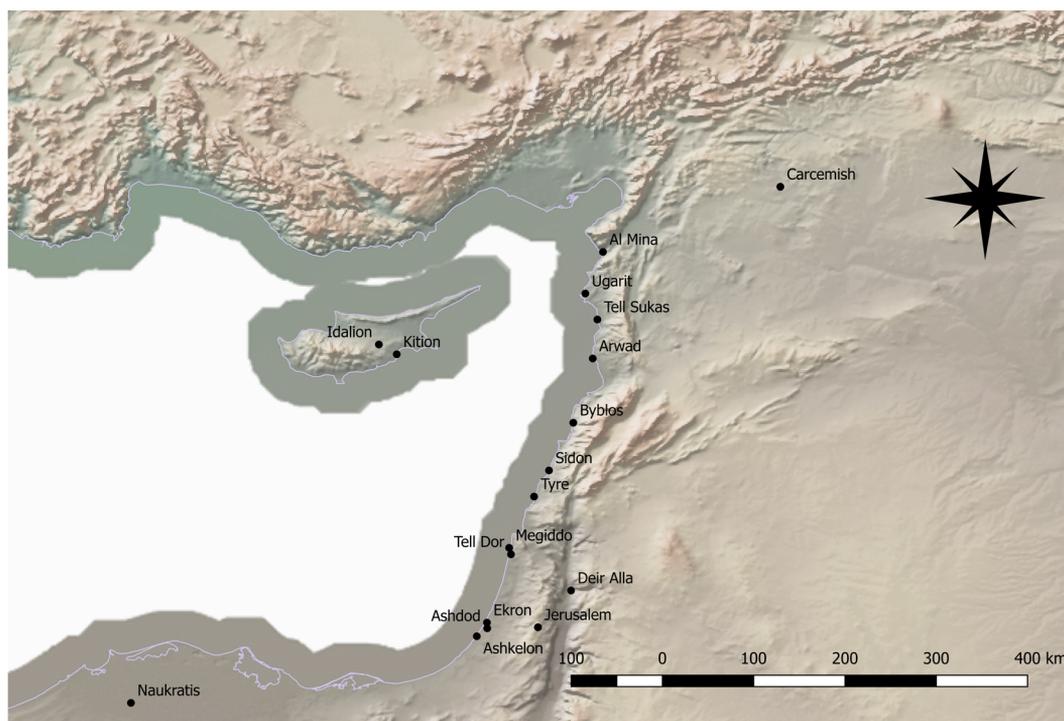


Fig. 1. Map of the eastern Mediterranean with sites mentioned in text.

Source: Author's elaboration.

1 "Because the Phoenicians, it would appear, were formidable from ancient times in finding ways to profit" (author's translation).

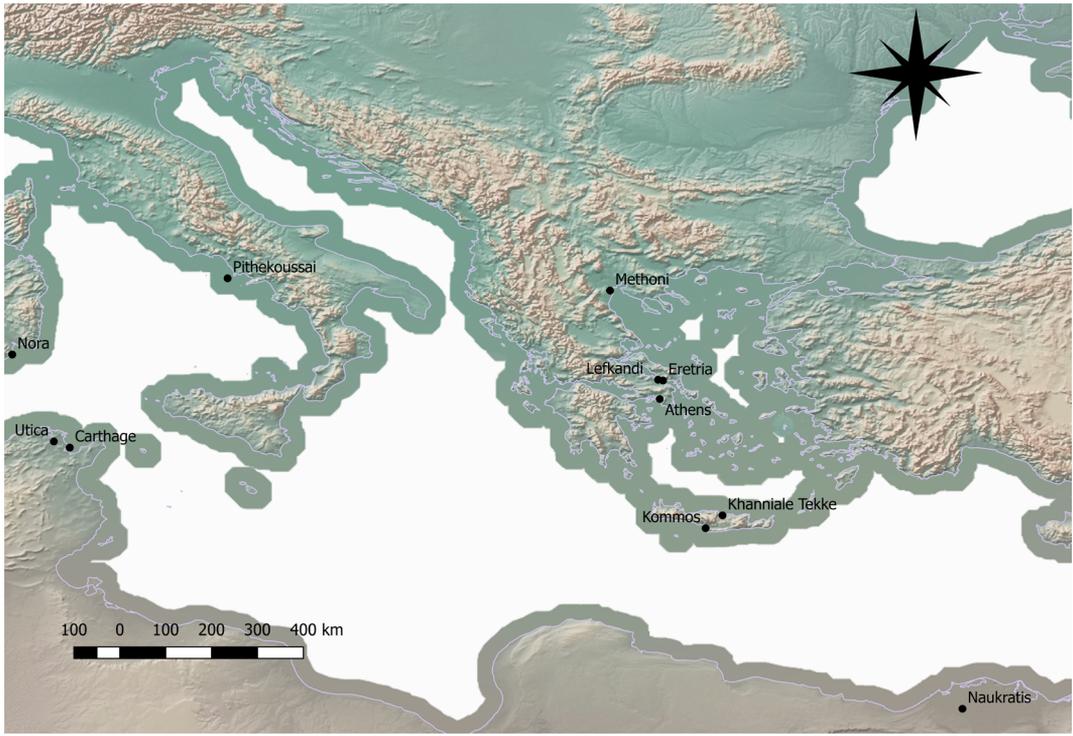


Fig. 2. Map of the eastern-central Mediterranean with sites mentioned in text.
Source: Author's elaboration.

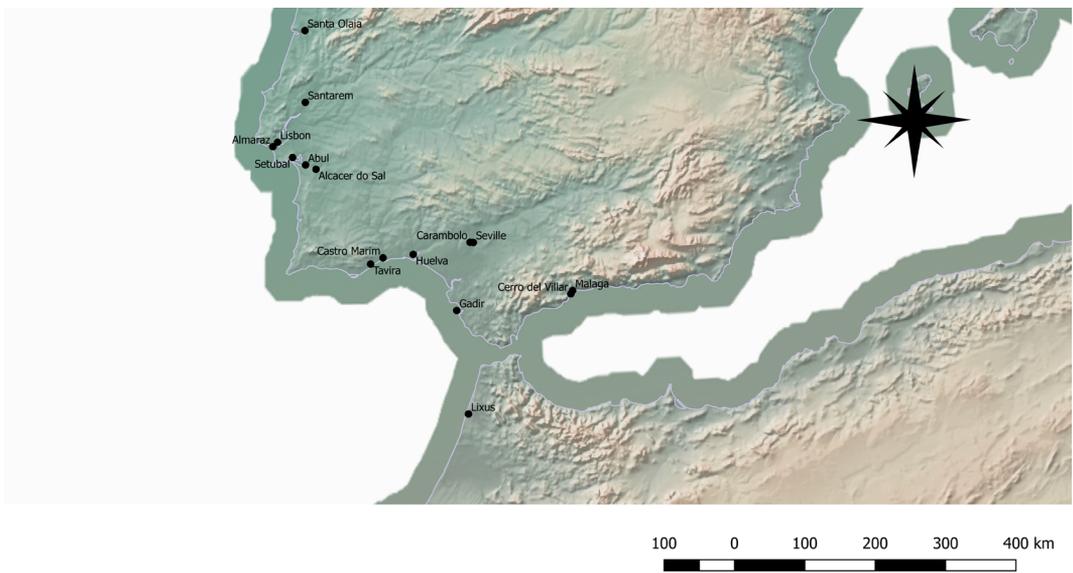


Fig. 3. Map of the western Mediterranean with sites mentioned in text.
Source: Author's elaboration.

Despite such advancements in other fields, archaeologists of the Iron Age Mediterranean continue to resist basic tenets of how commercial transactions would have been carried out prior to the introduction of coinage in the Mediterranean, seemingly dogmatically. A recent popular news item on the Phoenicians included the banal-sounding statement that “Like all good businessmen, the Phoenician traders put their agreements in writing. As they travelled west and established trading outposts along the Mediterranean, they brought their alphabet with them, planting the seeds of literacy in the Aegean” (Bohstrom 2016). While in popular media the idea that Phoenician merchants made use of Phoenician letters for commercial purposes is taken for granted, scholarly field divisions have resulted in the bizarre situation where similar hypotheses are met with derision, for no reason that is credible. Scholars from various fields tend to ignore or reject the idea that literacy was related to business models that led to a commercial expansion, rather than being a mere corollary to trade. Aegean archaeologists of the 1st millennium BCE largely ignore data on Near Eastern economic and legal texts, as well as the archaeological evidence from the western Mediterranean. Near Eastern historians, on the other hand, approach the archaeological and even epigraphic record of the Mediterranean with undue suspicion because they themselves largely deal with the written record in their own fields, in addition to ignoring the contemporary archaeological evidence from the western Mediterranean. Epigraphists, in addition, compile compendia but do not always use this information in the context of topics such as monetisation. Thus, scholars working on textual records find it hard to approach non-textual records, thereby rejecting out of hand the postulation of a credit-based Phoenician economy at a time when every other Near Eastern economy that left texts is known to have utilised a credit economy using written documents (contracts, promissory notes). Lack of textual records is only the archaeological vicissitude

of the result of preferences on the material used for texts (baked clay in Mesopotamia, papyrus in the Levantine coast). The first survived for millennia, the latter, not so. This differential survival, in the archaeological record, of different materials used in writing has led to a damaging compartmentalisation of specialised knowledge of societies that were spatially, chronologically, culturally and socio-economically related, which fact, when neglected, does not advance scientific inquiry.

The Phoenicians were unanimously recognised in classical and later antiquity for the ancestry and antiquity of their maritime commercial dominion across the Mediterranean sea and the Atlantic ocean, stereotyped as cunning merchants in search of profit. In a comedy for the most part lost, Aristophanes would joke “I am becoming a true Phoenician: with one hand I give and with the other I take away” (*apud* Kassel & Austin 1984: fragment 957; see Mazza 2001: 643). Diodorus Siculus (V, 38, 3) mentions that the Phoenicians found ways to profit “since old times” (Mazza 2001: 641), and so the Carthaginians fought against their enemies through wealth created by the trade in metals, not through “political soldiers” or the “persuasion of allies”². Another stereotype attributed to the Phoenicians already by archaic Greek writers was that of the teacher of the “Phoenician letters” to the Greeks. These two stereotypical images of the Phoenicians (master seafarers – profiteering merchants and teachers of the alphabet to the Greeks) were for centuries recycled and repeated in the works of ancient writers (Mazza 2001). Modern research on the emergence of alphabetic literacy has taken the cue from ancient authors, and has focused for decades on the development of the Greek alphabet. The result of this trajectory of modern research springing from ancient texts is the unconscious sidetracking of important information, which has not

2 In fact, Diodorus Siculus (V, 38, 3), so as to drive the point home in this passage, coins a new verb, *καταπλοντομαχῶ*, ‘to fight through wealth’.

been aided by the aforementioned scholarly divisions that prevent a wholistic treatment of the spread of literacy.

Yet several strands of information, both new and old, affect the picture formed on the origins of literacy and its connection to those of monetisation, and need to be taken into account. The first is that the rapid spread of the alphabet in the Mediterranean world in the early 1st millennium BCE postdated by several centuries the development of the first *abjad*, the largely exclusively consonantal script that was invented during the 2nd millennium BCE. This proto-alphabetic script (known as ‘proto-Sinaitic’) likely developed in the Sinai by Semitic populations (Sass 1988). One interpretation sees the 2nd millennium BCE inventors of the proto-Sinaitic signs as members of an enslaved Semitic population controlled by the Egyptians, during which time the script remained minimally used (Goldwasser 2011, 2015). The seeds of this theory go back to 1906 (Rollston 2010: 11-12). Despite such advancements, only very recently has the parameter of the sweeping spread of literacy in the previously illiterate, early 1st millennium BCE Mediterranean societies – more than a millennium after its invention – been highlighted as a parameter that needs to be looked at in order to explain the spread of the West Semitic *abjad*, i.e. the Phoenician alphabet, in the Mediterranean (Pappa 2017). The second strand of information, largely overlooked³, that needs to be taken into account is that the Greek alphabet was only one of the early scripts that adapted the so-called Phoenician alphabet early in the 1st millennium BCE. Not all adaptations of the West Semitic *abjad* concerned alphabets or occurred in the eastern Mediterranean. Studies on the origins of the transmission of the ‘Phoenician letters’ to the Greeks ignore that the earliest scripts originating in the

Phoenician *abjad* developed independently at the two ends of the Mediterranean: in the Greek world and Asia Minor, as well as in Atlantic Iberia. This oversight skews our understanding of a concurrent process in the western Mediterranean that is causally related to what was taking place in the Greek world. The latest archaeological and epigraphic research documenting coeval developments on literacy in both ends of the Mediterranean can elucidate the sweeping spread of literacy in the early 1st millennium BCE, which is not restricted to the spread of the Greek or Phrygian alphabets. The third strand of information is that historical research in the Archaic Greek economy has modernised our understandings of the complexity of ancient economy, moving beyond the now dated primitivist-modernist debate and its offshoots. In addition, developments within the subfield of the anthropology of money can offer new perspectives on our conception of what money is and how monetisation should be conceptualised. This requires an updating of how we evaluate the socio-economic context within which the phenomenon of literacy emerged, and consequently how we interpret the evidence for the origins of literacy.

In view of the reappraisal of older theories on the ancient Mediterranean economy, and new evidence from the western Mediterranean, the present study re-examines the question of the rapid spread of literacy taking into account these three strands of evidence as parameters of investigation that have not so far been utilised in the study of the subject. It puts emphasis on the importance of the institutional context of writing in the rapid spread of the alphabet approximately a millennium after its emergence. Additionally, it looks at the new evidence for the emergence of scripts in the Aegean, but also at synchronously-used scripts that emerged in Iberia and derived from the Phoenician *abjad*. Moreover, it takes into account new information on how maritime trade was conducted. The problem of the popularisation of literacy is thus looked at from a broader temporal and spatial perspective, within the context of the institutional

3 Apart from a passing comment in Powell (1997: 16) on the adaptation of the western Semitic letter signs into the vowels of the Greek alphabet and into the syllabic signs of the early Iberian syllabaries.

structures of Phoenician commerce, pre-coinage monetisation and Near Eastern transaction practices. It takes into account archaeological data from across the Mediterranean, historical information and the latest research on the anthropology of money. It formulates a hypothesis and documents it, utilising mainly archaeological and epigraphic evidence at both ends of the Mediterranean, in tandem with the latest research on contemporary Near Eastern economies. The conceptual approach to money departs from recent perspectives outlined in anthropological research, which deem money to be socially and culturally relational.

