

Alphabetical numbering and numerical progressions on drachms and Massalia's small bronze coins

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Abstract: The acronyms found on the Massalia coinage, interpreted not as monograms made up of letters but as figures made up of numbers (expressed in Greek with the same letters), have unexpectedly been revealed to be progressive numbers that gradually show the advanced minting progress. The numbers used on the minted coins simplified the programming of the monetary series and helped mint officials and workers to recognize and better count some specific groups of coins.

Keywords: Monograms, Greek numbers, Numbers on Massalia coins, Edition of the Massalia issues

Riassunto : Le sigle riportate sulle monete di Massalia, interpretate non come monogrammi composti di lettere ma come cifre composte di numeri (espressi in greco con le stesse lettere dell'alfabeto), si rivelano inaspettatamente dei numeri progressivi che scandivano il progredire della coniazione dei pezzi dell'emissione. L'apposizione di questi numeri facilitava la programmazione delle serie monetali da parte dell'autorità emittente ed il materiale conteggio delle monete battute da parte degli addetti della zecca perché consentiva di distinguere e contare meglio degli specifici gruppi di monete.

Parole chiave : Monogrammi, Numeri greci, Numeri sulle monete di Massalia, Tiratura delle emissioni monetali di Massalia

Introduction

Nous avons édité en 2000 le Catalogue des drachmes de Marseille établi par le regretté Jean Charra (1914-1985). Vingt-cinq séries typologiques avaient été établies avec un relevé très précis des différents qui pouvaient exister au droit et/ou au revers. Il n'était pas question de discuter ni la nature de ces monnaies ni leur chronologie : la disparition de l'auteur ne lui a pas permis d'aller plus loin. Il s'agissait cependant d'un travail d'importance à défaut de celui qu'Henri Rolland devait publier. Certes de nombreuses études partielles ont été publiées depuis 1970 mais la question des différents est restée sans solution. Certains ont cru voir dans ces lettres des initiales de monétaires!, des signatures de graveurs! ou bien des numérotations de coins dans des suites alphabétiques incomplètes. Dans le volume 10, 2016 de la revue Omni, F. De Luca a étudié les séquences numériques présentes sur des monnaies grecques parmi lesquelles les monnaies de Marseille (p. 24, fig. 5). La nouveauté de cette approche nous a invités à demander à F. De Luca de bien vouloir prendre en considération les monnaies de Marseille afin de voir si ses hypothèses pouvaient coïncider avec ces nombreuses séries, bien établies par J. Charra.

Voici donc une première livraison qui permettra aux chercheurs de juger de la fécondité de ce travail et de lui apporter leur approbation et/ou leurs critiques constructives.

Jean-Claude Richard Ralite et Gisèle Gentric

At the beginning of the 2nd century BC the Massalia mint started to issue its classic monetary series¹. The basic silver coin, the drachm², took over and on the obverse Artemis' profile is introduced, while on the reverse we find a lion. The reverse of the drachms minted in 200-150 BC showed under the lion's stomach, not the symbols that distinguished the previous issues, but letters in alphabetical order from A to Φ (as in figure no. 1). This characteristic suggests that the letters singled out certain groups of coins, minted in succession: after minting a first group of coins with an alphabetical letter on it, they went on to mint another group, probably of the same size, but using the next alphabetical letter. To understand this method better, we assume that every coin group made up of 10,000 pieces has a letter from A to Ω: it is clear that it is easier to count "only" 10,000 pieces minted with a specific letter than to count 240,000 coins from one big group without any letters.



Fig. 1. Silver "light" drachms minted in Massalia (Gaul) in 200-150 BC. Obv.: head of Artemis to right, wearing wreath of olive branches, pendant earring and pearl necklace; bow and quiver at shoulder. Rev.: lion prowling to right; MAΣΣA; letter between the lion's rear and front paws (no.1: Ξ; no.2: Ο; no.3: Π; no.4: Ρ). No.1 (Charra 812): Classical Numismatic Group, Triton IX, 10 Jan. 2016, lot 666 (2.68 g); No.2 (Charra 813): Obolos (by Nomos), Webauction 3, 15 Nov. 2015, lot 34 (14 mm, 2.72 g); No.3 (Charra 814): CGB.fr, Monnaies 15, 30 Sept. 2002, lot 93 (15 mm, 2.69 g); No.4 (Charra 816): CGB.fr, Monnaies 15, 30 Sept. 2002, lot 94 (17 mm, 2.56 g).

Obviously to mint the coins falling within each group marked by a different letter (which we can suppose for example to consist of 10,000 pieces) several obverse and reverse dies were used in sequence until the predetermined number of coins to be minted was reached, as it clearly appears in figure no.2 in which are shown two coins produced from two different reverse dies but both carrying the letter O: after the first reverse die was damaged, the minting was continued by the second.

It is clear that we find alphabetical numbering on the drachms minted at the beginning of the 2nd century BC in Massalia, like those used in the first half of the 3rd century BC by the Alexandrian scholars to number the 24 books of the *Iliad* and the 24 books of the *Odyssey*: the books' numbering with the 24 letters of the alphabet (A-Ω). This use of alphabetical numbering is confirmed in many

¹ Many are the studies on Massalia coinage but the detailed cataloguing of the emission of drachms accomplished by CHARRA J. (2000) still remains unsurpassed.

² The 2.70 g drachm minted in Massalia in the 2nd -1st century BC is traditionally called "light" to distinguish it from the "heavy" 3.70 g drachm minted in the 4th -3rd century BC. For Depeyrot (1999), p.5-17, however, the main silver coin minted in Massalia is not a drachm but a tetrobol ("heavy" or "light" according to the moment of the issue).

inventory texts, on buildings blocks that were marked to facilitate their implementation, on personal cards to indicate the owners in certain categories³.

The alphabetical numbering of groups of coins minted in succession is found in many Greek mints and in different periods⁴: one of the first examples is found at the end of the 5th century BC in another city of Phocian foundation, exactly in Velia⁵ (figure no.3). Even in the last decades of the 5th century BC in the nearby town of Poseidonia, an issue of staters was minted and identified by a letter in alphabetical sequence on every obverse and reverse die of the issue⁶ (figure no.4). For Cantilena and Carbone, two authors who wrote a recent book on Poseidonia's coinage, Velia's precedent was very decisive for the Poseidonia mint because "per contraddistinguere le serie degli stateri aveva apposto sui conii lettere in successione alfabetica per numerare le serie, facendo ricorso ad un espediente, utilizzato in precedenza da Velia e attestato anche a Thurii, per far fronte alla necessità di immettere in circolazione un previsto notevole quantitativo di numerario"⁷ ("to distinguish the staters' series they affixed on the coins an alphabetical sequence to number the series, using a ploy, previously used in Velia and also attested in Thurii, to put into circulation a considerable amount of expected cash"). As can be seen, Cantilena and Carbone correlate the affixing of letters in alphabetical sequence on the dies with a massive programmed production of currency: it is a device intended to make it easier.



Fig. 2. Silver "light" drachms minted in Massalia (Gaul) in 200-150 BC. Obv.: head of Artemis to right, wearing wreath of olive branches, pendant earring and pearl necklace; bow and quiver at shoulder. Rev.: lion prowling to right; ΜΑΣΣΑΛ; letter O between the lion's rear and front paws (Charra 813). No.1: Obolos (by Nomos), Webauction 3, 15 Nov. 2015, lot 34 (14 mm, 2.72 g); No.2: CGB.fr, Auction Monnaies 15, 30 Sept.2002, lot 91(16.5 mm; 2.64 g).



Fig. 3. Silver drachms minted in Velia (Lucania) in 440-400 BC. Obv.: head of nymph right, letter behind neck (Γ retrograde on no.1 and Δ on no.2). Rev.: owl on olive branch; YEAH. No.1: ACR Auctions, Auction 9, 29 Apr. 2014, lot 67 (3.94 g); No.2: Pegasi Numismatics, Buy or Bid Sale 141, 22 Feb. 2012, lot no.22 (3.65 g).