The model put forward here is of a credit-based maritime commercial economy associated with the Phoenician city-states of the ancient Near East during the early 1st millennium BCE and their commercial operations, which explains the rapid spread of the alphabet in its second wave of expansion (early 1st millennium BCE) in the Mediterranean. Accordingly, it is postulated that writing had a functional role in commercial transactions of international trade. Facilitating the expansion of credit-based economies, it led to its rapid spread and local adaptations in several regions in the Mediterranean, coevally. The postulation here is analytically structured as follows: commercial transactions within maritime trade were conducted using written documents (e.g. contracts of which kinds of commodities were exchanged for other kinds of commodities) in large-scale commercial exchanges. The future means of payment were not necessarily in a physical form of money, even if the standard reference of value was with reference to a metrological system of metal weight (silver, gold), to be paid instantaneously or in the future, once the transaction had been completed, conceivably through a series of intermediaries. Thus, commodities could have been exchanged for other commodities using a standard reference of value in metal weight so as to establish the equivalence of value. This would form the onset of the process of monetisation in the Mediterranean in the Iron Age, whereby value is reckoned monetarily. The model takes explicitly into account the institutional context

of interregional trade. It should be noted that this hypothesis deals with the spread of literacy in the Mediterranean and does not take into account the spread of literacy in Israel, where other processes were at play (Sanders 2004). In itself, the connection between script and trade-related account-keeping is not novel.

For the Bronze Age, eastern Mediterranean palatial societies, the connection between writing systems and accounting related to redistribution and trade systems is explicit (e.g. Michailidou 2001, 2005). For the Iron Age, despite avid discussions on trade, this aspect remains obscure. Studies have noted our sketchy understanding of the institutional framework, seeking to understand the archaeological evidence through economic theory.

Some caveats should be clarified. The scope is focused on the documentation of the postulated interrelationship between the spread of literacy and monetisation. It is specifically a problem/conundrum-oriented study, one that emerged from the effort to understand the underlying mechanisms of many of the processes of commercial exchanges that have been documented archaeologically (e.g. Pappa 2013). The initial idea derived from the need to explain the large data sets of archaeological evidence from across the Mediterranean that indicate intricate and complex trade patterns akin to market-oriented commercial enterprises, pointing towards a highly monetised Phoenician economy (ca. 850-600 BCE). As such, the intention is not to sketch out the wider economic system, so I will not be concerned with divisions of labour, profits from land exploitation, taxation systems and the like, nor will I provide a survey or analysis of ancient Phoenician economy. While it is informed by contemporary anthropological on money and monetisation, the model presented here avoids the anachronisms that have plagued the field of ancient economic history⁴. It explains the available archaeological epigraphic and historical evidence and will be difficult to

4 On criticism of historical research on ancient economies from that perspective, see Vlassopoulos (2018).

contradict by future archaeological discoveries, unless unusual datasets of epigraphic material detailing a different picture gets unearthed in the future.

The present study thus elucidates the sudden popularisation of literacy and the increasing monetisation of the Phoenician economy prior to the introduction of coinage, by tracing the interconnected causality of these two parameters in the institutional role that literacy played within commercial transactions. It was only by a series of historical vicissitudes, linked to the ebb and flow of state powers in the Mediterranean, that what came to define Mediterranean and north European history were neither a vocal-free phonetic script, nor a coinless economy. In sum, a specific problem of economic activity and its relationship with the rapid spread of literacy is documented here: the way financial transactions within commercial settings were conducted. In what follows, the premises of this model are archaeologically documented, illustrating the way credit-based economies functioned, after discussing first the theoretical framework, based on anthropological and historical research.

Money and monetisation in the Near East and the Mediterranean: concepts, objectives and methodological avenues

Money is a form of measuring the value of objects and labour (e.g. for services rendered). Value in itself is a social construct dependent on the cultural context, reflecting individual and collective attitudes, tastes, and desires that shape priorities on the needs for labour and the acquisition of goods (Papadopoulos & Urton 2012). Economic anthropology has documented the use of different forms of money, diachronically, across the globe. In defining money, consideration should be given to the fact that several different functions may be fulfilled by different categories of objects and practices. Money, as defined today, encompasses different functions, at once serving as index of value (unit of account), means of payment or medium of exchange and

store of wealth, guaranteed by an authority (Hart & Ortiz 2014: 471, 474).

In which sense can we talk of monetisation in pre-coinage societies then? The idea that market-based commerce, as evidenced in the literary record of fluctuating prices of neo-Assyrian and Babylonian commodities, or in the cross-Mediterranean archaeological record of commercial activities, existed without money is absurd. Already in the Bronze Age, the emergence of markets lowered the importance of social and political ties (Earle 2002: 13)⁵. Thus, to expect from a single, physical object to play the role that money traditionally has been assigned, as index of value, store of wealth, physical means of payment and/or medium of exchange, guaranteed by an authority, is an arbitrary restriction that finds support neither in recent anthropological research (Hart & Ortiz 2014), nor in historical research on early forms of money. It is not even a modern concept that is anachronistic when applied to the ancient past, since it no longer fully applies in our contemporary times either. While for Karl Polanyi, “all-purpose money”, the modern national monopoly currencies, were “invented in the mid-nineteenth century” (Hart & Ortiz 2014: 472), the world, and with it the currencies in use, have shifted dramatically since. Nowadays money can take many forms, not all of which are served by the same object. Paying for an object with a credit card, for example, consists in using the currency in which the exchange is made (dollar/euro etc.) as the index of value, though as the means of payment, digital bytes are used via digitally-accessible bank accounts, with numbers on computer screens referring to real units of money that do not physically exist as paper. In such a credit card transaction, the means of payment consist in digital bytes, using the sophisticated materiality of electronic systems of bank transfer (cables, non-wired networks etc.) and a piece of plastic with a magnetic stripe on it. Central banks and

5 For archaeological approaches to market exchanges in other regions and periods, see Garraty & Stark (2010).

state governments provide the guarantee of authority on the standard value of money, which exists in the case mentioned above as digital bytes on a screen (Lolas 2018). Even the last parameter of defining money, the guarantee of state authority, will soon be demolished by the ongoing attempts of giant corporations to issue their own digital cryptocurrencies (as announced by Google, Facebook etc.). Thus, to semantically restrict the term 'money' to the physical means of payment (e.g. a banknote) is not a fruitful avenue for investigation neither for the modern economy, nor for the ancient.

Referring to the Phoenician economy as an example, Scheidel (2010: 85) succinctly noted that coinage cannot be considered the teleological end of monetisation, but rather, one of the many varying currencies that served as money. In treating the subject from the angle of a lack of coinage, one imbues it with anachronistic biases. Why should the existence of coinage be considered normative after all? The subject of the development of money should rather be addressed from the angle of the historical availability of the concept that could serve existing practices. When city-states in Phoenicia adopted coinage in the 5th c. BCE (Elayi & Elayi 1993), it was not because they had reached the optimal stage of a teleological process of monetisation that necessitated coinage, but because they were conquered and annexed by the Persian empire, where coinage was coming into use.

The societies of the ancient Near East have furnished information on transaction mechanisms and payments on the basis of textual and archaeological finds. Mesopotamian economies were monetised, as documented by the extensive state and private archives of economic and legal texts, as well as archaeological finds. While several different economic practices, objects and even enslaved humans fulfilled different functions of money (with payments made with the transfer of property, slaves, barley, textiles and other), by the early 1st millennium BCE, copper and silver were increasingly used (Fales 1996). Payments with weighed metal are documented

in the textual archives, persisting for a very long time, as suggested by the archaeological record. Contracts for such transactions are known in large numbers from Mesopotamian cultures, spanning millennia. For the Levantine coastal centres in Syria, Phoenicia, and Israel, the main source of information on monetisation is archaeological, and consists in hoards of metals. Transactions took place at markets, other public places and at sanctuaries. Different types of balance scales are known as actual objects and through their iconographic representations. The earliest representation of balance scales comes from mid-3rd millennium BCE Egypt, while balance scales are found as actual objects in 2nd and 1st millennium BCE Mesopotamia and the Levant (Elayi & Elayi 1997: 218-220). Balance weights would have been placed on the plate of the balance scales aiming to equal the mass of the commodity placed on the other. Volumetric units instead were used for measuring the quantities of staple foodstuffs, such as liquid commodities (wine, oil) or dry produce such as wheat and barley.

The literate Mesopotamian cultures left textual records in large numbers that span millennia. Regarding larger transactions, apart from the vendor and the client, witnesses would have been present as well as the scribe, who would have sealed the purchase with a contract. For the Levantine coastal centres in Syria, Phoenicia, and Israel, the main source of information on monetisation is archaeological, and consists in hoards of metals, whose monetary function is disputed. These entail cut-up pieces of silver such as jewellery fragments and other scraps of metal, found in clay jars or bundles⁶. In Israel, they appear from the Middle Bronze Age IIA onwards and persist down to the Late Iron Age IIC. Bundled hoards come from a number of sites, including those with documented connections with the Phoenicians such as Early Iron Age Megiddon, Beth Shean, Tell Dor, Tell Akko and Ashkelon (Eshel *et al.* 2018).

For the Iron Age Aegean world, however, studies on the advent of monetisation have

6 The unfortunate loan term *Hacksilber* has persisted in the scholarship to refer to fragments of silver.

focused mainly on the introduction of coinage in Lydia and its spread into the Aegean. Seaford (2004: 11) postulated that the central element in the development of coinage, the abstraction needed to view money as transforming something into value, fulfilled the precondition for the emergence of pre-Socratic metaphysics that accordingly “involves (without *consisting of*) unconscious cosmological projection of the universal power and universal exchangeability of the abstract substance of money”, which would explain the contemporaneity of the emergence of coinage and this branch of philosophy in the Greek polis. In essence, Seaford (2004) connects the abstraction needed to see a piece of metal as embodying value to the abstraction needed in philosophical thinking, linking it to the emergence of the political institution of the polis, metaphysical philosophy and tragedy. However, it is factually incorrect to argue, as Seaford (2004) did, that there is no evidence for extensive monetisation in the Near East prior to the use of coinage by the Greeks.

Commercial exchanges had a much longer past in the Greek world, predating the adoption of coinage by centuries at least. This long past has been teased out by inscriptions, later literary texts, and archaeological evidence. Rudimentary transactions in kind, but utilising a standard reference system as index of value, are known. In the Homeric poems, the poet’s famous use of oxen as index of value did not mean that these draught animals also functioned as means of payment, or medium of exchange (Peacock 2011). In Archaic Cretan laws, bronze cauldrons functioned as index of value but not as means of payment, while in mainland Greece iron spits were used as currency, with Kroll (2011b) considering them ‘utensil’ money, possibly erroneously (in the sense that they may not have held a practical usage). In pre-Roman Italy, at the settlement of Satiricum (south of Rome), two pairs of metallic weight units may indicate the monetary use of metals in pre-Roman Latium (Nijboer 1994)⁷. A shared understanding of

monetary values belies such practices in pre-coinage Greece and Italy, even if the majority of exchanges took place in kind.

Coinage, however, developed only once. First emerging in 7th c. BCE Lydia, it rapidly spread into the Aegean and from there, across the Greek colonies established in the central and western Mediterranean (Sicily, southern Italy, southern France, Catalonia, perhaps briefly in Corsica too) and the Black Sea. The derivation of the onomatology of Greek coinage from monetary practices of weighing metal and other pre-coinage means of exchange suggests that coinage succeeded previously established monetary practices. The word *stater* (*στατήρ*), for example, refers to a coin of specific weight whose name derives from the verb *ἵστημι*, ‘to set on the scales’, a reference to weighing out silver or other noble metals, while *talanton* (*τάλαντον*) derives from the verb *ταλαντόω*, ‘to sway’ (as in, to sway on the balance scales, which led to puns in comedy plays, of people being swayed off their money) (Papachrysostomou 2012-2013)⁸. The word *drachma*, denoting a monetary unit of six obols, comes from the verb *δράττω*, ‘to grasp’. The name originated in the practice of grasping six spits, *oboloi* (*οβολοί*) which equalled a drachma in value, based on a sexagesimal monetary system (conceivably of Mesopotamian, perhaps ultimately Sumerian) origin. Kroll (2011b) suggested that the influx of precious metals in the Greek world during the Orientalizing period (8th-7th c. BCE) resulted in that “the value-units of obol and drachma were transferred to denote small weight-units of gold and silver,” as by the early 6th c. BCE, a law on tax collections attributed to the Athenian lawmaker Solon referred to silver drachmas and another to silver that “was lent at interest as weighed-out silver” (Kroll 2011b: 15). The pre-monetary value unit of a drachma (equalling

corresponds to the Campanian weight metrological system. The second was found in a settlement context, is dated to ca. 700-650 BCE and corresponds to the Roman-Oscan metrological system (Nijboer 1994).

8 For this and other interpretations of puns involving this word and its derivatives in Sopater’s play *Φακῆ*, see Papachrysostomou (2012-2013).

7 The first, dating to ca. 725-540 BCE, was found with a pair of small balance scales in a votive deposit, and

six obols, *i.e.* six iron spits) came to denote, after the adoption of coinage, a coin equal to six obol coins or 1/3 of a stater, but the interest rate in cases of loans continued to follow pre-coinage practices even after the introduction of coins. Thus, in the Greek world, the names of early coinage and economic laws preserve the memory of pre-coinage monetary practices (Kroll 2011b).

For the Near East, clay tablets preserving economic and legal documentation leave no doubt as to the gradual monetisation of Mesopotamian economies. Yet our understanding of Near Eastern economies that did not use clay tablets for economic transactions, such as the Phoenician economy⁹, lags behind for the banal reason that administrative records were kept in perishable media (e.g. papyrus or wax-lined wooden tablets). Research into these economies ought to integrate the analysis of large corpora of epigraphic texts from the cuneiform-based administrative systems of imperial states with the extant archaeological finds (Peyronel 2010). That understanding should open avenues of investigation into the Phoenician economy. To that end, both the broad frame of economic growth observed within the Phoenician colonial network (seen through the explosive demographic growth, urbanism, production structures, and multi-nodal commerce) and the individual categories of evidence (balance weights, evidence for hoarded metal) should be taken into account.

The archaeological documentation for monetised commercial networks and the spread of literacy in the Mediterranean

Phoenician maritime trade in the Mediterranean: a Near Eastern economy, Mediterranean 'free trade' markets and the parameters of credit and growth

Calls for the use of economic theory in understanding the archaeological evidence of the Phoenician expansion in the western

⁹ But see below for the Persian-era Phoenician archive in clay tablets found in Cyprus.

Mediterranean put emphasis on the need to understand the relationships between society and economy within a wider framework, and to ask "the right questions" (Johnston 2013: 668). The commercial Phoenician expansion in the Mediterranean has been approached through Neo-Classical Institutional Economics, where ancient social behaviours are drawn into the domain of economic reasoning, e.g. oaths to the gods are seen as an economic mechanism regulating trust in transactions (Pappa 2013: 181-183). In a recent study on the southern Levantine economy, the New Institutional Economics, a subset of Neoclassical Economics, was favoured as an improvement on the latter, introducing the concept of 'transaction costs' and dispensing with the unrealistic, theoretical concepts of earlier economic theory, such as 'rational actor behaviour', 'perfect knowledge' (of the market), 'perfect competition' etc. (Walton 2015: 45-46).

The Phoenician expansion in the Mediterranean has been linked to economic, political and social motives. Economically, a major role in the establishment of trans-Mediterranean shipping lanes was played by the large-scale trade in metals, proceeding from the exploitation of the rich metalliferous zones of the Mediterranean, such as the famous mining region of Río Tinto (Huelva) in Iberia (Fig. 4) and Sardinia. In particular, silver and tin were mined in south-western Iberia (Hunt Ortiz 2003) and exported to the eastern Mediterranean. Chemical analysis of stratified Levantine hoarded metal artefacts suggests that the Phoenicians began trips to Iberia in the 10th c. BCE (Eshel *et al.* 2019). Other raw materials, such as timber, may have been exported from Iberia (Pappa 2013: 101), although the trade of timber from Lebanon is well-attested (Semaan 2015).

In his *Chronicle of Eusebius*, the Byzantine Georgios Sygkelos (8th-9th c. CE) situated biblical Tarshish (e.g. 1 Kings 10:22), where a joint Tyrian-Israelite fleet of ships procured metals, in Iberia (Lipiński 2004: 250). The long-postulated identification of biblical

Tarshish with Herodotus' (1.1.63) Tartessos, a kingdom beyond the 'Pillars of Herakles' (Straits of Gibraltar), drawing its wealth from gold and silver sources, is now confirmed by epigraphic finds and archaeo-metallurgical information, both pointing to the region of modern-day Huelva as the ancient Tarshish/Tartessos (Celestino Pérez & López Ruiz 2016: 113-114; Eshel *et al.* 2019). Phoenicians were not mere intermediaries in the trans-Mediterranean metal trade, but actively involved in the ore extraction, as the sophisticated silver metallurgy attested during the Iron Age had no precedent in Iberia (Hunt Ortiz 2003). A study postulated two patterns of production and distribution

of silver in south-west Iberia, with one being large-scale and nucleated, and the other small-scale and independent, remarking that no Phoenician settlement is discerned in the former but allowing for a "possibly coercive" system of silver production (Johnston 2013: 669-670). That silver was exported as a commodity does not exclude its monetary role as bullion, once it had reached the destination markets in the Mediterranean. The exportation of Athenian coinage from Athens as commodity despite its use as coinage at the end destinations in the Near East during the late Classical period (Bresson 2016), offers an analogy.



Fig. 4. General view of the Río Tinto mining region (disused open pit outside present-day exploitation zone), Huelva, Spain.

Source: Author's photograph.

Although the Phoenicians are known as the traders *par excellence* of Mediterranean antiquity, the mechanisms of their commercial exchanges ca. 10th-6th c. BCE remain speculative. In a study on the monetary practices of western Anatolians and Greeks in the Aegean and Italy, Kroll (2010: 32) wrote *en passant* that "some [coins from the Tarentum hoard] may have been brought on the ships of Phoenician and Carthaginian traders, who probably continued to depend on weighed bullion in the international, Mediterranean-wide activities". This statement aside, there has been little interest in the monetary mechanisms of financial transactions *per se* in non-Greek and pre-coinage contexts of commercial expansion

in the Mediterranean. This is symptomatic of the fact that the monetary system of the pre-Greek and pre-Roman Mediterranean have not been adequately studied, partly because of modern preconceptions on how monetisation is defined¹⁰. The Phoenicians left neither coinage, nor the archives of the Near Eastern palace societies, yet the archaeological record spanning the Mediterranean shows complex monetised commercial networks. This preconception has led to a distortion in the understanding of the Phoenician economy, which is treated as a non-monetized one, despite mounting evidence

¹⁰ But see García-Bellido, Callegarin & Jiménez Diez (2011) for an exception.

as to the contrary, both regarding the existence of a credit economy (which presupposes notions of debt), and the market-based, multi-nodal private trade mechanisms.

A distinction between Near Eastern palace-based economies and Mediterranean free trade has long been held. For Bresson (2016), Near Eastern economies did not adopt coinage for there was no special advantage to it in the redistributive palace economies of the Near East, where wealth was centrally collected in the form of tribute-based taxation by the state and redistributed to palatial staff and serfs, who were often paid in kind. By contrast, the Greek economy operated on completely different terms, according to this position. It was largely land-based but considerable wealth was created through interregional 'free trade', which encouraged the development of specialised production and led to economic growth. This was not a capitalist system in the modern sense of the word, but a profit-seeking, private commercial system, heavily regulated by each Greek city-state that aspired to maintain autarky (with taxes, customs and bans on exports of basic foodstuffs), while capital for commercial enterprises was provided by sanctuaries (Bresson 2016).

The Phoenicians, though springing from a Near Eastern socio-economic context, were in no possession of a redistributive palace economy of the Assyrian type. In Mesopotamia and the Levant, private trade, often overlapping with royal commerce, is documented from the Late Bronze Age onwards (e.g. Aubet 2013; Peyronel 2010: 935). Although a distinction between private and public economic spheres does not apply strictly and synergies existed between state and private actors, entrepreneurs seeking profit are documented as important agents of economic activity in the Late Bronze Age long-distance trade networks (Monroe 2000). Regardless of the degree of forced subjugation of the Phoenicians to the Assyrians, once out in the Mediterranean, the Phoenician merchants' commercial transactions had to be regulated by a specific system of exchanges. So, how did they trade? Departing from Bresson's (2016) viewpoint under discussion,

it can be argued that the Phoenician traders, operating across their network of trading posts and colonies in the Mediterranean, were caught in a situation of distinct spheres of economic practice. On the one hand, they were trading with Mediterranean people such as the Greeks and the Etruscans in a form of private, profit-seeking trade, unrestrained by a redistributive, centralised palace economy. Since they lacked coinage, how were they to engage in large-scale, systematic exchanges across the Mediterranean, and on the Atlantic fringes? In order to build these economic ties, they had at their disposal the tools of a Near Eastern economy: namely, a credit-based economy, facilitated through private letters and receipts of transactions that allowed for private initiative. Such types of transactions are amply documented in the contemporary Neo-Assyrian private sphere of commerce.

It can be conjectured that literacy worked as a means of facilitating large-scale commercial transactions within the Phoenician expansion, used for writing contracts and promissory notes. These guaranteed either a payment in weighed metal in the future (for example, upon receipt of merchandise in Spain, shipped from the Levant) and allowed for payments in kind, albeit upon equivalences of value established in metal weight. Records of sales and future payments, in kind or in silver, would be made to ensure future payment, in a form of credit transaction that is familiar from the multiple modes of payment that were established for millennia in the ancient Near East, attested by cuneiform archives. While the value of commodities would be estimated using silver by weight as index of value, the means of exchange may not have always been silver or some other (noble) metal. Straightforward in its conception, this model can explain the archaeological evidence to a large extent and it is not countered by any of it.

For example, a Tyrian ship with a large cargo of wine from Ashkelon, packaged in transport amphorae produced in Sarepta, could offload this merchandise in a Phoenician port in Malaga, say Morro de Mezquitilla, picking up a small cargo of tin ingots from Atlantic Iberia, ivory tusks and transport amphorae containing salted

tuna fish. The exchange, sealed by contracts establishing the details of the sale, would be made on the basis of the equivalence of prices for each of the commodities established in a shared index of value (e.g. silver weight), and the profit would result from the differential price ranges of the imported goods at the end destinations. In the case of the Tyrian ship of the example that would be upon arriving in Phoenicia, where neither tin nor tuna, much less ivory tusks, were readily available. The sale of commodities would have taken place through wholesale trade intermediaries at ports, once the ship reached anchorage, as known for the Greek world (see below). Upon return, if the merchant had taken a loan for the voyage, he (or perhaps she) would be able to return it in kind, or in silver money, plus interest, according to the contract made prior to the voyage, in the previous sailing season¹¹.

This proposed model establishes the institutional role of literacy in the context of commercial transactions, thus allowing us to hypothesize the emphatic role of writing in the sealing of commercial transactions. This is the key to explaining the rapid spread and adoption of writing among the otherwise pre-literate peoples of the Mediterranean. Such a hypothesis offers a straightforward, coherent and plausible explanation for the way transactions were carried out across the Phoenician commercial networks but answers some very complex problems of archaeological and historical research: the evidence for market-based commercial networks and the rapid spread of literacy across the two ends of the Mediterranean, with local adaptations of the Phoenician script into alphabets and syllabic scripts. The idea that the Phoenician economy worked in a fashion that was comparable to its contemporary Near Eastern economies is not only plausible and realistic, but finds ample documentation in the archaeological record. That for such a long time the obvious conclusions have been met with resistance largely pivots on that old habits die hard, compounded by narrow, scientific

specialisation that has inadvertently created entrenched disciplinary boundaries.

In what follows, the model is sketched out and documented by the available archaeological and epigraphic evidence. Market mechanisms presuppose mechanisms of demand and offer (not a redistributive) economy, i.e. a market as an economic reality, and forms of money and larger institutions that oversee some of the mechanisms of exchanges. Thus, the premises of the reconstruction of monetised Phoenician commercial networks, as based on a credit-based economy, are as follows: the market was an economic reality, not merely a physical space; market mechanisms should be materially evident (e.g. the effort to lower transaction costs can be seen in the standardisation of production and transactions, in common metrological systems, and in the development of money for capital mobility as an effort to lower transaction costs); there should also be overseeing authorities. The monetisation of the economy is visible in the market mechanisms of commercial exchanges, which are suggestive of the discrete forms that money took as index of value, means of payment and store of wealth. Finally, monetisation presupposes rudimentary institutional mechanisms that oversaw some of these interregional processes of standardisation of exchanges and offered capital in the form of lending, evidence of which appears in the dense archaeological record of Phoenician and other Near Eastern sanctuaries that doubled as trading posts. The premises of the model break down analytically the function of money into its discrete functions as an index of value, a means of payment/medium of exchange and a store of wealth. The following sections provide the archaeological documentation for each of these premises.

Market as a physical space and economic reality in Phoenician maritime trade in the Mediterranean

A market economy accounts for a complex system of exchanges, with rudimentary mechanisms of offer and demand regulating

11 The example is based on commodities known to have been produced and traded in Phoenician maritime trade.

commercial enterprises aiming at profit¹². Two elements characterise the notion of market here: free choice to buy or not, and the relative standardisation of production and exchange mechanisms. This does not imply fully-fledged mechanisms of offer and demand determining price mechanisms, regulated by national or international institutions, which is an anachronistic idea, inherent in modern capitalist economy. But it does mean that the availability and desirability of commodities played a role in what was produced, what was sold and how much it was sold for.

Scholarly opinion on how Phoenician commercial mechanisms operated is not coherent or concise. The fact that the Phoenician maritime commerce in the Mediterranean was structured by market mechanisms was taken for granted by Bondi (e.g. 1995: 274) in his studies on Phoenician commerce. Accordingly, profit was made by the differential prices of commodities across the Mediterranean, depending on transaction costs. Bondi (1995) offered a pioneering conception of the Phoenician economy, remarking that the expansion westwards resulted from a saturation of the eastern Mediterranean market (Levant, Syria, Cilicia), albeit this hypothesis was based on the then accepted chronology for the Phoenician expansion in the western Mediterranean, dated at the time to the middle of the 8th c. BCE, which does not explain the 10th c. BCE forays to the West¹³. The idea finds parallels in Bresson's (2016) view of the Greek commerce, where profit margins relied on differential price ranges for the same commodity. The specifics regarding monetary mechanisms that presumably underlay this market-based profit were not discussed.

12 But see Bresson (2016: 211-212) who argues without explanation that in the ancient (Greek) market, competition was not based on the elasticity of supply, but on variations in price or quality for an essentially static supply. By itself, the author argued, supply could not create more demand, though this begs the question why. The opposite can be argued on the basis of the creation of niche markets for the export of Attic pottery, to give a counter interpretation of the author's example.

13 For updated information for the Phoenician expansion in Syrian and Cilicia, see Fales (2017).

Beyond this, scattered references in studies on early 1st millennium BCE cross-Mediterranean commerce imply that this large-scale commerce operated on the basis of barter trade in pre-coinage economies, or in rare cases, conceive of silver bullion as a means of payment. Views of barter trade come into sharp contrast not only with what we know of how contemporary or near-contemporary Greek commerce was organised, but also with the archaeological record that shows multi-nodal commercial networks, with regional circuits, and a rapid growth in production and exchange in short spans of time.

The Archaic and Classical commerce of Greek city-states is instructive, not only for the chronological contemporaneity and overlap of physical space with the Phoenician city-states in their respective spheres of commercial activities (Syria, the Aegean, Italy and Iberia), but also because in both cases it was dependent on private initiative in the socio-political context of city-states. A consensus has been reached on that the ancient Greek economy was not 'primitive' (e.g. Nafissi 2004) in the terms described by Finley (1973) and others. Complex economic notions of modern economy, such as supply and demand, can be employed to understand the ancient economy (Jones 2014). Bresson (2016) described the archaic Greek market as an economic, legal, social and physical space. Greek trade is thought of as 'free trade', but not as 'capitalist' in the modern sense of the word, partly because profit margins were monitored by cities so "that no profit would be exacted without an extra service between the moment the price is first registered and that when it is sold" (Bresson 2016: 331).

This system may also have aimed to curb the economic power of an emerging merchant class, preventing potential aspirations of political control by a wealthy class of traders. If polis control of market prices functioned as a protection of land-based wealth and political power from the emerging merchant's capital and from usury as a form of power, then this is evidence of institutional authorities protecting the existing political system from rapid socio-economic changes brought by market mechanisms. In the Classical and Hellenistic

periods, the Greek city-states enacted specific laws and signed trade agreements cognisant of market behaviour, in a form of protectionist interventions aiming at safeguarding indispensable foodstuffs or materials within the polis and at preventing speculation on prices (e.g. a specific law on the importation of wood and charcoal enacted by Delos ca. 275-225 BCE, the purpose of which was to prevent speculation by allowing an acceptable profit margin) (Bresson 2016: 329-331)¹⁴. The city itself was a major economic actor in trade (Bresson 2016: 316).

This kind of information on how maritime trade was conducted is not available for the western Phoenician world in such detail. Three trade treaties between Carthage and Rome are known. The first was signed between Carthage and Rome in 508/7 BCE, and stipulated that commercial transactions involving foreign traders in Carthage were conducted in the presence of a public secretary or herald, and were written down, as a form of legal guarantee for international trade. Discussing this provision, Bresson (2016: 320-324) views the Carthaginian city protection of international commerce as similar to that of the Greek city-states, albeit more cumbersome for lack of coinage. Greek city-states provided legal guarantees to merchants (without the need to record every transaction in the presence of a city's representative). In general, for the period between the 9th and the 4th c. BCE, there is not enough knowledge to specify if other Phoenician colonies across the Mediterranean operated like autonomous political entities, in similitude to that of the Greeks, as Carthage did. The latter has been suggested for Iberia (Álvarez Martí-Aguilar & Ferrer Albelda 2009).

14 Specifically, measures included price-regulation when the demand was high and was met by low offer (which increased exorbitantly the prices), the introduction of taxes, customs and the supervision of prices, the negotiation with foreign merchants even as far as conferring privileges on foreign merchants that would agree to lower prices, and the city acting as a cartel for private buyers in order to stabilise the prices of imported goods. Other measures consisted in the use of public funds for the importation of goods (Bresson 2016: 254-257, 325-326). By the 4th c. BCE, commercial suits regarding maritime trade in Athens conferred on foreign merchants the rights of representation allowed to a citizen (Bresson 2016: 318-319).