³ GUARDUCCI M. (2005), p.87.

⁴ On the topic DE LUCA F. (2016b), p.7-12

⁵ On Velia's drachms which have letters in alphabetical order see WILLIAMS R.T. (1992), p.30-42.

⁶ On these issue of Poseidonia's staters see NOE S.P. (1952), p.9-19; KRAAY C.M. (1967), p.113-135; RUTTER N.K. (2001), p.110; CANTILENA R., CARBONE F. (2015), p.45-48.

⁷ CANTILENA R., CARBONE F. (2015), p.45.



Fig. 4. Silver staters minted in Poseidonia (Lucania) in 420-410 BC. Obv.: Poseidon standing right, wearing chlamys and brandishing trident; letter in left field: ΠΟΣΕΙ (ΠΟΣΕΙΔΑ on the fourth coin). Rev.: bull standing left; letter in exergue on the first two coins, between the bull's belly and the line of exergue on the other two; ΠΟΣΕΙΔΑ. No.1: Kraay (1976) 654, Oxford (7.81 g); No.2: British Museum Collection (6.86 g); No.3: Munthandel G. Henzen, list 119 (2001) no.3 (7.80 g); No.4: Numismatica Ars Classica NAC AG, Auction 27, 12 May 2004, lot 40 (7.82 g).

Even on the gold octodrachms minted between 261/260 and 242/241 BC by Ptolemy II Philadelphus to commemorate his dead wife (as well as his sister) Arsinoe, we find on the obverse letters following an alphabetical order from A to Ω (in figure no.5 we can see a part of the sequence). For Troxell⁸, who refuses any attempt to see dates in these sequence letters, the coin groups that are linked to these letters are the different issues minted in succession.



Fig. 5. Gold octodrachms minted by Ptolemy II Philadelphus (285-246 BC) in 261-241 BC. Obv.: veiled head of the Queen Arsinoe II right, wearing diademed stephane and horn of Ammon; lotus-tipped scepter in background, its tip visible above head; letter behind. Rev: double cornucopia bound with fillet; ΑΡΣΙΝΟΗΣ ΦΙΛΑΔΕΛΦΟΥ. No.1: Gorny & Mosch Giessener Münzhandlung, Auction 190, 10 Nov. 2010, lot 384 (27.73 g); No.2: Gorny & Mosch Giessener Münzhandlung, Auction 190, 10 Nov. 2010, lot 385 (27.73 g); No.3: Classical Numismatic Group, Mail Bid Sale 60, 22 May 2002, lot 997 (27.85 g); No.4: Gorny & Mosch Giessener Münzhandlung, Auction 190, 10 Nov. 2010, lot 386 (27.73 g).

⁸ TROXELL H.A. (1983), p.35-41.

According to my interpretation, alphabetical numbering is found even on “New Style” Athenian tetradrachms minted from 196 to 86 BC where on the reverse we find some letters in alphabetical order, generally the letters from A to M carried above the amphora on which is perched the Athena’s owl⁹.



Fig. 6. Silver “light” drachms minted in Massalia (Gaul) in 200-150 BC. Obv.: head of Artemis to right, wearing wreath of olive branches, pendant earring and pearl necklace; bow and quiver at shoulder. Rev.: lion prowling to right; ΜΑΣΣΑ; letters between the rear and front paws of the lion (ΓΓ on no.1 and ΖΖ on no.2). No.1 (Charra 824): CGB.fr, Monnaies 15, 30 Sept. 2002, lot 95 (15.00 mm, 2.67 g); No.2 (Charra 828): Solidus Numismatik, Online Auction 9, 8 Oct. 2016, lot 18 (15 mm, 2.79 g).

The elements that make the alphabetical numbering are letters in alphabetical order and not numbers expressed with the 24 alphabet letters, according to the most widespread numeral system which, in fact, used the letters of the alphabet and was known as “Alphabetical” (or even “Ionic”). To number objects with more than 24 elements after Ω they used double letters, like AA, BB, ΓΓ, etc. then continued with AA/BB, BB/BB, ΓΓ/BB, etc.: for example, many large amounts of blocks from the Piraeus theater were marked with this sequence which had been put in place¹⁰. And also in Massalia we find this type of alphabetical numbering with double letters as is attested by a sequence that starts with AA and finishes with ZZ (some elements are proposed in figure no.6).



Fig. 7. Silver decadrachms minted by Ptolemy II Philadelphus (285-246 BC) in 270-260 BC. Obv.: veiled head of the Queen Arsinoe II right, wearing diademed stephane and horn of Ammon; lotus-tipped scepter in background, its tip visible above head; letter behind. Rev.: double cornucopia bound with fillet; ΑΡΣΙΝΟΗΣ ΦΙΛΑΔΕΛΦΟΥ. No.1: Münzen & Medaillen AG Basel, Auction 95, 4 Oct. 2004, lot 107 (35.68 g); No.2: Ira & Larry Goldberg Coins & Collectibles, Auction 46, 26 May 2008, lot 68 (35.48 g); No.3: Classical Numismatic Group, Triton V Sale, 16 Jan. 2002, lot 1535 (35.70 g).

⁹ The thesis is shown in DE LUCA F. (2015a), p.53-86, e in DE LUCA F. (2015b).

¹⁰ About this see HEATH T. (1981), p.36.

Another example of alphabetical numbering with double letters is present on coins minted by Ptolemy II Philadelphus and precisely on silver decadrachms, minted between 270 and 260 BC with the same types that were to be used on the gold octodrachms: they brought an entire series of double letters from AA to ΩΩ (figure no.7).

There are also some numberings that do not use letters in alphabetical order but increasing numbers: is the case of the tetradrachms in the name and types of Alexander the Great¹¹ minted in Aspendos in the period between 221/20 and 189/88 BC¹². The different groups of sequentially minted coins are numbered¹³ consecutively in a sequence that runs from 1 to 31. A part of this numerical sequence is proposed in figure no.8: as seen, the presence of the number 16 (coin no.3, fig.no.8), which figures the *digamma* Ϝ that is evidently a number, shows that they are really numbers in succession. The way with which the different groups of coins are numbered suggests that they were all made up with the same amount of coins.

¹¹ Between the III and the II century BC there was in the Pamphylian area an intense coinage of tetradrachms in the name and types of Alexander the Great: as well as in Aspendos they were also minted in Sillyum, Phaselis and Perge. For MØRKHOLM O. (1991), p.23 and 143, a monetary production so dense is in no way justified by the economic importance of the cities issuers but it was made for the purpose of profit: these tetradrachms were exported to other districts in Asia Minor and especially in the Seleucid Empire where they were often checked (see for example coin no.3, fig. no.9 and the coin no.1 fig.no.10). Archaeological finds confirm a strong presence of tetradrachms in the name and types of Alexander the Great in Syria coming from Pamphylia starting from the first 40 years of the second century BC.

¹² This dating has been convincingly suggested by H. Seyrig based on archaeological findings and general historical considerations (see on the argument MØRKHOLM O., 1991, p.143).

¹³ The oldest Greek numeral system is called “Attic” or even “Acrophonic” because used as numerical symbols the initial letters of the words that indicate the main numbers (from *akron*, “the end”, “the beginning”, and from *phōnē*, “entry”). The basic signs were | = 1, Π = 5, Δ = 10, H = 100, X = 1,000, M = 10,000. Other signs were obtained with the addition or the multiplication of two basic signs. For example, the number 50 was indicated with Ϟ (5 times 10 = 5 x 10) etc. There were also some specific signs that indicated amounts of money, for example Ϡ (10 talents) which came from the union of Δ (number 10) and T (the symbol of the talent); this fusion of symbols showed that they were multiplied together: the talent is a monetary unit that corresponds to 6,000 drachms, therefore 10 talents are equal to 60,000 drachms (on this sign see HEATH, 1981, p.31). The more recent numeral system is called “Alphabetical” or “Ionic” (see the layout on next page) which used 27 alphabet letters: nine for the numbers lower than 10, nine for the multiples of 10 lower than 100 and nine for the multiples of 100 lower than 1.000. Because the classic Greek alphabet was only composed by 24 letters, 3 archaic letters were also used, falling into disuse: *digamma* (in the form Ϝ or in the most common form ϝ) which indicated number 6, *koppa* (Ϟ) used to represent number 90 e *sampi* (Ϡ) for the number 900. This circumstance suggests that the origins of the Ionic numeral system dates back at least to the 5th century BC, when these letters were still in use. Generally when the letters indicating the numbers were tiny they were followed by an apex.

Other symbols from other minor numeral systems that indicated a certain amount of money were widespread everywhere like for example the symbol Α, often simplified with A, used in Andania, city of Messenia, to indicate the amount of 10 mine, equal to 1.000 drachms (on this see TOD M.N., 1979, p.47) and the notation Ϡ (sometimes simplified with O or with the letter Θ) that in Argos indicates the amount of 10 drachms (on this last sign TOD M.N., 1979, p.5). On the Greek numeral systems see HEATH T. (1981), p.30-35; GUARDUCCI M. (2005), p. 85-87.

In the indication of figures hundreds, tens, and units followed in decreasing or increasing order from left to right, so that number 329 could be written in different ways like TKΘ or ΘKT; but the numbers could also be arranged without following any order and could be mixed: 329 could also be TΘK.

It also happened that in both common language and in numerical notations numbers were expressed in tens (*dekades*), hundreds (*hekatontades*), thousands (*chiliades*), tens of thousands (*myriades*) and hundreds of thousands (*dekakismyriades*): in this way Plato (*Phaedrus* 257) used the expression “*ennea chiliades etōn*”, that meant “nine thousands of years”, to indicate 9,000 years.

In the numerical notations carried on the coins and in other contexts, a number could be expressed *in an understood method*, in tens, hundreds, thousands, etc., whereby only a detailed examination of the context can clear if it deals with a finished number or if it implies other decimal orders. Furthermore on the coins there was an extensive use of the multiplicative principle because often two or more numbers were combined and placed next to each other: in this way the two or more numbers must be multiplied between each other to obtain a figure (their product) that otherwise would be too long to write in the confined space on the coin.

Once finished the sequence (partially reconstructed in figure no.8), the minting of a new group of coins minted in sequence began and they were distinguished by a new numerical progression that restarted from the number A = 1 (fig.no.9): to distinguish this new numbering from the previous one, on the new group of coins the numbers that identified them are no longer carried in the left field but under Zeus' throne.

A further set of groups of coins minted in sequence were distinguished, as well as the new numerical progression, by affixing a different symbol for every group (fig. no 10): even in this new sequence the presence of the number 26 (coin no.2, fig.no.10), where the *digamma* figures in the \square form that can only be a number, confirms that these are numbers.

A, α',	1.	I, ι',	10.	P, ρ',	100.
B, β',	2.	K, κ',	20.	Σ, σ',	200.
Γ, γ',	3.	Λ, λ',	30.	T, τ',	300.
Δ, δ',	4.	M, μ',	40.	Υ, υ',	400.
E, ε',	5.	N, ν',	50.	Φ, φ',	500.
Ϛ, ϛ',	6.	Ξ, ξ',	60.	X, χ',	600.
Z, ζ',	7.	O, ο',	70.	Ψ, ψ',	700.
H, η',	8.	Π, π',	80.	Ω, ω',	800.
Θ, θ',	9.	Ϟ, ϟ',	90.	Ϛ, ϛ',	900.

The "Ionic" or "Alphabetic" numeral system.



Fig. 8. Silver tetradrachms minted in the name and types of Alexander III 'the Great' (336-323 BC) in Aspendos (Pamphylia) in 221/20 - 189/88 BC. Obv.: head of Herakles wearing lion's scalp right. Rev.: Zeus enthroned left holding scepter and eagle; in the right field: ΑΛΕΞΑΝΔΡΟΥ; in the left field: ΑΣ, initial part of the name of the issuing city, and numerical notation. No.1: Ira & Larry Goldberg Coins & Collectibles, Auction 78, 28 Jan.2014, lot 2311, 16.5 g; No.2: CNG, Electronic Auction 381, 24 Aug. 2016, lot 204, 16.66 g; No.3: CGB.fr, Monnaies 31, 21 June 2007, lot 75, 16.65 g; No.4: Roma Numismatics, E-Sale 2, 2 Nov.2013, lot 176, 16.64 g.



Fig. 9. Silver tetradrachms minted in the name and types of Alexander III 'the Great' (336-323 BC) in Aspendos (Pamphyilia) in 221/20 - 189/88 BC. Obv.: head of Herakles wearing lion's scalp right. Rev.: Zeus enthroned left holding scepter and eagle; numerical notations under the throne of Zeus; in the right field: ΑΛΕΞΑΝΔΡΟΥ; in the left field: ΑΣ, initial part of the name of the issuing city. No.1: Roma Numismatics, e-Sale 4, 28 Dec.2013, lot 181, 16.58 g; No.2: Roma Numismatics, e-Sale 4, 28 Dec.2013, lot 180, 16.58 g; No.3: CNG, Electronic Auction 380, 10 Aug. 2016, lot 260, 15.99 g; No.4: Numismatik Lanz München, Auction 123, 30 May 2005, lot 195, 16.94 g.



Fig. 10. Silver tetradrachms minted in the name and types of Alexander III 'the Great' (336-323 BC) in Aspendos (Pamphyilia) in 221/20 - 189/88 BC. Obv.: head of Herakles wearing lion's scalp right. Rev.: Zeus enthroned left holding scepter and eagle; in the right field: ΑΛΕΞΑΝΔΡΟΥ; in the left field: ΑΣ, initial part of the name of the issuing city, and numerical notation (except that on coin no.4 on which the numerical notation is placed under the throne of Zeus); symbol under the throne of Zeus on no.1, in exergue on no.2, in the left field on no.2 and no.3. No.1: CNG, Electronic Auction 258, 22 June 2011, lot 200, 16.61 g; No.2: Fritz Rudolf Künker GmbH, Auction 89, 8 Mar. 2005, lot 1428, 16.81 g; No.3: VAuctions, Auction 263, 5 May 2011, lot 16, 15.91 g; No.4: Fritz Rudolf Künker, eLive Auction 23, 30 Oct. 2013, lot 30, 16.59 g.

The presence of three different numberings that always runs from A=1 with the addition of useful elements to distinguish each series from each other (changing the numerical notation position, or adding a symbol) clearly excludes the possibility that the numbers on these different tetradrachms groups are dates, as was commonly believed¹⁴, but it clarifies the nature of the elements of identification that distinguish batches of minted coins in succession according to a fairly widespread use in the Greek world.

It seems clear that the coins groups minted in alphabetical or numerical order responded to both the accounting needs of the issuing authorities to program coin series activities, and even the coins minted by the minting officials because it helped them distinguish and count better the specific groups of coins.

Let's not forget that it was necessary “tenere il conto, e quindi ‘controllare’ il numero delle monete emesse. L’esigenza era profondamente sentita nell’antichità, come testimonia l’accordo tra Focea e Mitilene della fine del V sec. a.C. Il trattato, che prevedeva che le due città emettessero ad anni alterni monete che godessero di libera circolazione in entrambe, comminava la pena di morte al magistrato che si fosse reso reo di non rispettare il peso e la lega del metallo impiegato per le coniazioni”¹⁵ (“to keep count and ‘control’ the coins minted. It was very important in antiquity, as in the agreement at the end of the 5th century BC between Phokaia and Mytilene. The treaty said that both towns could issue every other year coins with freedom of movement, and the death penalty would be inflicted on the magistrate who had been guilty of not respecting the weight and metal alloy used for minting”). And the numbering by means of sequential letters or increasing numbers of groups of coins minted in sequence seems to be a useful way to keep track of the coins issued¹⁶.