It remains a strong possibility, both because the mode of civic organisation in Phoenicia was close to that of the Aegean-Ionian world (in small city-states) and because in the 4th c. BCE, when several Iberian cities, founded as Phoenician colonies, began to issue coinage, they did so in the name of each city. The urban model of colonies, often fortified, also suggests a level of autonomy.

That the market in the Phoenician colonial world was more than simply a place of barter trade during the 1st millennium BCE, but an economic and legal reality, is reflected in the archaeological record of a multitude of trade and commercial stations in the Mediterranean, the rapid spatial expansion of commercial networks stretching to the Atlantic coasts of Africa and Europe, multi-nodal trade flows, such as the import of products produced in long-distance regions for commodities locally available (e.g. Greek wine was imported in wine-making regions in southern Iberia and traded even in Morocco) and the establishment of sanctuaries at commercial trading posts or in areas frequented by merchants, which may have regulated commercial exchanges. Sanctuaries may have served as regulating institutions, e.g. by sealing negotiations (Pappa 2013: 180-183).

The market was also a physical space and an economic as well as legal reality that safeguarded commercial transactions and lowered transaction costs by concentrating all interested parties in the same area¹⁵.

15 In the Greek world it is known that retail trade took place at the agora. In Athens, the agora was delimited by boundary stones, while wholesale trade took place at the port (*ἐμπορίον*), also physically and legally delimited. Port taxes would have been levied on incoming ships, as well as custom duties. From the 5th c. BCE Sounion, north of Athens, it is known that customs duties were 7 obols for each 1000 talents of cargo weight. In 3rd c. BCE Delos, at least three different taxes were levied on cargo ships, related to anchorage fee, usage of the capstan and of the necessary space for offloading/loading the cargo. Customs duties were separate and related to transporting the goods to be sold in the city (Bresson 2016: 307-309). In many Greek cities, the place at the emporion called the 'example' (*δείγμα*) was where merchants, bankers and other middlemen met to try out samples of merchandise before wholesale transactions were sealed (Bresson 2016: 311-313). This lowered transaction costs by reducing travel time and costs, concentrating all interested parties in one place, the *emporion*.

Several markets have been excavated across the Mediterranean, in cities of the Levant, the Aegean and the colonial world of the Phoenicians and the Greeks. At Cerro del Villar (Malaga), such a market place has been excavated, documenting the presence of shops and storage areas for merchandise arriving from the sea and inland (Aubert 1997). Complex trade patterns in Iberia show that apart from the bulk of traded commodities along the cross-Mediterranean and regional shipping routes, trade networks transported commodities to areas where similar commodities were also produced (Pappa 2013: 110-138). Main commodities such as silver, tin and agricultural goods must have been the mainstay of trade flows onto which other products that brought revenue, but were not the backbone of the exchange system, were added, such as luxury goods (e.g. perfumes, of which ample packaging material survives), Greek figured pottery, textiles.

These characteristics of the archaeological evidence for the Phoenician expansion is impossible to explain unless one assumes that market mechanisms were at play, such as the effort to lower transaction costs. Secure transaction mechanisms, the standardisation of production and exchange mechanisms (or at least, the inter-convertibility of weight standards in the metrological systems used for those purposes), strategies of risk-spreading and the availability of geographical, economic and social information about markets, as well as the use of money, are all forms of lowering transaction costs, to be discussed below.

Standardisation and interconvertibility in production and selling: the lowering of transaction costs as a market mechanism

Trust in commercial partnerships is a form of lowering transaction costs within a market economy. A network of established intermediaries (brokers, money lenders etc.), as well as the establishment of trading stations, can help increase trust in commercial exchanges. Walton (2015) has argued that the

creation of several trading posts in southern Levant in the 1st millennium BCE lowered transaction costs. By analogy, the role of the multiple trading posts founded in the Mediterranean by the Phoenicians can be seen as a way to create an established commercial network of stable partnerships. An alternative or complementary hypothesis is that the multiplicity of trading posts created in Iberia by the Phoenicians (in a striking density where in regions such as Malaga and Granada no more than 2 km separated two trading posts in some cases) is the result of competition between guilds that operated as private commercial firms. Such guilds are attested intermittently from the Late Bronze Age to the Punic period on the basis of historical and epigraphic evidence (Pappa 2013: 183-185).

The standardisation of production and packaging is seen both in the Levant and in the Phoenician colonies in the western Mediterranean, already from the 8th c. BCE. Transport amphorae were used for transporting wine, oil and salted fish (as residue analysis documents) (Pappa 2013: 97-132). They are a precise archaeological indicator of standardisation, as they were mass-produced to exact volumetric standards for the export of foodstuffs. The mass production of Phoenician containers is a form of such standardisation, with kilns operating in many regions as attested in Tyre and Sarepta (Walton 2015: 417-418). Entire cargo shipments of standardised amphorae are documented by the two shipwrecks off Askhelon ('Elisa', 'Tanit'), and other Phoenician vessels identified in the Mediterranean (Abdelhamid 2015). The mass-production of these transport containers indicates the existence of several interconnected professional operations, from the agricultural harvest in different regions and the co-ordination of producers, as well as bulk-trade buyers of agricultural goods, to merchants and sailors involved in market enterprises aiming at generating profits through export across the Mediterranean.

Typological studies of Phoenician transport amphorae produced in the eastern,

central and western Mediterranean document that transport containers exhibit strict standardisation (e.g. Ramón Torres 1995) not seen in other classes of pottery at the time. Volumetric studies of torpedo amphorae, hundreds of which type were found in the two 8th c. BCE Phoenician ‘Tanit’ and ‘Elisa’ shipwrecks off Ashkelon, show that a common Phoenician transport amphora was manufactured according to the Egyptian metric system, corresponding to 4 *heqats* (Beyl 2013: 128; Walton 2015: 85). The transport amphorae were standardised as a matter of commercial strategy, facilitating commercial exchanges by lowering transaction costs.

The standardisation of Phoenician amphorae produced in the Phoenician colonies in the Mediterranean proceeded from typological norms established in the Levantine homeland. The amphora typology developed by Ramón Torres (1995) shows such efforts to standardise transport containers from the earliest periods of Phoenician expansion. For example, the central Mediterranean carinated amphora was a transport container of ovoid shape with carinated shoulders and small round handles. Variants of it were produced in Carthage and possibly Motya; it had a short life span (second half of the 7th/early 6th c. BC) (Ramón Torres 1995: fig. 1, fig. 2)¹⁶. The type was exported to the western Mediterranean for its contents. For example, amphora fragments (Fig. 5) found at the site of Palácio da Galeria in Tavira, Portugal (Pappa 2015b), belong to this Carthaginian type (corresponding to types T-1.1.2.1 or T-1.1.2.2 of Ramón Torres 1995). The ‘sack-shaped’ amphora was a transport container, produced in the western Mediterranean. It dates to the 7th c. BCE. It was oval-shaped, 60-70 cm in height, with a round, flat base, globular shoulders, small round handles and untreated surface (Ramón Torres 1995:

229-233)¹⁷. A recent typology of Phoenician-derived amphorae produced in the Tagus estuary, near Lisbon (Olaió 2018) also documents standardisation of production. The copying of Levantine models for the amphorae produced in Atlantic Iberia implies that the units used for these amphorae were originally derived from Phoenicia. Thus, the volumetric units of transport amphorae produced in the central and western Mediterranean appear to have been based on Levantine metrologies¹⁸, as was their original shape that evolved locally in different areas of the Mediterranean. Information on the volumetric units of Phoenician transport containers comes also from epigraphic material, but dates to a later period. Graffiti in the Phoenician language on ostraca from Idalion, Cyprus, dating to the 4th c. BCE, refer to containers or to volumetric units for oil, but this needs further research (Amadasi Guzzo 2017: 375). In general, in Iron Age Mediterranean commerce, there was a conscious effort to create standardised volumetric units for production estimates and evaluation by trade agents and customers, which facilitated exchanges by lowering transaction costs. For example, volumetric units for Greek transport amphorae export to Satiricum and Pithekoussai in the Italian Peninsula in the 7th c. BCE show interconvertibility with Egyptians ones (Nijboer 1998).

Efforts to standardise the metrologies of balance weights, which relate to the standardisation of payment mechanisms in silver or other metals, are attested throughout the Near East, Egypt, Greece, Italy and even Iberia, with an effort for cross-regional

16 Four types by Ramón Torres (1995) correspond to this: T-1.1.1.1, T-1.1.2.1, T-1.1.2.2 and T-1.3.2.11.

17 It includes several of the Ramón Torres (1995) types (T-10.1.1.1, T-10.1.2.1, T-10.2.1.2, T-10.2.2.). Types T-10.1.1.1 and T-10.1.2.1 are chronologically successive or overlapping. The former features an ovoid, sack-shaped body, carination in the upper third part of the body and round handles. The latter appears from the second third of the 7th c. BC.

18 Though more research is needed on comparative studies of volumetric units between eastern and western Phoenician amphorae.

interconvertibility¹⁹. Greek and Phoenician metric weights were interconvertible, for example. At the Euboean settlement of Lefkandi (ancient Eretria), the 9th c. BCE 'Warrior-Trader Tomb' (tomb 70 of the Toumba necropolis), yielded a range of foreign balance weights. These were

considered "virtual duplicates of common LBA balance weights from Cyprus and the Levant" by Kroll (2008: 37). Discussing the Euboean weight standard, Kroll (2008) postulated that the weight of the *didrachm* amounted to 1 *shekel*, that is, a drachma was fashioned to equal half a shekel.



Fig. 5. Carinated amphora (Cabinete Arqueológico de Tavira: Inv. Num. 827), Tavira, Portugal.
Source: Author's photograph.

Some of these balance weights have metrological and/or typological comparanda in locally-made Final Bronze Age (1200-900 BCE) contexts of Beira (Portugal), where the metrologies derive from the Levant (Vilaça 2011)²⁰. The form of these indigenous balance weights from

Portugal is also comparable to the Lefkandi ones (the fusiform/sphendonoid type) (Pappa 2019: 67). Regardless of the controversy over the original development of these types, early contacts between Atlantic regions and the Aegean are far from inconceivable given the cumulating evidence for early trans-Mediterranean contacts from the 10th c. BCE. These attempts to achieve interconvertibility and standardisation of the metrological and volumetric measures across the Mediterranean, from the Levant to the Atlantic, reflect market mechanisms.

¹⁹ The discussion on weight systems has remained conservative in its intended enquiries of the material record, not moving beyond questions of barter/exchange/coinage and interconvertibility of weight systems. This problem arises predominantly due to the fact that the evidence related to weight systems continues to be studied in isolation, away from the socio-political and historical contexts that generated them, and in regional settings. This formalism in approach does not really serve the types of questions that can be addressed using this type of evidence, nor even the main questions that routinely get asked with regard to weights (such as weight system interconvertibility).

²⁰ See Pappa (2019) for a lower dating of these Atlantic weights.

The monetisation of the Phoenician economy

The coetaneous presence of a multitude of trade stations, standardisation of units for volume and mass production expresses market mechanisms for lowering transaction costs, indicating the monetisation of the economy. Money reduces transaction costs by facilitating capital mobility. With this in mind, Walton (2015: 417) postulated that the introduction of money (in silver bullion) in the 1st millennium BCE Levantine economies aimed at lowering transactions costs. How commonly transactions in the Levant employed silver bullion prior to the introduction of coinage remains controversial. Eshel *et al.* (2018) argued that the hoarded metal objects found at sites in Israel from the Middle Bronze Age onwards did not constitute pre-cut silver for payment (as seals attached to bundles containing the silver are found only in few cases, while the weight of the individual bundles of metal objects do not correspond to known metrological systems). The bundles may have equaled a value appropriate for a specific payment, rather than being value units ready-made for payments. The silver contained therein served as a store of wealth, fulfilling at least one function of money (Pappa 2019: 67). The importation of silver into Israel from the Río Tinto and other mines in the province of Huelva (biblical Tarshish) “seems to have lent its brand name to the silver used for temple payments” in Jerusalem (Celestino Pérez & López Ruiz 2016: 115). Archaeo-metallurgical analysis has confirmed beyond doubt that such silver was imported in the Levant from Iberia already by 1000 BCE (Eshel *et al.* 2019). In the Neo-Assyrian economy, copper and silver were both used in the 8th c. BCE as currencies (with interconvertibility), but thereafter silver took over (Fales 1996: 17-22). The fact that Phoenician involvement in the mining explorations of Iberia facilitated the import of huge quantities of silver into the Levant and Assyria certainly played a role in the increasing use of silver as currency, and may help explain the deflation of silver prices observed in 7th c. BCE Assyrian texts (Pappa 2017: 21). The deflation of silver prices in 7th c. BCE Assyria through the postulated

import of large quantities of this metal from the western Mediterranean would essentially indicate the effects of market mechanisms on precious metals. Such an occurrence has been observed in the market prices of other commodities in Assyria whose exchange rates were volatile depending on several factors (e.g. bad harvest for crops etc.) (Fales 1996: 20-33). Similarly in Egypt, a greater availability of silver is observed in the first half of the 1st millennium BCE (21st-25th Dynasties), when silver grows in importance in funerary depositional contexts (both royal and non-elite tombs), despite that Egypt had no native sources of silver (van der Wilt 2019: 239). Effectively, as in Assyria, the importation of silver in Egypt via Phoenician merchants and their newly tapped silver sources in the western Mediterranean can be reasonably assumed.

Transaction mechanisms with payment in silver bullion would have involved balance scales, balance weights, a given amount of silver, bronze or other metal to be cut out and weighed, witnesses and a widely accepted metrology. These practices are documented from the Levant to the Phoenician colonies of the Atlantic. Images of balance scales, as well as physical remains of such objects are known from the Near East and Cyprus (Elayi & Elayi 1997). Visual identification of the weight unit corresponding to each object would have sped up the process, as the exact weight could be identified immediately, through the form of the object or graphemes (phrases and/numbers), by analogy to Michailidou’s (2001) interpretation of Late Bronze Age Aegean balance weights. This hypothesis of visual identification is supported by the variety of forms balance weights took and their inscriptions in both the Levant and the Mediterranean (Elayi & Elayi 1997; Pappa 2019). In Elephantine, Egypt, silver was pre-weighed and carried around in pouches ready for payments of high value transactions ca. 750-600 BCE (van der Wilt 2019). In Greece, evidence for the monetary use of metals during the pre-coinage period comes again from Euboea, from the the 8th c. BCE hoard of broken jewellery, bars and scraps of metal found in the north-west of the settlement of Eretria (between the Heroon and the temple of Apollo Daphnephoros). Tellingly,

this was a Greek polis with a port commercially connected to the Levant (Le Rider & Verdan 2002) (Fig. 6 and Fig. 7). Gold ingots produced around this time in the Euboean colony of

Methoni (Pieria, Macedonia) in northern Greece, display the monetary character of metal in circulation (Verdan 2013)²¹ and so should be interpreted in tandem with this evidence.