Afterwards in Massalia they did not use alphabetical letters to keep count but increasing numbers (expressed in Greek language with the same alphabetical letters) inside the same issue, as happened - according to my interpretation¹⁷ - in many other Greek mints (even Velia, among others).

Such numbering happened: when the obverse and reverse dies were made to be used in the production of coins, figures were then engraved to characterize all the coins minted from those dies. When the dies were damaged or needed to be substituted, the ensuing dies were engraved with the same numbers if it was necessary to complete that quantity of coins, or even higher numbers than the previous ones, if they went on to mint a further quantity of coins.

For example, the acronyms on the coins in figure no.11, minted in 150-130 BC, are made up of two overlapped elements, that clearly indicate that these elements are not letters but numbers and have to be multiplied together, exactly as it was necessary to do with two numbers found in the

¹⁴ Believes that, for example, MØRKHOLM O. (1991), p.143. In the case the numbers on the tetradrachms in the name and types of Alexander the Great minted in Aspendos are considered dates, it is necessary to determine if even the numbers carried on the tetradrachms in the name and types of Alexander the Great minted in Phaselis and Perge are dates referred to two separated eras or to one provincial Pamphylian era.

¹⁵ So M.Caccamo Caltabiano, Preface to DE LUCA F. (2015a), p.5-6.

¹⁶ DEPEYROT G. (1999), p.58, recognizes that the introduction of alphabetic numeration on Massaliote drachms “marque un tournant dans la production monétaire et certainement une augmentation des quantités émises. La numérotation alphabétique permet de longues séries grâce à l’utilisation d’une puis de deux lettres”. Depeyrot, curiously concludes that “ces marques ne sauraient être interprétées comme de marques de numérotation des coins, mais bien au contraire comme des marques d’émissions, peut-être de baux monétaires. En effet, on retrouve les mêmes différents sur plusieurs coins”.

¹⁷ According to DE LUCA F. (2015a), p.21 ff., in some cases the monograms on the Greek coins are numbers that indicate the issue's edition, that means the number of pieces minted. I mentioned in DE LUCA F. (2016a), p.24, the monograms reported on the Massalia's drachms.

compound numbers in the Attic system (for example number Γ is compounded by the number $\Delta=10$ surmounted by the number $\Pi=5$ the result is 50 which indicates that they are multiplied together). The overlapped numbers in the numerical notation on the reverse of the coin no.1 figure no. 11 are 10 in the Attic system (Δ) which multiplies with 20 in the Ionic system (K)¹⁸ to give as the result 200 hundreds of drachms, that is 20,0(00) drachms. The numbers on the obverse and reverse of the coin no.2 figure no. 11, instead, are 7 in the Ionic system (Z) which multiplies with 5 in the same system (E); the result is 35 thousands of drachms, equal to 35(,000) drachms. On both sides of the coin no.3 we have the number 5 of the Attic system (Π) x 10 of the same numeral system (Δ) with a result of 50 thousands of drachms, equal to 50(,000) drachms. The coin no.4 which closes the sequence always has on both sides the number 1,000 of the Attic system (X) that multiplies with the number 100 (H) of the same numeral system with the result of 100,000 drachms, the final issuing number.



Fig. 11. Silver "light" drachms minted in Massalia (Gaul) in 150-130 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field (except that the no.1). Rev.: lion right; ΜΑΣΣΑ-ΛΙΗΤΩΝ, "(coin) of Massalia's citizens"; numerical notation in right field. No.1 (Charra 1126): Leu Numismatik, Auction 86, 5 May 2003, lot 181 (2.77 g); No.2 (Charra 1123): Numismatica Varesi s.a.s., Auction 63, 26 Nov. 2013, lot 15 (2.43 g); No.3 (Charra 1130): Gerhard Hirsch Nachfolger, Auction 250-251, 8 May 2007, lot 518 (2.53 g); No.4 (Charra 1125): Classical Numismatic Group, Mail Bid Sale 67, 22 Sept. 2004, lot 43 (2.65).

¹⁸ The ancient sources attest in many cases the contextual use of numbers expressed according to the Attic and the Ionic numeral system. So, for example, in the 2nd-1st century BC on two Boeotian epigraphs we can find numbers taken from the Attic numeral system used inside the same figure close to numbers taken from the Ionic numeral system: see ROESCH (1966), p.77-82, n.15; CALVET- ROESCH (1966), p.297-332. Furthermore, the two systems are seen side by side in a number of papyrus-rolls written in Greek found at Herculaneum: these state are on the title page, after the author's name, the number of books according to the Ionic numeral system, and the number of lines according to the Attic numeral system, just like when we commonly use Roman figures to denote *Books* and Arabic figures for *sections* or *lines* (see HEATH, 1981, p.35).



Fig. 12. Silver "light" drachms minted in Massalia (Gaul) in 150-130 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field (except that the no.4 and no.7). Rev.: lion right; ΜΑΣΣΑ-ΛΙΗΤΩΝ, "(coin) of Massalia's citizens"; numerical notation in right field. No.1 (Charra -): Classical Numismatic Group, Electronic Auction 264, 21 Sept. 2011, lot 1 (17 mm, 2.67 g); No.2 (Charra -): OGN.Numismatique.com, no.6956, 20 Sept. 2016 (2.71 g); No.3 (Charra 1129): Roma Numismatics Limited, Auction 4, 30 Sept. 2012, lot 4 (16 mm, 2.48 g); No.4 (Charra 1103): Nomos, Auction 11, 9 Oct. 2015, lot 8 (18.00 mm, 2.69 g); No.5 (Charra 1108): Centre Numismatique du Palais Royal, no.106, 21 May 2010 (2.67 g); No.6 (Charra 1106): CGB.fr, Auction Monnaies 59, 19 June 2013, lot 644 (17 mm, 2.73 g); No.7 (Charra 1111): Pegasi Numismatics, Auction XXV, 8 Nov. 2011, lot 6 (2.52 g).

All these progressive numeral notations¹⁹ were recorded because it helped to keep count of the pieces gradually minted since they made specific recognizable groups of coins that would otherwise be merged into one indistinguishable and single mass. Little by little, the mint masters minted the coins, divided them in numerical notations and recorded them in a proper memo: in case there was a mistake made in counting the pieces minted it was enough to recount the coins of one specific group and not all the coins minted. In this way officials could control the whole amount of precious rare metal received at the beginning before it was transformed in coins. Besides, dividing the same

¹⁹ DEPEYROT G. (1999), p.58, does not comment extensively on the function of the monograms that at this time are shown on Massaliote drachms and generally talk about "lettres dans le champ qui remplacent les symboles utilisés par les monétaires".

issue into many distinct groups, gave officials a good method of checking the work done in the mint that, when finished, had to be handed over.

Another numbering sequence is found in the following issue in figure no.12 that triples the edition with 300.000 drachms. On the reverse of the coin no.1 we find the number 5 in the Ionic system (E) that is multiplied with another number 5 from the same system (E) with a result of 25 thousands of drachms, equal to 25(,000) drachms, while on the obverse of the same coin we have the number 100 Attic (H) that is multiplied with the Ionic number 5 (E) the result is 500 thousands of drachms, equal to 500(,000) drachms. On the following coins the same notations are found on both the obverse and the reverse; in particular on the coin no.2 we have 7 in Ionic (Z) x 5 in Ionic (E) = 35 thousands of drachms, equal to 35(,000) drachms; the coin no.3: 100 in Attic (H) x 5 in Ionic (E) = 500 hundreds of drachms, equal to 50,0(00) drachms; the coin no.4: 1,000 of Andania's drachms (A) x 10 of Argos' drachms (O) = 10,000 tens of drachms, equal to 100,00(0) drachms; the coin no.5: 1,000 in Attic (X) x 100 in Attic (H) = 100,000 of drachms; the coin no.6: 10 in Attic (Δ) x 10 in Ionic (I is inserted inside the Δ) x 20 in Ionic (K) = 2,000 hundreds of drachms, equal to 200,0(00) drachms; the last coin issue is the coin no.7 reached by the number 300 in the Ionic system (T) and the amount of 1,000 drachms according to the Andania's numerical system with a total result of 300,000 drachms²⁰.

As can be seen, some numerical notations recur identically on some coins of the issue of figure no.11 and others of the issue of the figure no.12 (ZE e XH, while the notation Δ IK on the coin no.6 in figure no.12 is shaped on the notation Δ K of the coin no.1 in figure no.11): this circumstance is the evidence that these signs are absolutely consecutive numbers because, if they were authority official's names, they would not have changed so often and always in the same order.

We have already analyzed two different numerical sequences reported on so many Massalia issues. But the most skeptical readers still continue to screw up their nose and ask: "Who assures us that those reported on the Massalia coins are really numbers and not letters?". We then look for elements in epigraphic sources that help distinguish numbers from letters.

After the victories at Marathon and Salamis that removed the Persians away from Greece, Athens gathered around itself many allies who pledged to contribute each year to maintaining and increasing the fleet. One part of the sums paid by the allies (exactly one mina per talent, that means a sixtieth part) was taken for Athena's treasury. The Athenian Tribute Lists of every year was carved on the stone. So in the List of the year 440-439 (figure no.13, third line) we can see that the Aphytis citizens conferred to Athen's treasury the amount of 50 drachms indicated with the Γ symbol from the Attic or Acrophonic system. Well, the same number was used even on some tetradrachms minted in Amphipolis in the name of Alexander the Great in 318-317 BC: it was indicated on the reverse, in the field between Zeus' knee and his right hand (figure no.14). While in the Athenian Tribute List no one had a doubt that what came after the word that indicated the Aphytis citizens was a number, because it was something already studied and ascertained. In the Alexander coin case, however, many people were skeptical about the fact that the monogram could actually be the number 50 from the Attic or Acrophonic system simply because it was now affirmed for the first time. A fact, however, remains undeniable: the symbol carried on Alexander's coin is absolutely identical to the one carried on the Athenian Tribute List of the year 440-439 BC.

Even if the author of the present study manages to be convincing on the fact that the monograms reported on the Massalia coins are composed of numbers and not letters, another doubt will remain

²⁰ For inscriptions which have numerical symbols of a minor numeral system used far away from their place of origin (such as A = 1.000 of Andania used in Massalia) you could see ROESCH (1966), p.77-80 and GRANDJEAN (1995), p.1-26.

That the numbers resulting from these multiplications are sums expressed in drachms is then confirmed by the complete reconstruction of issues (the figures appear to be compatible with the number of dies belonging to the issue and with the number of coins from those presumably generated) and also by the fact that in common parlance the large digits used without any specification were implicitly referred to amounts in drachms. Thus in *The Knights* (829) of Aristophanes, Paphlagon threatens to denounce the Sausage-seller because he stole “*treis myriades*”, that means thirty thousand (3 x 10,000) drachms: in fact, the expression “*treis myriades*” implies “*drachmōn*” that means “of drachms”. The same does Plutarch in *Marius* (34) using the expression “*myriadōn epta ēmisuos priasthai*” (“buy for 7 myriads and a half”) that implies “*drachmōn*” (“of drachms”).

Even if the doubt has been dispelled that the multiplication of two combined numbers gives rise to a large sum expressed in drachms, there will remain one last (at least I hope so) perplexity. In the reconstruction of the Massalia issues so far shown (and in the reconstruction of the issues that will be shown later), often some numbers were interpreted by the writer *in an understood way* in hundreds, thousands or other decimals. Is this a legitimate supposition?

The answer is that the use of implying several order decimals for a given number was very common in both the Greek and Roman world where it was positively attested.

One of these documentaries evidence was understood by de Callataÿ. In the generous effort to quantify the volumes of production and coins circulation in antiquity, de Callataÿ has searched all the sources which gave information about large sums of money, including first the coins' listing, gold and other riches taken away as booty of war and brought in triumph²². For example, in Manius Acilius Glabrio's triumph over Antiochos III and the Aetolians (190 b.C.) described by Titus Livius (XXXVII, 46, 3) they were made to parade fabulous riches, that is: 3,000 pounds of silver in ingots (equal to 38 talents), 113,000 Attic tetradrachms and 249 *cistophori* (*cistophori ducenta undequinquaginta*), many heavy silver vases, a silver royal *suppellectilem* and 45 golden crowns donated from the various subdued cities. Still Titus Livius (XXXIX, 7, 1-2) lists all the wealth shown in Gnaeus Manlius Vulso Glabrio's triumph over the Galatians (187 a.C.): 212 golden crowns, 220,000 pounds of silver (equal to 2,769 talents) and 2,103 pounds of gold (equal to 265 talents), 127,000 Attic tetradrachms, 250 *cistophori*, 16,320 golden *Phillips*. Well, in this context of astonishing wealth (which also gives us an idea of the great amount of circulating money in the antiquity) de Callataÿ rightly believed that those reported for the *cistophori* (249 pieces for the triumph over Antiochos III and the Aetolians and 250 pieces for the triumph over Galatians) appeared “des sommes très faibles” and comes to the conclusion that “tout indique qu’il faille ici restituer *milia*. Dans le cas contraire, la situation serait assez ridicule en effet”²³. The conclusion of de Callataÿ is absolutely correct and the omission of the word *milia* by Titus Livius is not due to his forgetfulness but to his will to conform to the use of implying several order decimals in the indication of a figure.

Another accurate attestation of the existence of such use in the Roman world comes from a *Compendio delle antichità romane, ossia leggi, costumi, usanze e cerimonie dei Romani compilato per l'istruzione della gioventù* (Compendium of Roman antiquities, or rather laws, customs, habits and Romans ceremonies written for young people's education). The edition consulted is the one printed in G. Miglio's typography in Novara (Italy) in 1817 where in the introduction the editor wrote that the Compendium was published in France by an anonymous literature professor and

²² Among the numerous writings of this author on the subject we will only mention DE CALLATAÿ F. (1984), DE CALLATAÿ F. (1987), DE CALLATAÿ F. (1993), DE CALLATAÿ F. (1995), DE CALLATAÿ F. (1998), DE CALLATAÿ F. (2005) and DE CALLATAÿ F. (2006b).

²³ DE CALLATAÿ F. (2006a), p.42.

adopted by the University of Paris already for a century²⁴. In this Compendium on the pages 199-200 you can read: “When you count with an adverb, and the adverb is combined with *sestertium*, it always implies *centena millia*. For example, *semel sestertium* is the same as *semel centena millia sestertium*. And *decies sestertium* means *decies centena millia sestertium*; sometimes we find only the adverb, being omitted or implied the word *sestertium*, or *millia sestertium*. For example, *debet mihi decies*, that is to say *decies sestertium*, or *decies centena milia sestertium*. *Quadragesimum milia res* implies *sestertium*. *Vespasianus rhetoribus annua centena constituit*, or rather *centena milia sestertium*. As when you say *mille munitium*, *mille talentum*, it is a construction of the adjective and of the substantive with the genitive governed by *res*, which was implied”²⁵.

In Latin, then, exactly as it was in the reconstruction of the numerical sequences on the Massalia coins, to understand the order of sizes of which we are talking about, we must contextualize every single number: *decies sestertium* or *decies centena milia sestertium*? Fifty drachms or fifty thousands of drachms?