Fig. 6. View of the seashore in Eretria, taken from the ancient Akropolis.
Source: Author's photograph.



Fig. 7. View of the West Quarter of the settlement (on the ruins of Geometric settlement, such as the Heroon) and the Akropolis in Eretria, Euboea Greece.
Source: Author's photograph.

But how frequent or common was such a system in the case of wholesale sales maritime trade? Such a process of weighing out silver metal to pay for large transactions would have entailed a certain amount of risk in commercial operations that involved bulk

cargoes to be transported via sea crossings across the Mediterranean. Could a merchant, for example, pay the intermediary or producer for his cargo's worth, even without knowing

²¹ Oral presentation.

if it could be sold? Silver reduced transaction costs but it could not always have been readily available for making payments, neither would it have been a desirable form of sealing maritime trade contracts, which were likely based on forward sales (in advance of receiving the purchased commodity), credit transactions and securities. While silver may have been used for day-to-day payment²², forward sales, backed by commercial contracts, likely involved different means of transactions. Distinct market principles of carrying out maritime Greek commerce were in operation even after the use of coinage became widespread, and it is worth exploring them here. Forward selling was common in Greek maritime trade, where a credit payment system and guarantees were used instead, facilitated by written contracts, as attested by Athenian maritime commercial contracts involving private merchant partnerships (see below).

To sum up, the monetisation of the Phoenician maritime economy is attested through the archaeological evidence. The interconvertibility of weight systems would have allowed for interregional commercial payments using bullion silver or some other precious metal, but it does not guarantee that all commercial transactions would have been concluded with payment in silver bullion. For commercial transactions in bulk, the likelihood must remain that the value was reckoned in monetary units but involved barter exchange, as in forward selling cases, common in maritime commerce of even later periods when coinage was common. In such cases, payment was in credit, and loan guarantees were provided in kind. The idea of payment by bullion does not offer a persuasive explanation for commercial transactions of the type involved in maritime trade and forward sales in bulk. As a result, the postulation here is that the Phoenician commercial network was organised on the basis of a credit-based economy that belies the extensive networks of Phoenician commercial activities. But how did this actually work?

A credit-based, maritime economy: money as an index of value and contracts as substitutes for immediate payment

Silver facilitated capital mobility and thus reduced transaction costs (e.g. Walton 2015: 417). The use of silver in wholesale trade was not readily available even in Classical Athens, despite the centuries of coinage-based economy. For maritime trade activities, upfront payment in silver in the expectation of future profits received for commodities exported would be a risky enterprise, as there would be no guarantee of future sales and safe return voyage, plus the merchant would need to find all capital in advance. Spreading the risk would be a viable strategy, with long-distance trade based on a credit economy: contract-backed loans signed in the presence of witnesses and/or under oath.

This suggests that the index of value was different to the means of payment in the context of commercial transactions, which necessitated written accounts for the fulfilment of transactions. Transactions would have been carried out using upfront contracts and promissory notes, stating which kinds of commodities were exchanged for other kinds of commodities in commercial exchanges involving bulk shipments, conceivably through a series of intermediaries. Future payments to lenders would have been in commodities in bulk whose equivalence of value would be established in metal weight, or they would have been in silver metal *per se*, once the commercial partnership had been completed (some months into the future). While the price of commodities was reckoned with silver weight as the index of value, the means of exchange could have been different. Such a credit-based economy would explain the rapid growth of Phoenician commerce, as any credit money requires records of contractual obligations. This implies the following premises: that (1) literacy was employed in transactions, *i.e.* for account-keeping and (2) that it was widespread among commercial circles, that (3) payment could be estimated in one unit but paid in kind and that (4) sales and payment contracts were drawn up in commercial enterprises – all of which

²² The small pieces found in hoards, fractions of a *shekel* may suggest daily use purchases (Eshel *et al.* 2018).

are givens of economic behaviour attested in the contemporary Near East and/or in the Mediterranean.

Premises (1) and (2): literacy in transactions and literate merchants and sailors

According to this model, commercial transactions would have been drawn up in advance, with the terms and conditions of the trip, the sailing season, the merchandise to be delivered and the profit to be shared or returned to the person issuing the loan. This would have been financed upfront, partly at least, with guarantees put on the property of the sailor-merchant or the person owning the business or the ship-owner. The value would have been reckoned in monetary terms, but often paid in kind (with exchange merchandise). Literacy is postulated to have been necessary for commercial purposes, while contracts would have been drawn up in such commercial enterprises.

The practice of contract-regulating commerce in a credit-based economy, where payments were often in monetary estimates but paid in kind, seems to survive for a long time. Parallels for such practices are known from the Near East and from Archaic and Classical Cyprus, as well as and Greek world.

Near Eastern archives preserved in fired clay indisputably attest to the paramount role that the script had in commercial dealings and other economic transactions, both in the private and the state spheres in Near Eastern societies that were contemporary to the Phoenician and Levantine states involved in the Phoenician expansion. The Near East had in fact a millennia-long tradition in contract agreements, such as economic and legal texts: letter orders and receipts for goods, livestock, tax payments and payments for labourers (Brosius 2003; Charpin 2010). Documenting and processing the transfer of goods in cuneiform tablets involved multiple, serial issuing and copying of receipts, and the final transfer of written information from individual tablets to summary accounts, in periodic intervals (Brosius 2003). Old Babylonian records from the 3rd millennium

BCE document complex economic documents (balance accounts, and linked receipts and tax records) during a system where the state provided merchants with capital (Steinkeller 2003). Similarly, in the 1st millennium BCE, the Neo-Babylonian private record-keeping practices reveal the use of legal contracts in a credit-based economic system. Promissory notes specified or negated future financial liabilities, stating witnesses and not so commonly, judges (Baker 2003: 256)²³. Similarly, Neo-Assyrian evidence shows that written documents were used for business transactions. For example, documents from the Nabu temple and an elite household at the acropolis of Kalhu (i.e. Nimrud, the Assyrian capital ca. 879-706 BCE), consist in business documents, such as grain loans and administrative documents from the temple, as well as legal documents from the household and the "palace" (Herbordt *et al.* 2019). Once the Greek city-state institution takes over in the Hellenistic world of the Near East, the private economic archives disappear (Brosius 2003: 10). Conceivably this occurred because the polis institution brought coinage with it. This observation further supports the postulated monetary role of the written word in conjunction with values reckoned in metal by weight in Near Eastern economies, as argued here.

From the Levantine/Canaanite sphere, the Late Bronze Age Ugaritic kingdom has yielded economic archives in a language close to that of the Phoenician city-states, but in cuneiform script (Dietrich, Loretz & Sanmartí 2013). In the Phoenician city-states in the Levant and the Mediterranean, the use of writing for account-keeping in commercial contexts is attested by scattered epigraphic evidence. Script was used to identify contents and occasionally producers or destinations, as shown by graffiti on transport amphorae. For example, a mid-7th-early 6th c. BCE Phoenician amphora produced in southern Levant (around Mount Carmel) and

23 For example, a specific legal clause was "used to protect the creditor by expressly excluding any existing obligations between the two parties from being counted as part of the current obligation" (Baker 2003: 247).

found in an archaic tomb in Carthage was originally a transport jar containing sinapis (mustard), as a dipinto in red indicates (Schmitz 2012: 54-58). Graffiti in Phoenician on pottery sherds found in Arad (Israel), dating to the 7th-6th century BCE were accounts of commodities to be transported to the Phoenician colony of Kition (Cyprus), if the identification of Kition with the inscribed *Kittim* is correct (Ioannou 2011: 272)²⁴. Institutional record-keeping in Phoenician is attested by the so-called Kition tariffs, a 6th century BCE limestone tablet in cursive Phoenician found in the harbour area of Kition, recording payments allotted to deities, but also to the staff of the sanctuary (barbers, sailors, scribes) and to deities (Healey 1974). Further, the recent, discovery of clay-tablet archives at a 'palace' in Idalion, Cyprus, dating to the 5th-4th cc. BCE onwards proves that a Phoenician state, Kition (under the overlordship of which Idalion had found itself) maintained large archives of financial information (Quinn 2017). The 733 inscriptions in marble, limestone and clay bases preserve economic texts; longer texts from this archive include "deliveries of certain commodities or goods to individuals or groups/families" (Amadasi Guzzo 2017: 375-380). The translation of these documents is ongoing, but initial research has suggested that the documents are economic, and include names of containers, capacity units and possible prices, as well as personal names. Pending further information, it is thus likely that these texts correspond to contracts, payment receipts or promissory notes given the elevated number of individuals' names found therein (Amadasi Guzzo 2017).

Phoenician societies in the central and western Mediterranean, then, were no outsiders to record-keeping. The widespread literacy in commercial circles is perhaps the central finding of Phoenician epigraphic research of the past decades. Literate merchants and sailors were

agents in the fast spreading of the alphabetic script in the Mediterranean. The studies of large corpora of epigraphic fragments of pottery in Iberia shows that writing was used for banal purposes with easiness and that most hands were used to writing mainly on papyrus (Zamora López 2005). Even as far away as the seasonal trade station of Morocco (south of Rabat, Morocco), Levantine merchants scratched their names on their plates as a form of identification (Amadasi Guzzo 1992). Apart from indicating ownership, informally, commercial uses must include graffiti in Phoenician on amphorae, also inscribed in Greek, which may have been added at the end destination in Phoenician colonies in Iberia (Zamora López 2019). Account-keeping texts on clay sherds are known from Cerro del Villar, dating to the 7th century BCE and from Tavira possibly dating to the following century (Zamora López 2019).

In Greece the alphabet spreads quickly within a matter of a few decades, and by the 8th c. BCE, it is used for pun word games in sympotic contexts, with impromptu scratching of poems on pots, from the Aegean to the Greek colonies of southern Italy, documented by the inscription in hexameter verse of the so-called Nestor's cup at the Euboean emporion on Pithekoussai (Ischia) in the Bay of Naples towards the end of the 8th c BCE²⁵. The earliest evidence for graffiti however comes from commercial contexts and is comparable to the uses that the Phoenician script was put to: graffiti on pottery sherds. The crucial role of the Euboeans in the period following the collapse of the Mycenaean palaces, emphasised in archaic Greek sources on early Greek commercial and colonisation networks, has been corroborated by decades

24 For the opinion of the Phoenician presence in Cyprus as an expression of Assyrian overlordship of the island, see Cannavò (2007).

25 This was a Rhodian cup (735-720 BCE) whose inscription was written in the Euboic Greek alphabet and was deposited in a child's grave (Ridgway 1997). For a different view that sees this inscription in the context of magic and not of sympotic games, see Petropoulos (2008: 42-44).

of archaeological research²⁶. According to some hypotheses, 10th-9th c. BCE Euboean commercial interests and networks reached Al Mina (Hatay, Turkey) by the Orontes valley in the northern Levant and elsewhere on the Syrian coast by the 8th c. BCE, as at Tell Sukas (Jableh, Syria) (Riis 1970).

It was these Euboean forays that eventually led to the establishment of Pithekoussai as a commercial settlement on Ischia (Bay of Naples). In the Aegean, the Euboean expansion is archeologically attested in the Protogeometric period (1050-900 BCE), showing the active role of the Euboeans in maritime commerce (Lemos 2002). It is thus no surprise that the earliest evidence for the mechanisms of commercial transactions, as well for the adaptation of the *abjad* into the Greek alphabet is known from Euboean-related contexts: Lefkandi, Eretria, Pithekoussai and more recently, Methoni. Recent findings at Methoni show the multiplicity of early alphabetic scripts, Greek and Lydian, and their use in a commercial context – on transport and storage jars (Besios, Tzifopoulos & Kotsonas 2012a). As discussed, both Eretria and Methoni yielded evidence for the monetary use of metals. The Euboean commercial activities in the Levant, Aegean and the Mediterranean, leading to trading enterprises with the literate peoples that used their script for business, must have been a crucial factor in the dissemination of the alphabet.

The connection of the alphabetic script with Euboea and the Phoenicians is also brought out by the Greek literate sources. Herodotus (5.57.1-58.2) narrates that the transmission of the alphabet to the Greeks by the Phoenicians took place in Thebes, Boeotia, a city ruled by the Phoenician Kadmos (Cadmus). Descendants of these Cadmeans were the Athenian clan Gephyraians (among whom Hipparchos, the tyrannicide of Peisistratos, in the 6th c. BCE) who, Herodotus alleges, claimed that their origin was Eretrian, but in fact they had been Phoenician followers

of Cadmus, maintaining their rites up until being admitted into Athenian citizenry (Powell 1997: 21). In another Greek tradition, the hero Palamedes, considered the inventor of seafaringness, is implicated in the invention of the alphabet according to Stesichorus (Powell 1997: 25). Stesichorus was a Sicilian Greek poet (630-555 BCE), and one of the first Greek poets to write of Tartessos in his poem *Geryonis* (Celestino Pérez & López Ruiz 2016: 97-98). Palamedes hailed from Euboea, according to information provided by the post-Iliadic epic *Kypria*, as Powell (1997: 25-26) infers. This is an indirect literary attestation of the connection between Euboea and the introduction of alphabet in the Greek world.

Homer, although not describing a literate Greek world, was aware of writing in his own time and in other cultures, evinced in the passage of Iliad (6.168-170) where Bellerophon is sent to hand down 'baneful letters' on foldable tablets to a Lycian king ("σήματα λυγρὰ γράψας ἐν πίνακι πτυκτῶ"). Indeed, such tablets for writing are archaeologically known from the Phoenician emporion at Huelva, dated to the 8th-7th c. BCE, found in a secondary context in association with Attic and Euboean pottery (González de Canales Cerisola, Serrano Pichardo & Llompart Gómez 2006). So, was writing in use in Anatolia at the time the Iliad was composed and was Homer aware of it? Did Homer have in mind the Phoenician script, the Aramaic, or perhaps an Anatolian adaptation, perhaps Phrygian? Sass (2005: 149-152) has tentatively argued in favour of the derivation of the Greek alphabet from the Phrygian one on palaeographic and other grounds, but this remains to be proved pending further evidence. The suggestion however that such long poems as the Iliad and the Odyssey could have been composed and memorised without a written script is difficult to credit.

The parameter that has been neglected in the study of the spread of the alphabet in the Mediterranean is the fast spread of writing in Atlantic Iberia, too, and its appearance in indigenous monumentalised form in South-Western Iberia. While the *abjad* was transformed into the Greek and

26 It is assumed through the extant literary sources that the Lelantion Plain war between Chalkis and Eretria would have led to the gradual exhaustion of both neighbouring cities, opposite the eastern coast of Attica, and to the quest for better opportunities overseas (e.g. Tzifopoulos 2012).

Phrygian alphabets in the Aegean and Anatolia respectively, graffiti of which are found in Methoni (Papadopoulos 2016), in the western Mediterranean it was adopted into a (pseudo-)syllabary for writing the local languages. The earliest script created for the palaeo-Hispanic languages is the South-Western, and in a contested theory, it records a form of proto-Celtic (Koch 2013). The script would have been initially used for writing graffiti on commercial clay vessels according to Valério's (2016: 141) valid postulation. Later the script emerged on funerary stelae. Several other variants emerged in subsequent

centuries, one of which appears on the 5th c. BCE Espanca tablet made of a schist slab (Fig. 8), found in Castro Verde Alentejo (Valério 2016: 116), recalling a practice of inscribing abecedaries that is known from earlier centuries in the Near East and the Sinai (Pappa *in press*). In addition to these local scripts, the use of the Phoenician script by indigenous people in Atlantic Iberia is evidenced in 7th c. BCE Atlantic contexts, as for example on a grave marker inscribed in Phoenician for a man of Celtic lineage found in Lisbon, a place frequented by Phoenicians (Neto *et al.* 2016).



Fig. 8. Espanca Tablet, Museu da Lucerna, Castro Verde, Alentejo, Portugal.

Source: Author's photograph with permission from Museu da Lucerna.

Crucially, a graffito on a transport jar fragment from the Euboean colony of Methoni is a grapheme of the South-West syllabary, developed in the 8th c. BCE (Pappa *in press*). This fragment belongs to a fully-painted, black amphora, dated to the late 8th or early 7th BCE, but its sign was not identified (Besios, Tzifopoulos & Kotsonas 2012b: 475)²⁷. The fragment is painted with a dark brown band, and was inscribed with a post-firing graffito in the form of the hour-glass shape. It is likely the first attestation of the Iberian South-Western script (*ko/go* character) in Greece. Several comparanda exist in Portugal, including a

specimen of Phoenician Red Slip pottery from the site of Palácio da Galeria in Tavira (Pappa 2015b: 33, fig. 20) (Fig. 9). Given that Methoni was a large commercial port town in the northern Aegean with far-flung connections, the identification of the graffito as pertaining to an Iberian script is plausible.

These uses of the early Greek alphabetic scripts show a very practical, economic and commercial application of the Phoenician script and its Mediterranean and Atlantic

²⁷ Catalogue 145, M02245 (Besios, Tzifopoulos & Kotsonas 2012b).

offshoots, imitated in the applications to which Greek and the South-Western signs were put (graphemes on pots). The concurrent development of Greek and Phrygian scripts in commercial contexts, as well as the development of a syllabic script in the western Mediterranean, are critical in understanding the spread of literacy across both ends of the Mediterranean. Long-distance maritime trade facilitated this spread, as highlighted by the preponderance of graffiti in the port of Methoni, where Greek, Phrygian and the South-Western scripts were all found scratched on commercial transport jars.



Fig. 9. Red-Slip fragment with graffito (Cabinete Arqueológico de Tavira; Inv. Numb. 700), Tavira, Portugal.
Source: Author's photograph.

Premises (3) and (4): credit-based payments in means different to the index of value and the use of contracts

The premises here postulate that the index of value was different to the means of exchange and that exchanges were sealed contractually. Accordingly, in the Phoenician commercial expansion in the Mediterranean, the value of a commodity would have been estimated in monetary terms but would not always have been paid in silver currency throughout the 1st millennium BCE. Such a system of buying and selling is known from pre-coinage monetary

practices in the Near East, Egypt and the Mediterranean, spanning millennia.

Account-keeping texts in the Phoenician world are known epigraphically from Iberia and Cyprus (mentioned above). Specifically on setting down economic obligations in contracts in the Phoenician-Punic society, there is one quasi-intact example. A contract releasing the debtor from the debt, inscribed on a lead tablet, is known from a 2nd century BCE tomb in the Douïmes necropolis of Carthage (Schmitz 2012: 84). The tablet preserves “the Canaanite traditions of law and covenant” that survived into the Roman period, even when influenced by Roman legal formulas (Schmitz 2012: 84).

In Mesopotamia, copper and silver by weight were used in the Neo-Assyrian economy as currency, and loan documents show the use of such money for the purchases of estates and slaves in private transactions from the end of the 8th c. to the 7th (Fales 1996). However, in Neo-Babylonian economic texts recording transactions in the private sector, payments in *gunni* silver (*standardised* silver) are interpreted as referring to physical silver, although in rare cases where silver as a means of value is mentioned, the means of payment remains unclear to us (Jursa 2010: 762, 772). Payment may have been in the form of other commodities. On the whole, Jursa (2010: 776) considers the Neo-Babylonian economy monetised through the use of silver by weight for payments in the non-institutional sectors of the economy, though in the institutional sector many other kinds of commodities fulfilled some of the functions of money.

In the Mediterranean, there are unequivocal historical precedents and antecedents for transactions based on common monetary systems but carried out phenomenically as barter trade. For example, the earliest record of a monetary transaction from Egypt comes from Giza, dates to the 6th Dynasty (c. 2345-2180 BCE) at the latest, and records the sale of a house in the presence of witnesses and a scribe that ensured the legality of the transaction; the house was exchanged for goods (furniture) whose value was cited

in monetary terms referencing metal (silver or gold) weight, so that the equivalence of value between house and furniture would be established (Cribb 2004: 41-42).

Clearer documentation for the discrete functions of money as a means of value and a means of payment, as well as for the use of contracts, comes from the Greek world. From archaic Cyprus, such evidence comes from Idalion, an autochthonous kingdom, and makes plain such a form of transaction. The tablet preserving a contract was deposited, according to its own testimony, at a temple of Athena in the western Acropolis of Idalion, and dates to 500-475 BCE (Georgiadou 2010). The language is Greek, written in the Cypriot syllabic script. It stipulates the clauses of a contract made by the king and the community of Idalion to a certain doctor, Onesilos, and his brothers, for medical services provided to the community after a war. The payment for these services is estimated in monetary terms (talents of silver) but is made in kind (plots of land) – whether this was a post-conflict emergency where the measures employed are out of necessity or a standard practice remains to be seen (Georgiadou 2010).

From the Classical and Hellenistic Greek world, several contracts survive that show that the use of advance deposits for commercial sales in bulk was a common phenomenon in Archaic and Classical maritime trade (Bresson 2016). The notions of ‘ownership’ and ‘possession’ were in fact distinct, as shown by a 5th c. BCE contract for the forward selling of Thasian wine, which stipulates that once the wine was bottled and sealed, it belonged to the purchaser (who may not have fully paid for the purchase), while the amphorae with the wine still sat at the winery (Bresson 2016: 233-234). In a legal speech delivered in Athens in the 4th c. BCE by the orator Demosthenes (used in a court case over a loan repayment dispute), the entirety of a maritime commercial contract is preserved (Bresson 2016: 281-283). It is the sole intact contract of its kind, revealing that even at the height of the monetised Greek economy, the transactions were carried out in kind but valued in monetary terms. It stipulates the money loaned out, interest, the specifics of the

sailing season (determining the loan interest depending on seasonal weather conditions) and set out several conditions. A cargo of 3000 wine amphorae, to be bought by the merchant taking the loan, was used as security for the creditor (even though the security did not yet exist at the time of signing the contract). Several parties came together for this maritime trade business partnership; in the expectation of profit, contracts were drawn, securities were determined and the mortgage was a commodity to be bought, with the eventual profit to come from selling the merchandise. Failing that, the loan was paid back to the lender through its security, in kind – in the instance described, the security consisted in a substantial shipment of wine, not money) (Bresson 2016: 281-283). Thus, Greek maritime trade operated as late as the Classical period with return voyages of cargos, made on credit by private capital, where commodities of one kind were sold and bought for another, wholesale. Was physical exchange of money always part of stable, maritime trade? From this commercial contract, it would appear that it was not so. In fact, even securities for loans could be made in the form of cargo to be bought by the person or group of people taking a loan. Classical Athens, however, experienced a tremendous economic growth through the elasticity provided by banking credit and the silver mines of Lavrion; to a large extent this growth derived from the Athenian credit economy (Cohen 2010; Kroll 2011a).

The premise of money-less commercial transactions is also supported by the 6th-3rd c. BCE Iberian monetary practices in areas colonised or affected by the Phoenicians, in the Punic and Roman periods. Regions colonised by the Phoenicians adopted coinage very late compared to those colonised by the Greeks (Pappa 2017). The adoption of coinage in these Phoenician-influenced regions in Iberia was linked to the arrival of Carthaginian influence or direct control in the region, intensified by the Second Punic war²⁸. This would be

28 On the adoption of coinage in Iberia, see several contributions in García-Bellido, Callegarin & Jiménez Diez (2011).

explained if commercial exchanges in the Phoenician nuclei of south-central Iberia had functioned according to a credit-based economy, where monetary values depended on prices established in metal weight, independently of whether the payment was in silver or other means (Pappa 2017). It should be noted that as late as the Roman period, in the northern frontier zones of the Roman empire (*limes*), the commodities were likely reckoned in monetary terms, but were exchanged for other commodities or services, without actual money (Katsari 2010: 243).

Despite the documented monetisation of the economy, non-coined monetary practices continued. These show the flexibility and adaptability of ancient economic systems in the Mediterranean that cannot be reduced to the primitive forms of exchange so far argued for, but neither do they require bullions of silver to be carried around. The practice of using a standard reference of monetary value for exchanges or payments made in kind is beyond doubt met in 3rd millennium BCE Egypt, in 5th c. BCE Cyprus (Georgiadou 2010), and in commercial contracts related to maritime trade in the Greek world during the Classical period and later (Bresson 2016), despite the availability of coinage in the Greek city-states for centuries by then. It was also most likely used for transactions carried out in Mesopotamia in the early 1st millennium BCE. Thus, the premise of discrete practices and objects as fulfilling the different functions of money in the Phoenician maritime economy has precedents (Egypt, Mesopotamia,) and antecedents (Archaic Cyprus, Classical Athens, Roman *limes*) as has been shown here.

Overseeing institutions

The legality of commercial transactions was guaranteed by oaths to the gods, as a social convention. Sanctuaries would have provided capital and the institutional structures for carrying out commercial activities, especially overseas. Sanctuaries in the Near East but also Greece and the Phoenician diaspora have long

been recognised as institutions that regulated or contributed to commercial exchanges, though capital lending, provision of guarantees and the sealing of contracts with oaths. Religion was important in trade, for one, because it provided a supreme authority for sealing negotiations, as documented by written oaths in treaties (e.g. the vassal treaty between the Assyrian monarch Esarhaddon and the Tyrian Prince Ba'alu, dated to the first half of the 7th c. BCE), but also because it offered a structure to marine life (through the observation of regulated rites) as well as the psychological recourse for assailing the fear of the unknown in maritime life (Pappa 2013: 180-183, 2015a: 52-53). This is especially true of Phoenician sanctuaries, with their commercial function long recognised. Sanctuaries in the Mediterranean were also involved in production activities, commonly of metals, textiles, and other crafts, so as to serve their needs but presumably also so as to make a profit (e.g. Pappa 2015a).

Literacy appears to have been promoted by sanctuaries. At the 9th-8th c. BCE sanctuary of Kuntillet 'Ajrud in the Sinai, textile production and the use of writing are attested. Abecedaries found may have had a religious purpose (for incantations) or were means of teaching how to write (Boertien 2007, 2008; Shea 2012). Similar evidence for textile production and abecedaries have been found at Deir 'Alla (Phase M/IX) in the Transjordan (Franken 1976, 1992; Ibrahim & van der Kooij 1991), a sanctuary famous for a text on the dream/prophecy of Balaam written on plaster on the wall in a language disputed as Aramaic (Hoftijzer & van der Kooij 1976, 1991).

The Phoenician temple of Ashtarte at Kition, set up on a Late Bronze Age sanctuary derelict by then, yielded evidence for metal-working activities (Karageorghis 1976) (Fig. 10A, 10B and 10C). In the dense network of Phoenician colonies in southern Iberia, sanctuaries were founded in marine and riverine waterways, accessible by ships, via sea or rivers. They stretched across the water systems of Andalusia and to the north on the Mediterranean and Atlantic coasts of Iberia, attracting merchants from

different regions. Such sanctuaries have been found across the waterways of south-western Iberia, in colonies and indigenous settlements. Huelva is a characteristic location of a Phoenician sanctuary, located in the estuary formed by the Odiel and Tinto Rivers (Fig. 11) (Pappa 2015a: 48). The large sanctuary of Ashtarte at Carambolo was separated from the Phoenician colony of *Spal* (modern Seville) by the navigable Río Guadalquivir (Fig. 12). The religious

site was in use ca. 10th-5th c. BCE (Fernández Flores & Rodríguez Azogue 2007). At Abul, on the River Sado river in Alentejo (Portugal), the Phoenician sanctuary functioned as a commercial port too (700-600 BCE) (Pappa 2015a). As elsewhere in the Mediterranean, sanctuaries in Iberia were not merely religious institutions, but they functioned as centres of knowledge and capital, attracting merchants, sailors, colonists and likely indigenous elites (Ruiz de Arbulo 2000).



Fig. 10. Late Bronze Age sanctuary of Aphrodite and Iron Age Phoenician temple of Ashtarte of Kition, Larnaca, Cyprus. A. General view of the sanctuary from the north. B. The 13th c. BCE Temple 2 dated to the 12th c. BCE, demolished by the Phoenicians in the 9th c. BCE and the courtyard Temenos B, later expanded by the Phoenicians. The footbridge to the left is supported on the eastern wall of the 9th c. BCE Phoenician temple of Ashtarte, built on the earlier temple of Aphrodite. C. Temple of Ashtarte, on ruins of Temple 1.

Source: Author's photographs.



Fig. 11. The Huelva estuary.
Source: Author's photograph.



Fig. 12. View of modern Seville (ancient *Spal*) and the Guadalquivir River.
Source: Author's photograph.

The economic role of sanctuaries is ubiquitously attested in Classical and Hellenistic Greece, but is evident already in earlier periods. Classical and later sources show the instrumental economic role of Greek sanctuaries (Bresson 2016), as capital and loan providers, collectors of taxes etc., which surely had a precedent in the Geometric and Archaic periods. The *in situ* metal workshops identified at the temple of Apollo Daphnephoros in Eretria date from

the Geometric period (Fig. 13), furnishing evidence for metal-working production that may have served the needs of the sanctuary. Alternatively the metalwork could have been sold to elites, circulating among the nobility as objects of prestige, and generating profits for the sanctuary through interregional trade (Verdan 2011). It is poignant that a four-letter Semitic inscription on a Middle Geometric skyphos has come from this temple (Verdan 2015: 185) showing the interregional

connections of sanctuaries and their role in the spread of the script. That the Phoenicians frequented Aegean sanctuaries is attested through other votives and even permanent structures. A 9th c. BCE Phoenician shrine erected on the remains of an 11th c. BCE of a Bronze Age sanctuary has been found

in Kommos, Crete (Fig. 14), a stop-over port on the East-West route frequented by Phoenician merchants, in continuation of Late Bronze Age trade patterns (Shaw 1989). This, too, documents the use of sanctuaries by Phoenicians in areas they passed by and the importance of religion in commercial circles.



Fig. 13. Temple of Apollo Daphnephoros, Eretria, Greece.
Source: Author's photograph.



Fig. 14. View of the site of Kommos, Crete, Greece.
Source: Author's photograph.