Although there is no evidence that indicates in the Greek world the use of implying different decimals orders for the written digits, we clearly understand it from the reconstruction of the numerical sequences reported on the Massalia coins. And whether Titus Livius has conformed to this use in the middle of the text written on papyrus or parchment, let's just imagine if the Massalia minters did not take advantage of carrying such big numbers on a little coin with only a 16 mm diameter...



1) AN = 1,000 (A) x 50 (N) = 50,000 dr.



2) ΠΑ = 5 (Π) x 1,000 (A) = 50,00(0) dr.



3) AZ = 1,000 (A) x 7 (N) = 70,00(0) dr.



4) AΘ = 1,000 (A) x 10 (Θ) = 100,00(0) dr.

²⁴ This Compendium of Roman antiquities can be consulted in its entirety online here: https://books.google.it/books?id=bdGLDIOM0ukC&printsec=frontcover&hl=it&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

²⁵ The Italian text is: “Quando si conta con un avverbio, e l’avverbio è unito a *sestertium*, si sottintende sempre *centena millia*. Per esempio, *semel sestertium* è lo stesso che *semel centena millia sestertium*. E *decies sestertium* vuol dire *decies centena millia sestertium*; qualche volta trovasi l’avverbio solo, essendo omessa, o sottintesa la parola *sestertium*, o *millia sestertium*. Per esempio, *debet mihi decies*, per dire *decies sestertium*, o *decies centena milia sestertium*. *Quadragesimum milia res* si sottintende *sestertium*. *Vespasianus rhetoribus annua centena constituit*, cioè *centena milia sestertium*. Come quando dicesi *mille munitium*, *mille talentum*, è una costruzione dell’aggettivo e del sostantivo col genitivo retto da *res*, ch’è sottinteso”.



5) AH = 1,000 (A) x 100 (H) = 100,000 dr.

6) AK = 1,000 (A) x 20 (K) = 200,00(0) dr.



7) AA = 1,000 (A)x 30(A) = 300,00(0) dr.

8) AIA = 30 (A)x 10(I) x 10(A) = 300,0(00) dr.

Fig. 16. Silver "light" drachms minted in Massalia (Gaul) in 125-90 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder. Rev.: lion left with raised paw; ΜΑΣΣΑ; numerical notations above and below the line of exergue. No.1 (Charra 1313): Yale University Art Gallery (15.53, 2.68 g); no.2 (Charra 1316): Dr. Busso Peus Nachfolger, Auctions 407/408, 7 Nov. 2012, lot 35 (2.76 g); no.3 (Charra 1306): Gorny & Mosch Giessener Münzhandlung, Auction 236, 7 March 2016, lot 6 (2.81 g); no.4 (Charra 1309): Fritz Rudolf Künker Münzenhandlung, Auction 111, 18 March 2006, lot 6022 (2.72 g); no.5 (Charra 1307): OGN.Numismatique.com, no. 8346, 20 Sept. 2016 (2.77 g); no.6 (Charra 1310): iNumis, Mail Bid Sale 12, 22 Oct. 2010, lot 71 (17 mm, 2.81 g); no.7 (Charra 1311): iNumis, Mail Bid Sale 30, 13 Oct. 2015, lot 35 (17.8 mm, 2.74 g); no.8 (Charra 1318): Ars Time Company Ltd, eAuction II, 17 Dec. 2013, lot 7 (2.71 g).

Returning to the Massalia issues, we notice that the information of the quantity of pieces minted little by little is still different in an issue of 125-90 BC: this time the progressive number which indicates the coins being minted are only shown on the reverse side of the coin. But this is not the only change because near the progressive number we find another number (located evenly and constantly on all the coins above the exergue line, between the lion's front and back paws) which indicates the end of the series: it's Λ , the number 30 from the Ionic numeral system which indicates, in tens of thousands, the issue size that, therefore, will be 30 tens of thousands of drachms that means 30(0,000) drachms. Here on the first reverse of issue (coin no.1, fig.no.16) we find above the exergue line the permanent notation $\Lambda=30(0,000)$ that shows the whole size of the issue and under that line the progressive number that indicates the exact number of pieces that the mint tended to produce at the time of the realization of that reverse die which was $1,000 (A) \times 50 (N) = 50,000$ drachms. This numerical threshold is indicated in an alternative way on the coin no.2, figure no.16, where we find the number 5 from the Attic system (Π) x the amount of 1,000 drachms (A) = 5,000 tens of drachms, equal to 50,00(0) drachms. The next target is indicated with number AZ (coin no.3, fig.no.16) that indicates the amount of $1,000 (A) \times 7 (Z) = 7,000$ tens of drachms, which means 70,00(0) drachms. The round figure is reached thanks to the contribution of the reverse die of the coin no.4, fig.no.16, that has the number $A\Theta$ it corresponds to $1,000 (A) \times$ the Argos' symbol for 10 drachms expressed with the letter $\Theta = 10,000$ tens of drachms, equal to 100,00(0) drachms and thanks to the contribution of the reverse die of the coin no.5, fig.no.16, that brings the symbol AH, with 1,000 which comes from Andania's original numbering system (A) x 100 from the Attic numeral system (H) the result is 100,000 drachms. Like all the previous, even this last reverse has above the exergue line the constant number Λ that indicates the edition of the issue. The next two following 200,000 and 300,000 drachm thresholds, are expressed with the sign $AK=1.000 (A) \times 20 (K) = 20,000$ tens of drachms, equal to 200.00(0) drachms (coin no.6, fig.no.16), and with $AA = 1.000 (A) \times 30 (A) = 30,000$ tens of drachms, equal to 300,00(0) drachms (coin no.7, fig.no.16). The final 300,000 drachms threshold is reaffirmed very clearly on another reverse die that helps to

produce the predetermined final volume of coins: on the reverse die of the coin no.8, in fact, appears the numerical notation $\Lambda\Delta$ which is dissolved in 30 from the Ionic system (Λ) x 10 from the Ionic system (I) x 10 from the Attic system (Δ) = 3,000 hundreds of drachms, equal to 300,0(00) drachms.

Even in the following issue (figure no.17) made up of 300,000 drachms, which is always indicated with a Λ (30 in the Ionic system) above the exergue line at which this time a number I (10 from the Ionic system) is added on the right, between the lion's front paws: with these two numbers the result shows us that the issue has 300 *chiliades* (thousands) of drachms pieces, which means 300(,000) drachms. The two numbers are brought up in a disconnected manner, letting us know we are talking about numbers that have to be multiplied together and not the initials of the name of the authority official. Both in Corinth²⁶ and in Velia²⁷ in some issue groups we find written in the same way (and thus in a disconnected manner) the two symbols of the numerical notation: in some Corinth's issues (figure no.18) the figures AP, which correspond to 1,000 (A) x 100 (P) = 1,000,00(0) drachms, they are placed in front of the neck of Athena and another at the bottom of it; in some Velia's issues (figure no.19) the symbol ΦI , which correspond to 500 (Φ) x 10 (I) = 500,0(00) didrachms, is engraved on the reverse, one on the left and the other on the right side of the issue's symbol.

In Massalia's issue of figure no.17 we find only three numerical notations that indicate three important edition phases in sequence: as soon as the series minting started the first target reached was 100,000 drachms indicated with A = 1000 hundreds of drachms, which meant 100,0(00) drachms; the following target was 200,000 drachms and it was indicated with AK which number is 1,000 in Andania (A) multiplied with 20 from the Ionic system and the result is 20,000 tens (*dekades*) of drachms, equal to 200,00(0) drachms; the final target is 300,000 drachms with the symbol Λ that meant 30 tens of thousands (*myriades*) of drachms, equal to 30(0,000) drachms.