Regarding the role of sanctuaries in Egypt, new research (iconographic, archaeological and literary) on the locality and mode of exchanges during the 1st millennium BCE suggests that the front open spaces of temples functioned as market places, while riverbanks doubled as points of embarkation and markets; the temple personnel constituted the authority that oversaw commercial transactions, providing for example the benchmark for weight standards used in selling (van der Wilt 2019).

The revolution of the alphabet: external symbolic storage, the power of institutions and social change

Symbolic Storage, institutions and social changes through literacy and monetisation

Central to the model outlined here is that the credit-based economy resulted in the rapid diffusion of the alphabetic script in the Mediterranean. This event accounts for the spread of literacy in the Mediterranean, explained by the institutional role of literacy within the commercial model and pre-monetary practices of the Phoenicians. Several works have explored social change caused by the interplay between the recording of knowledge and institutional power, taking as a point of departure the notion of 'external symbolic storage'. Developed in the work of psychologist Merlin Donald's (1991) *Origin of the modern mind*, this notion found fertile ground in archaeological application. Donald coined the term to denote that stage of cognitive evolution and social organisation in which collective knowledge was 'stored' outside the human brain, using mnemonic devices and tools for recording knowledge. Archaeologists quickly built on Donald's third evolutionary stage of 'storing knowledge' but emphasised the active role of material culture as symbolic and as constitutive of meaning, thus as an integral part of cognitive changes. The notion, limited to alphabetic writing in the context of literate societies in Donald's work, has been broadly utilised to explain earlier forms of storing

and transferring collective knowledge, from Palaeolithic hunter-gatherer societies onwards. Within the social sciences, an emerging field of inquiry examines Donald's 'external symbolic storage' from the lens of the dynamic interaction between the knowledge transfer process and the institutional framework. The way the externalisation of knowledge and memory interacted, shaped and was shaped by the institutional power framework, including institutional knowledge, is relevant in a range of archaeological and historical subjects. As a powerful tool for social control, the forms of external symbolic storage catalysed social change across a range of periods and regions. Both literacy and monetisation can be considered forms of 'symbolic external storage'.

The 'alphabetic' script spread twice, from the Sinai to the Levant, and from the Levant to the Mediterranean (Finkelstein, Robin & Römer 2016; Koller 2018; Rico & Attucci 2015). The popularisation of literacy outside the reigns of scribal circles in the early 1st millennium BCE is a critical moment of world history, occurring during the *second* diffusion of the alphabet. The precursor to the alphabetic script emerged by the middle of the 2nd millennium BCE in the Sinai (Goldwasser 2011, 2015)²⁹. Most studies place its invention between 1900 and 1400 BCE, during the 19th dynasty of Egypt (Koller 2018). The invention of the proto-alphabetic signs in the Sinai has been attributed to "religious and emotional impulses" (Goldwasser 2011: 267-268). The allegedly revolutionary character of the alphabet remained a potentiality, not a historical reality, as these Proto-Sinaitic signs spread from Egypt to the Levant, Mesopotamia and Yemen with the opening of the trade routes in the 15th-14th c. BCE, but remained coveted within scribal classes (Koller 2018). Effectively, the invention of the alphabet had occurred centuries to a millennium prior to its popular diffusion. During that period it had remained limited outside specific circles and regions, because it never attained an institutional role

29 For a purported earlier alphabetic sequence in hieratic Egyptian but recording Semitic words, as a mnemonic device, from Thebes, Egypt, see Schneider (2018).

of importance, with the exception of its role in Late Bronze Age Ugarit, which adopted a cuneiform-based *abjad* script for writing the vernacular tongue. After all, not all technological revolutions lead to cultural transformations immediately (Goldwasser 2011). The much-purported democratisation of literacy through the widespread use of the alphabet never occurred. The institutional framework was not right for that. Ugarit's cuneiform alphabetic script emerged and disappeared within a specific institutional context. Could this disappearance be explained by the cumbersome nature of the script or was the collapse of the institutional context adequate for its disappearance? It appears the latter is the case.

The situation radically changes when the alphabet succeeds in replacing the syllabic scripts (Akkadian etc.) in the 1st millennium BCE. What catalysed the spread of this script was the socio-political context and not its innate superiority. The alphabet had a role to play and that was, it is argued here, in the context of commercial transactions, which given the private, commercial organisation of 1st millennium BCE Levant led to its spread. The popularisation of literacy is not related to its assumed easiness compared to other scripts, but to the critical role it played within a monetised economy with no 'all-purpose money' at hand. Over time, its role within international commerce led to the spread of literacy across the Mediterranean, and it revolutionised production, economic exchanges, sciences and literature by permitting that knowledge could be 'stored' in a permanent form, transmitted, reworked and built upon. The fact that the easiness of the script was not the catalyst for its spread is indirectly suggested by the fact that once it was adopted in south-western Iberia, the Phoenician alphabet, in essence an *abjad*, turned into a syllabary, or a pseudo-syllabary, for this matched the linguistic requirements of the language³⁰.

The interplay between the recording and externalisation of knowledge and the

institutional forms of power is critical in understanding the spread of literacy, and the social change that it brought. The attested deep social changes in the colonial realms of Iberia for example, with rapid urbanisation and hierarchies set in motion by new forms of cognitive power, social exchange and control, and new social practices permitted by innovations in material culture (technologies for writing, standardisation, weighing) could not have occurred without the synergy of the external storing of knowledge and the specific institutional context. Thus, though the invention of the proto-alphabetic script dates to the 2nd millennium BCE, the rapid social change it catalysed occurred only in the 1st millennium BCE.

All this directly affects our understanding of the development of the Greek alphabet. In previous studies on the spread of literacy in the Iron Age Greek world, the institutional context was not explicitly taken into account. Archaeological discoveries of graffiti and other inscriptions from Anatolia, the Levant, Cyprus, the Aegean and Italy were plied for information on the date and place of the invention of the Greek alphabet by some individual genius, favouring, in turns, the 8th or the 7th century BCE as the date of transmission, and north Syria, Cyprus, the Aegean and the Tyrrhenian Sea, as the locale. From a West Semitic palaeographic view, Sass (2005: 145-149) postulated that the likely the transmission of the alphabet to the Greeks occurred in Phrygia, an Anatolian polity, between 825/800-750 BCE, considering a Phrygian derivation of the Greek alphabet more likely than the opposite. Evidence for this view is provided by the inscribed monuments of Cilicia or Tyana (Sass 2005: 148-149). Aramaic influence on the letter names of the Greek alphabet may suggest a direct derivation from Aramaic letter forms, or Phrygian ones, according to this view. No hypothesis is definitive, so depending on the precedence of Greek or Phrygian alphabet, any place from Cilicia or the Amuq valley to Arwad is plausible as the region of transmission, if the source is considered Aramaic-Phoenician, or anywhere in the

30 Valério (2016: 131) suggested that a syllabary may have better recorded the underlying language, but also considered plausible that the interpretation of the South-Western script as a syllabary and not as a pseudo-syllabary is a modern fallacy.

Mediterranean if only Phoenician derivation is postulated (Sass 2005: 138-139).

It is not mere coincidence that Sass's estimation for the development of the Greek alphabet ca. 825/800-750 BCE, on the palaeographic grounds of the early forms of Greek letters matches Valério's (2016: 145) estimation for the development of the South-Western script in Iberia ca. 825-750 BCE, again on palaeographic grounds, but in this case of the earliest South-Western syllabary signs. The institutional and commercial contexts that led to the diffusion of the Phoenician script and its adaptations into different writing systems at both ends of the Mediterranean depended on the same institutional context: a Phoenician maritime trade economy that necessitated the written word for carrying out commercial transactions.

From the Hellenist side, according to hypotheses heavily influenced by the philological background of the scholars who proposed them, the Greek alphabet developed so as to write down the Homeric epics³¹. In a later transmutation of the theory, the alphabet was born because the Greek language played a special role in the self-perception of Greek identity (Sherratt 2003: 229). According to this view, the phonetic alphabet of the Greeks developed because the Greek language was intimately linked to a pan-Hellenic identity, as supposedly revealed through the Greek comments on 'barbaric' tongues (with the coining of the word 'barbaric' to refer to the unintelligible sounds of other languages). Firstly, there is absolutely no symmetry of information on Greek views of their language versus those of other people's of the time, since no contemporary texts survive from other Mediterranean people of the kind that would document the presence of such views or not. It may well have been that Scythians, Sikans or Phoenicians had a similar view of the languages of others, treasuring their own over those of foreigners. Secondly, the development of a local script to write down the indigenous, proto-Celtic language in south-west Iberia (if

such it was) at the time the Greeks developed their alphabet – both scripts ultimately deriving from the same Phoenician source – also attests to the weakness of this argument. The Homeric epics were not created to promote a pan-Hellenic identity, but rather reflected what already existed, a sense of a shared, Hellenic identity. The notion that a major social breakthrough, such as the emergence of the Greek alphabet, would have been engineered across the politically disparate 8th c. BCE Hellenic (proto-) states so as simply to write down oral literature is entirely unconvincing³². Such views of the preponderance of poetry in the invention and spread of the alphabet appear more a reflection of the importance classical philologists accord to the subject of their own professional path than on ancient strategies, as if such a misguided teleological thinking of modern literary preoccupations would have amounted to programmatic, pan-Hellenic efforts of establishing a national literature advertising Hellenic identity early in the 1st millennium BCE. Neither does it explain the coeval emergence of literacy in societies that left no Homeric poems.

More recent hypotheses have postulated that the Greek alphabet developed in the context of commercial circuits in the Aegean, north Syria and Phoenicia, as a corollary to trade in mechanistic explanations of diffusion. In such hypotheses, the Phoenician letters spread in the Aegean, the Adriatic or the Tyrrhenian Sea, but the specific conditions of this spread are not explicated. It is also assumed, mostly on palaeographic grounds, that the adoption happened only once. The implication is that the Greeks were taught these letters, as if during a Phoenician merchant's past-time at a trading post in the eastern Mediterranean region (the Aegean included), where people of

32 The mechanistic view of seeing the alphabet as a symptom of the importance of the Homeric epics in Hellenic identity is probably linked to generational biases in academia, where a philological academic formation led to the unconscious overwriting of social, economic and political conditions by giving undue prevalence to the literature as an end in itself – hence the emphasis on philological texts as a pivot that causes social change, rather than reflecting or documenting it.

31 Indicatively, Powell (1991).

different origins came together in symposia and such (in trust-building commensality-related events, whatever particular inflection one is willing to allow to such events depending on the precise context).

The new evidence discussed here, supported also by the discovery of the earliest Greek alphabet in Methoni in a commercial context, and of the presence of the South-Western script of Iberia at the same site in Greece, shows the role of literacy within its institutional role in commerce. This fact alone should alert us to the possibility that the script had a critical role to play in commercial mechanisms and was the binding agent in the Phoenician expansion. Early attestations of Greek alphabet and the South-Western script in Methoni indicate the critical commercial role of the port, but also the critical role of literacy in commercial structures. This negates past theories that saw the alphabetic script being born out of the need to boost the Hellenic identity. The Greeks put the alphabet to a range of uses. Literature was one of them and while some of the majestic literary works composed at the time continue to fascinate for nearly 3 millennia, the Iliad and the Odyssey among them, it was not the primary function of the script. The extant body of Greek literature is simply the symptom of an event which occurred in a different social context – economic transactions – and not its cause.

Similarly, no evolutionary teleology should be postulated for the development of metal money in the Mediterranean. Jiménez (2019) noted that money is relational, dependent on cultural and social conditions, and so even a sale involving money may appear as barter exchange to an onlooker, whereby money is swapped for something else. Monetisation, one may argue, is in the eye of the beholder, and if a coinage-less economy does not appear monetised to us, this alone does not mean that it did not function like one. All modern ‘all-purpose money’ derives from the ancient coinage developed in Lydia, even though monetisation developed independently in different regions across the world. Monetisation was well in advance by the 2nd millennium BCE in Mesopotamia and

China. That from the types of currency used previously, coinage survived to the Roman period in the Mediterranean, through to late antiquity and modern Europe, was the result of historical vicissitudes. For millennia, monetised economies had functioned without coinage as currency.

The ripple effects of symbolic storage: debunking the erroneous hypothesis of the invention of coinage in China

The postulation that coinage was independently invented in China is a common fallacy, and has more to do with scholarly divisions, rather than any factual record. It is argued here that the first Chinese coins were inspired by Greek-derived coinage circulating in central Asia, dating to the Classical or the Hellenistic period.

The earliest coin-shaped money of China, the *ban liang* of 7.6 g. consisted in a round disc with a square perforation in the middle. It was thought that the first coins were minted by the first Emperor of China, Qin Shi Huang (259-210 BCE), of the Qin Dynasty, who commissioned the famous Terracotta Army and the Great Wall. New archaeological evidence suggests that the first Chinese coins may have been issued earlier, during the Warring States period, on the basis of new finds in a tomb dated to 306 BCE (Hartill 2005: 83)³³. In pre-imperial China, cowrie shells and tortoise shells had been used as currency from the 2nd millennium BCE, while from 1000 BCE, gold by weight, silver bars, bronze knives and spades (utensil money) came into use as forms of money. Thus, coins were only introduced in the 4th or 3rd century BCE after a long period of monetisation in China. The first coin in China, the *ban liang*, which had a weight of 7.6 g., corresponded to half a Chinese ounce of 24 *zhu*, the ancient Chinese metrological unit. Each *zhu* weighed 0.65-0.65 g, so 12 *zhu* units equalled a *ban liang* of 7.6 g. (Hartill 2005: 447).

The weight of the first Chinese coins of 7.6 g is significant, because although it

33 Hartill (2005) allows for a possibility of 378 BCE too.

has not been recognised so far, it reflects the interconvertibility with Mediterranean metrological systems. This particular weight of 7.6 g. appears as a standard throughout the Mediterranean in the 1st millennium BCE, being originally a north Syrian weight unit. Balance weights of 7.6 g. appear during the Aramaic kingdom of Hama in north Syria, ca. 800-720 BCE (Elayi & Elayi 1997: 27), in the form of spheres and crouched lions. The same weight unit appears among the balance weights found in the 9th c. BCE Warrior-Trader tomb in Lefkandi, Euboea, mentioned above. Kroll's (2008: 41-42, fig. 1, 1-7) study on these balance weights identified the presence of a 8.3 g. standard ('the Babylonian shekel'), the Syro-Egyptian *qedet* of 9.4 g, a southern Levantine standard of 10.5 g, and allegedly a 'Carchemish shekel' of 7.6-7.8 g, attributed to a north Syrian polity by Elayi & Elayi (1997: 27). This last standard of 7.6 g. became one of the metrological units for the Carthaginian mint in the 4th-3rd c. BCE, with postulated interconvertibility with Greek coins. Alexandropoulos (2007: 145) argued that north African silver coins of 7.6 g. refer to the 'shekel of Carthage' as a standard. Examples of Carthaginian coins of 7.6 g. are also known in gold, electrum, silver and few in bronze. The earliest is a specimen in gold (depicting a galloping horse and a palm on either of its sides), and dates to 390-380 BCE, equalling a stater (Alexandropoulos 2007: 363). The value of the coinage is metal-dependent, so for example an electrum coin of equal weight, dating to 320-310 BCE, equals 1/5 of a stater (Alexandropoulos 2007: 365). The issuing of these Carthaginian coins continued by different mints in the central Mediterranean regions that were in the orbit of Carthage. Several examples are known: a coin of 7.59 g. was issued by a Carthaginian mint in 320-310 BCE, a coin of 7.6 g. was issued in 310-300 BCE, and two other examples date to 310-290 BCE and to 290-270 BCE respectively, while coins of 7.6 g were also minted by the Carthaginians mints in Sicily ca. 300 BCE (Alexandropoulos 2007: 363-365, 368; Visoná 1998: 23).

The interconvertibility of weight units pre-existed the introduction of coinage. That a set exchange rate between the shekel and the stater existed already by the end of the 5th c. BCE is corroborated by Aramaic texts from the Persian garrison at Elephantine in Egypt (Kroll 2011a: 30; van der Wilt 2019: 242). By the 4th c. BCE, Athens was massively exporting the Attic tetradrachm, the famous Athenian owls that had come to be used as an international currency (Cohen 2010; Kroll 2011a, b) in western Asia and north Africa. Hoards of Attic coinage have been found in Egypt and the Near East (Kroll 2011a). Kroll (2011a: 31) suggested that two 5th c. BCE hoards of thousands of Athenian coins discovered at Carcemish and Aleppo, allegedly "the terminus of the silk road, imply that the silver was brought there for being transported by caravan still further to the east". If Athenian silver tetradrachms (equivalent to a double stater) were indeed exported through incipient trade networks, a predecessor to the Silk Road, by the 5th c. BCE, is it then a coincidence that China begins to issue coin-shaped money in the 4th c. BCE, at least over a millennium after it began using utensil money, tortoise shells, metal cowries, and rarely silver bars and gold bullion as forms of serving its monetised economy? The identification of a number of Phoenician eye beads found at elite tombs in different areas of central China dating to the Warring States period (403-221 BCE) (Gan *et al.* 2009), which overlaps with the classical period of Greece, has been confirmed by chemical analysis and suggests the existence of trade links with the Levant, probably through Persia, by the 5th c. BCE. It is notable that these Phoenician eye beads are found in tombs, a common usage in Phoenician culture too, implying some level of cultural knowledge and not mere export of goods. If the earliest Chinese coins date to the late 4th c. BCE, then a northern Levantine/Syrian standard of 7.6 g. for the first Chinese coinage is not inexplicable given the widespread export of Athenian coinage in Asia, which may have inspired the adoption of coin-shaped money in central Asia. This hypothesis tallies well with the recent redating

of the earliest Chinese coins to the 4th c. BCE, as mentioned above, but the exact metrological interrelationship between a north Syrian standard and the Chinese standard remain to be clarified. Which was the original impetus to opt for 7.6 g. units?

If the original theory of a 3rd. BCE introduction of the *ban liang* coin during the rule of Qin Shi Huang (259-210 BCE) is maintained, then the likely stimulus for the Chinese adoption of coin-shaped money is not the Attic export of tetradrachms through a pre-Silk Road trade route, but the Greco-Bactrian kingdom (3rd-1st c BCE). Several Hellenistic city foundations became part of the Seleucid empire, from which Hellenistic Bactria and its successor polities emerged, known modernly as the Greco-Bactrian and Indo-Greek cultures (Bernard 1994). The Bactrian kingdom was established with a succession of new Alexandrias founded by Alexander III (or his successors), whose march into the East spanned areas in Pakistan, Afghanistan and India, up to the river Hyphasis (River Beas) ca. 326-325 BCE (Bosworth 1996). Alexander had sent Krateros and a contingent of soldiers and their families into Helmand (Afghanistan). The former Achaemenid satrapy of Arachosia became the eastern region of the Seleucid empire during the period of the Successors, with a string of new foundations, military outposts, and large-scale forced settlements of Greeks in the region (Bosworth 1996).

After the Parni took over the Iranian Plateau in 247 BCE, in the eastern dominion of the Seleucid empire, the Greco-Bactrian regions of the empire became physically separated from it, which led to their autonomy. By the 230s BCE, king Diodotus had established an independent kingdom (Greco-Bactria), separated from the Greek Seleucids by the Parthian empire. The Bactrian kingdom lasted to the 1st century BCE (Adams 2006: 47-48; Holt 1999). Its capital was Alexandria on the Oxus - Eukratidia (meaning 'temperate' in Greek), identified with the archaeological site of Ai Khanoum (Takhar) in Afghanistan (Adams 2006: 47-48).

The (non-exclusive) Hellenistic culture of the kingdom is seen in several aspects of the material culture it left, although the identities

and realities of social, religious and linguistic life must have been complex. Already by the time of Alexander, the Athenian tetradrachm was adopted as the coin of the empire (Bosworth 1996: 167), a process of monetisation stimulated by the circulation of newly minted coins using Persian gold looted from Persepolis (Davies 2006: 80-82). The coinage of Bactria comprises an impressive collection of Hellenistic coins, some spectacular in their artistic and technological levels. Several bear coin legends in Greek referring to the king depicted on the obverse, which recall the main Hellenistic type. Others depict wreathed individuals of central Asian origin dressed in Hellenic attire. The extant coinage of Bactria shows that several mints were in operation, apart from the one archaeologically identified at Ai Khanoum. The coinage of Bactria was mostly based on the Attic standard (Bopearachi 1999).

Prior to the introduction of coins in China, money had taken many forms from the 2nd millennium BCE onwards. Coinage, however, in the form of a flat disc for easy transport and usage, was only adopted 1500 years after the use of shells and utensil money, either in the late 4th c. BCE or most likely, in the 3rd c. BCE. In 210 BCE, when the Emperor Qin Shi Huang introduced the bronze coin *ban liang*, turning it into the official, standardised currency of his empire, he was following a type of currency familiar from the coinage systems of the Hellenistic world that by that time had spread to southern Egypt and the Near East, as far east as the Bactrian kingdom in modern-day Afghanistan, bordering Chinese Turkestan. The Qin Emperor's Terracotta Army marks a sudden and dramatic appearance of sculptural art in China, albeit short-lived, instigated by contacts with the Hellenistic world of Bactria and the Indo-Kush, showing the artistic influences of the Hellenistic world in China during this time (Nickel 2013). Such Hellenistic influences can also be observed in metal-working techniques of repair that made use of copper-tin binary alloys employed during the Qin Dynasty (221-206 BCE), which were unknown before locally but had been used for centuries in Egyptian and Greek metalwork

(Mei *et al.* 2015: 228). After all, Greek cultural influences in Afghanistan and India lasted for centuries (Wallace 2016).

But why would a northern Syrian/Levantine standard be chosen for the first Chinese coins? This may be explained by the postulation of the pre-Silk Road trade routes as evinced by the presence of Mediterranean finds in China, such as the Phoenician eye beads. The adoption of coinage as a form of currency would have needed to await the stimulus of the late Hellenistic kingdoms of Bactria, even if the north Syrian standard was known previously further east. Perhaps it was the previous links of China with the Levant that led to a preference for a Levantine standard. After all, one of the earlier scripts of an Indian language, the Kharoshthi, recording the Indian language Pali, is derived from the Aramaic script, and is found on 3rd-1st centuries BCE legends of bilingual Greek-Indian coinage of the Indo-Greek kingdom³⁴. Would it be strange if along with the adoption of the Aramaic script and its adaptation into one for writing an Indian language in the 4th c. BCE, the adoption of an Aramaic weight standard of 7.6 g. had reached China, and led to the local issuing of coins of that weight unit? The successor of these Indo-Greek kingdoms, the Skythians (Kushans) that overran the Hellenistic polities in Bactria, issued their own coinage, some bearing both Chinese and Indian scripts, which are found in localities along the Silk Trade route. The Sino-Kharoshthi coins, as they came to be known, found in Xinjiang (Chinese Turkestan), as at the site of Khotan, bear legends in both the Chinese and the Kharoshthi scripts (Cribb 1984). These Sino-Kharoshthi coins postdate the earlier *ban liang*, but reflect the continuing commercial mechanisms that would have led to the circulation of the originally north Syrian unit to China. Both an Aramaic script and an Aramaic metrological unit became the basis for local transmutations, finding expression in a new script and coinage, from Bactria to China.

If on the other hand the introduction of coinage in China is assumed to have occurred earlier, pegged on the 306 BCE archaeological find as mentioned above, then the weight unit

of 7.6 g. BCE, as the weight of the *ban liang*, would be associated with the evidence for 5th c. BCE Phoenician beads in elite Chinese tombs, documenting an earlier, pre-Hellenistic Silk Trade route to the Mediterranean. In such a case of a 4th c. BCE issuing of the first Chinese coins, the inspiration for the use of coinage would have been provided by the mass export of Athenian coinage from the Aegean and its various foreign copies in the Near East, including those hoarded by the Persian empire.

The matter is worthy of further exploration, as its full analysis is not warranted here.

Conclusions

The present paper utilises the latest scholarship and finds in the areas of Mediterranean archaeology, from Greece to Iberia, and in ancient history, to offer a picture of the role of literacy in the economic transactions of Phoenician commercial and colonising networks. Through the analysis of the archaeological and epigraphic evidence, it postulates the existence of market-based commerce within a credit economy in the context of Phoenician colonisation: commercial agreements employing written records of transactions, based on shared measures of value established in (silver) metal weight. The functional role that writing played within the Phoenician commercial system explains the rapid popularisation of literacy in Mediterranean regions touched by Phoenician commercial networks (e.g. Iberian Peninsula) and the absence of a physical form of Phoenician currency, presenting a new model of ancient monetary practices in market-based commerce and their relation to literacy in the first millennium BC. The use of writing in commercial contracts and payments gave the impetus for the rapid spread of literacy in the context of the Phoenician expansion from the Levant to the Atlantic.

Thus, the present study showcases a watershed moment in our understanding of these processes, combining information from different disciplinary fields that study phenomena of temporal, spatial and historical congruence.

34 On the Kharoshthi script, see e.g. Samad (2011: 204-205).

The role that the script played within a monetised but coinage-less economy has been archaeologically documented. The preponderance of such a credit-base system also explains the fact that the Phoenicians did not adopt coinage, even though they were familiar with it from trading with the Greek world. Recent evidence for the earliest writing in Greek, which comes from Methoni, an interregional locus of commerce, fully supports this hypothesis. The change of substituting currencies for standardised forms of ‘all-purpose’ money such as coinage took centuries in the Mediterranean, was never uniform, and was subject to flexible economic and commercial conventions and norms. That coinage, in the end, was the form of money that prevailed in the Mediterranean has to do with historical circumstances unrelated to its inherent value in facilitating commercial exchanges.

The presence of this coinage-less but monetised credit economy also explains the emergence and rapid spread of other writing systems in the Mediterranean. It was the crucial role of writing within the context of commercial transactions that led to the rapid spread of literacy almost a millennium after the alphabet was invented, revolutionising society forever.

The study also concludes that the earliest coinage of China was not independently invented but was directly inspired by coins that had reached the region from a Greek or Hellenistic sphere, either during the 5th-4th c. BCE Silk Road trade route or during the Hellenistic kingdoms of Bactria. Most likely elites in China made use of a northern Syrian metrological system known from earlier contacts that reached the Mediterranean.

All alphabets in use today in the world developed from a script that emerged in the Sinai desert during the first part or middle of the 2nd millennium BCE, and became popular in the Mediterranean through the spread of the Greek alphabet. All modern money in use today developed from the first coinage minted in Lydia, developed in the late 7th c. BCE, and rapidly disseminated across the Mediterranean and the Black Sea through the Greek colonial networks in the middle of the 1st millennium BCE. But it did not become *de rigueur* to use

coins for commercial transactions until much later. Neither of these two processes, of coin or alphabet adoption, were teleological, yet occurred and defined human history, resulting in developments of incalculable importance for social and technological change.

Final remarks

The initial idea was born intuitively in 2011, building on a knowledge of the archaeological evidence documenting the Phoenician expansion, which needed to be made sense of and to fit into a wider understanding of how commerce worked, practically as well as institutionally³⁵. This idea then, departing not from insights through the study of numismatics but from the effort to understand how such complex trade patterns, as studied archaeologically by me for years, could be understood, was developed as a hypothetical explanation. It moved from the final end of viewing the results of market economy, the standardisation of production, complex networks of exchange, goods traded in regions where similar products were produced and expanding markets. The Phoenicians had no money, after all, at least none that was archaeologically visible. The initial idea on which this hypothesis pivots is that the use of alphabetic letters, literacy, substituted a physical form of money in the process of paying for goods within the system of production and transport, as well as buying in bulk to sell in markets. Since then, more and more evidence has emerged that substantiates it. The latest information on the Phoenician archive tablets unearthed in Idalion, even if dated to the 4th c. BCE, further strengthen this hypothesis, pending further research and finds.

35 The project was funded by the São Paulo Research Foundation in 2016, on a project proposal submitted in 2015. The hypothesis was first formulated as a project proposal for the ERC Starting Grant competition (17 October 2012), and was later submitted to the Vidi grant competition of the Netherlands Organisation for Scientific Research (4 October 2013), both times unsuccessfully.

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PAPPA, E. Os garotos-propaganda do 'capitalismo' da Antiguidade evitando dinheiro? A difusão do alfabeto no Mediterrâneo como função de um comércio marítimo baseado em crédito. *R. Museu Arq. Etn.*, 33: 91-138, 2019.

Resumo: Os avanços dos estudos sobre as origens da monetização no Mediterrâneo têm mostrado que, mesmo com uma circulação da moeda controlada por estados, as economias de crédito (sem moedas) existiam em paralelo, usando documentos escritos para transações até o período romano. Este artigo documenta que uma economia de crédito facilitou a expansão comercial fenícia no Mediterrâneo (sécs. IX – VII a.C.), tornando-se o veículo pelo qual o *abjad* semítico ocidental, o “alfabeto” fenício, foi rapidamente adotado e adaptado a várias escritas fonéticas e silábicas no Mediterrâneo. Isso levou à rápida disseminação da alfabetização em sociedades que tinham voltado a ser totalmente analfabetas neste período, como os gregos, ou que nunca haviam desenvolvido a alfabetização. Em contraste com explicações anteriores que viram a disseminação da alfabetização no Mediterrâneo como consequência do comércio internacional, este estudo postula que a alfabetização teve um papel funcional nas economias de crédito que cresceram com o comércio internacional, fornecendo assim o ímpeto para a disseminação da alfabetização, na medida em que oferece documentação que substancia essa hipótese. No fundo, o estudo vincula a rápida disseminação da alfabetização ao papel institucional da escrita no contexto de transações comerciais monetizadas, utilizando achados arqueológicos de ambas as extremidades do Mediterrâneo e interpretando-os dentro do seu contexto histórico.

Palavras-chave: Economia do crédito; Alfabeto; Moeda; Fenício; Aramaico.

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