Fig. 17. Silver "light" drachms minted in Massalia (Gaul) in 125-90 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder. Rev.: lion left with right paw raised; $\text{M}\Lambda\text{C}\Sigma\text{A}$; numerical notations above and below the line of exergue and between the lion's front paws. No.1 (Charra -): Jesus Vico S.A., Auction 145, 2 June 2015, lot 100 (2.8 g); no.2 (Charra -): Bibliothèque nationale de France, département Monnaies, médailles et antiques, 1966.453.85 (2.78 g); no. 3 (Charra 1305): Bibliothèque nationale de France, département Monnaies, médailles et antiques, 1966.453.84 (2.58 g).

²⁶ See DE LUCA F. (2015a), p.91-99.

²⁷ See DE LUCA F. (2015a), p.144-151.



Fig. 18. Silver staters minted in Corinth (Corinthia) in 345-307 BC. Obv.: Pegasos flying left; archaic letter koppa below. Rev: head of Athena left wearing Corinthian helmet; behind the issue symbol (no.1: eagle; no.2: chimaera); numbers in front of the neck of the goddess and below it. No.1: Gorny & Mosch Giessener Münzhandlung, Auction 133, 11 Oct. 2004, lot 184 (8.62 g); no.2: Gorny & Mosch Giessener Münzhandlung, Auction 170, 13 Oct. 2008, lot 1381 (8.53 g).



Fig. 19. Silver didrachms minted in Velia (Lucania) in 300-290 BC. Obv.: head of Athena right wearing a crested Attic helmet decorated with a griffin on coin no.1 and with a wing on an olive branch on coin no.2. Rev.: lion stalking right; symbol (pentacle star on coin no.1, bunch of grapes on coin no.2) above between two numbers; YEAHTΩN, "(coin) of Velia's citizens". No.1: Numismatica Ars Classica, Auction 27, 12 May 2004, lot 52 (7.53 g); no.2: Classical Numismatic Group, Triton I, 1997, lot 147 (7.29 g).

A well-defined progression with not only three figures but with fourteen different number notations are found in the issue of figure no.20, always minted in 125-90 BC. All the different figures of the new series are composed of two numbers that have to be multiplied together, the first appears between the lion's rear paws, the second between the front and rear paws. The first numerical target indicates (coin no.1, fig.no.20) 50 *chiliades* (thousand) that corresponds to 50(,000) drachms and is expressed with the number 10 from the Attic system (Δ) x 5 from the Ionic system (ϵ). The same amount is indicated in an alternative way on the coin no.2, fig.no.20, it is the multiplication of the numbers 5 (Π) x 10 (Δ) in the Attic system with the result of 50(,000) drachms. The following 100,000 drachms limit, is then indicated in four different ways: a first time for effect of the multiplication of the number 5 of the Attic system (Π) by the number 20 from the Ionic system (κ) with the result of 100(,000) drachms; the second way without simplification on the coin no.5, fig.no.20, which shows the multiplication of the symbol of 1,000 drachms of Andania (α) by the number 100 from the Attic system (H) with the result of 100,000 drachms; the third way on the coin no.6, fig.no.20, by means of the multiplication of the symbol of 1,000 drachms from Andania (α) by the number 10 from the Attic system (Δ) with the result of 10,000 tens of drachms, equal to 100,00(0) drachms and at the end on the last coin no.7, fig.no.20, by means of the multiplication of the simplified symbol of the 10 drachms of Argos (\omicron) by the same symbol made with the letter Θ with the result of 100 thousands of drachms, equal to 100(,000) drachms.

The minting and the counter's numbering continue on the coins issued and the following number (coin no.8, fig.no.20) is TE which means 300 in the Ionic system (T) multiplied with number 5 from the same system (ϵ) the result is 1,500 expressed in hundreds, that corresponds to 150,0(00) drachms. As had already happened with the 100,000 drachms target, even the amount of 200,000 drachms is indicated in many different ways, exactly in three ways. The first notation is on the coin no.9, fig.no.20, and is made up with the number 5 from the Attic system (Π) x 2 from the Ionic

system (B is braided together with Π) x 20 from the Ionic system (K) = 200(,000) drachms. As you can see, this notation $\overline{\text{BTK}}$ from the coin no.9, fig.no.20, is different from the notation ΠK on the coins no.3 and no.4, fig.no.20, only because there is a B added between the symbol Π : this slight difference, almost imperceptible to the coins users, is a remarkable numerical difference that brings us to the doubling of the first number. On the coin no.10, fig.no.13, instead, the 200,000 drachms target is indicated with the Ionic number 50 (N) x Ionic number 4 (Δ) the result is 200(,000) drachms, while on the coin n.11 with AA= 2,000 drachms in Andania system are intended as 200,0(00) drachms. To dispel every doubt on the validity of the interpretation of the initials AA that indicates 200,0(00) drachms we find the coin no. 12, figure no.20, that brings on the reverse, on the right field, the additional numerical notation $\Sigma= 200$ that corresponds to the same amount, expressed in thousands, of 200(,000) drachms.

The final 300,000 drachms issue edition is shown in a clear and simply way on the coin no.13, fig. no.20, for effect of the multiplication of the amount of 1,000 drachms of Andania (A) with the number 300 from the Ionic system (T) and then again on the coin no.14, fig.no.20, thanks to the use of an element that without any doubt is a number, it is a 10 talents symbol ($\hat{\Gamma}$) that multiplies with number 5 (E) from the Ionic system and the result is 300,000 drachms: in fact a talent is equal to 6,000 drachms, 10 talents = 60,000 drachms that multiplied with 5 becomes 300,000 drachms, that is exactly the limit announced for this issue. As we just said, the symbol $\hat{\Gamma}$ that is on the coin no.14 (fig. no.20) can be only a number and confirms that the signs on the Massaliote coins are composed by numbers and not letters. The numerical notation of the end issue edition $\hat{\Gamma}\text{E}$ is used because this reminds the notation of half issue TE (coin no.8, fig.no.20): even here, as happened on the coin no.9, fig.no.20, adding an element corresponding to a numerical difference that entails doubling of the first number. Subsequent very similar numerical notations are found even in issues from other mints (for example some issues minted in Corinth and by Ptolemy I Soter as Egypt's satrap: see figure no.22 and no.23) and by now it seems evident that this device to resemble some figures to others in the same numerical progression responds to a precise Greek inclination. The fact that the numbers were correctly understood only by a careful eye confirms that they were not addressed to the coin users but to the minting staff, to help them count the volume of the coins minted.



1) $\Delta\text{E} = 10 (\Delta) \times 5 (\text{E}) = 50(,000)\text{dr.}$



2) $\Pi\Delta = 5 (\Pi) \times 10 (\Delta) = 50(,000) \text{ dr.}$



3) $\Pi\text{K} = 5(\Pi) \times 20(\text{K}) = 100(,000) \text{ dr.}$



4) $\Pi\text{K} = 5 (\Pi) \times 20 (\text{K}) = 100(,000) \text{ dr.}$



5) $\text{AH} = 1,000(\text{H}) \times 100(\text{H}) = 100,000 \text{ dr.}$



6) $\text{A}\Delta = 1,000(\text{A}) \times 10(\Delta) = 100,00(0) \text{ dr.}$



7) $10(\Theta) = 10(\Theta) \times 10(\Theta) = 100,000$ dr.



8) $TE = 300(T) \times 5(E) = 150,000$ dr.



9) $\text{BK} = 5(\Pi) \times 2(B) \times 20(K) = 200,000$ dr.



10) $N\Delta = 50(N) \times 4(\Delta) = 200,000$ dr.



11) $AA = 2,000 = 200,000$ dr.



12) $AA = 2,000 = 200,000$ dr.; $\Sigma = 200,000$ dr.



13) $AT = 1,000(A) \times 300(T) = 300,000$ dr.



14) $\Delta E = 60,000(\Delta) \times 5(E) = 300,000$ dr.

Fig. 20. Silver "light" drachms minted in Massalia (Gaul) in 125-90 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder. Rev.: lion right with raised left paw; ΜΑΣΣΑ-ΛΙΗΤΩΝ, "(coin) of Massalia's citizens"; numerical notations above the line of exergue. No.1 (Charra 1611): Numismatik Lanz München, Auction 132, 27 Nov. 2006, lot 32 (17 mm, 2.74 g); no.2 (Charra 1626): Ars Time Company Ltd, eAuction II, 17 Dec. 2013, lot 6 (2.73 g); no.3 (Charra 1627): www.vcoins.com, Tom Vossen Store, item 6039, Sept. 2012 (2.47 g); no.4 (Charra 1627): Aurea Numismatika, Auction 71, 1 May 2015, lot 2056 (2.67 g); no.5 (Charra 1606): Numismatik Lanz München, Auction 125, 28 Nov. 2005, lot 39 (15 mm, 2.62 g); no.6 (Charra 1605): CGB.fr, Auction Monnaies 24, 24 June 2005, lot 854 (14.5 mm, 2.64 g); no.7 (Charra 1625): CGB.fr, Web Shop N° bga_131918 (2.72 g); no.8 (Charra -): UBS Gold & Numismatics, Auction 73, 5 Sept. 2007, lot 307 (2.34 g); no.9 (Charra 1630): Classical Numismatic Group, Auction 22, lot 61517 (2.62 g); no.10 (Charra 1623): Bibliothèque nationale de France, département Monnaies, médailles et antiques, 1966.453.70 (2.69 g); no.11 (Charra 1604): Ars Time Company Ltd, eAuction II, 17 Dec. 2013, lot 5 (2.79 g); no.12 (Charra 1633): Roma Numismatics Limited, Auction 5, 23 March 2013, lot 3 (2.78 g); no.13 (Charra 1610): Freeman & Sear, Mail Bid Sale 14, 21 June 2007, lot 98 (2.64 g); no.14 (Charra 1631): Auctiones GmbH, eAuction #30, 19 Oct. 2014, lot 17 (16 mm, 2.68 g).



Fig. 21. Epigraph discovered in Athens' acropolis in 438 BC shows the cost of the realization of the famous chryselephantine statue of Athena Parthenos, made by Phidias (numbers expressed according to the Attic numeral system). On the epigraph portion reproduced here there is the cost of KATAB(OΛH), pedestal, that has the amount of 30 talents and 300 drachms, which is written on two lines with $\uparrow\uparrow\uparrow$ /HHH (Bibl. IG I3 460; ML 54 B; Fornara 114).



$\uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = 400(\Upsilon) \times 5(\Pi) = 2,000(,000) \text{ dr.}$ $\uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = 5(\Pi) \times 1,000(\Lambda) = 5,000(,000) \text{ dr.}$

Fig. 22. Silver staters minted in Corinth (Corinthia) in 345-307 BC. Obv.: Pegasos flying left; archaic letter koppa below. Rev: head of Athena left, wearing Corinthian helmet; numerical notation and herm behind. No.1: Classical Numismatic Group, Auction 64, 24 Sept. 2003, lot 722557 (7.97 g); no.2: Gorny & Mosch Giessener Münzhandlung, Auction 147, 7 March 2006, lot 1429 (8.00 g). This issue is reconstructed in its entirety in DE LUCA F. (2015a), p.101-106.



$\uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = 300(\Gamma) \times 500(\Phi) = 1,500,00(0) \text{ drachms} + 1(\Lambda).$



$\uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = \uparrow\uparrow\uparrow = 500(\Phi) \times 10(\Delta) \times 70(\Theta) = 3,500,00(0) \text{ drachms.}$

Fig. 23. Tetradrachms struck in 312-309 BC by Ptolemy I Soter, as satrap of Alexander the Great, bearing the image of Athena Promachos and the symbol of the eagle on the thunderbolt. Obv.: head of Alexander right, wearing diadem and elephant's skin headdress. Rev.: Athena Promachos advancing right, brandishing spear and holding shield; numerical notations to right; eagle on thunderbolt in right field; ΑΛΕΞΑΝΔΡΟΥ, "(coin) of Alexander". No.1: Classical Numismatic Group, Auction Triton V, 16 Jan. 2002, lot 1532 (15.37 g); no.2: Sylloge Nummorum Graecorum, Copenhagen (Denmark), 18 var. (15.57 g). This issue is reconstructed in its entirety in DE LUCA F. (2015a), p.39-44.

$\Delta E = 10 (\Delta) \times 5 (E) = 50(,000) \text{ dr. (coin no. 1);}$
 $\Pi \Delta = 5 (\Pi) \times 10 (\Delta) = 50(,000) \text{ dr. (coin no. 2);}$
 $\Pi K = 5(\Pi) \times 20(K) = 100(,000) \text{ dr. (coins no. 3 and 4);}$
 $AH = 1,000(H) \times 100(H) = 100,000 \text{ dr. (coin no. 5);}$
 $\Delta \Delta = 1,000(A) \times 10(\Delta) = 100,00(0) \text{ dr. (coin no. 6);}$
 $O \Theta = 10(O) \times 10(\Theta) = 100(,000) \text{ dr. (coin no. 7);}$
 $TE = 300 (T) \times 5 (E) = 150,0(00) \text{ dr. (coin no. 8);}$
 $\overline{\text{BK}} = 5(\Pi) \times 2(B) \times 20(K) = 200(,000) \text{ dr. (coin no. 9);}$
 $N \Delta = 50(N) \times 4(\Delta) = 200(,000) \text{ dr. (coin no. 10);}$
 $AA = 2,000 = 200,0(00) \text{ dr. (coin no. 11);}$
 $AA = 2,000 = 200,0(00) \text{ dr.; } \Sigma = 200(,000) \text{ dr. (coin no. 12);}$
 $AT = 1,000(A) \times 300(T) = 300,000 \text{ dr. (coin no. 13);}$
 $\uparrow E = 60,000 (\uparrow) \times 5(E) = 300,000 \text{ dr. (coin no. 14).}$

SUMMARY TABLE OF RECURRING NUMERICAL NOTATIONS IN THE ISSUE OF THE FIGURE NO. 20.

The final figures AT (coin no.13, fig.no.20) and $\uparrow E$ (coin no.14, fig.no.20) are key notations that guide the interpretation of all the other numerical notations of the issue.

Both notations give the 300,000 drachms amount, without needing to imply any decimal order: since there are not any other numerical notations that correspond to higher finished numbers, 300,000 drachms certainly appears to be the final number of the numerical progression reported on the coins from the issue. In fact, the only other notation which dissolves in a finished number is the AH notation (coin no.5, fig.no.20) that gives place to the 100,000 drachms amount which is lower than 300,000 drachms and, therefore, could not correspond to the issue's last quantitative limit. Well, the fact that the 300,000 drachms threshold is doubly indicated with two different notations, both corresponding to finished numbers which do not imply any other size order, reveals the importance of this quantity.

Another importance indicator of the notation $\uparrow E = 300,000$, in particular, is the fact that in the issue under examination even another notation is found (it is the TE figure in coin no.8, fig.no.20), that is clearly molded on it but indicates a halved number.

So then, if the final threshold seems to be the 300,000 drachms, the $\Pi \Delta$ notation on coin no.2, fig.no.20, for example, would have to be dissolved in 50(,000) drachms and not in 50(0,000) as it is confirmed by the fact that there are not any demonstrated numerical notations used to continue the progression from 300,000 to 500,000.

The succession of the coins offers further useful elements in the understanding of the numerical notations. For example, the obverse of the coin no.4, fig.no.20, is the same as the coin no.9, fig.no.20 (see even fig. no.25). The reverse of the first coin with the ΠK notation (coin no.4, fig.no.20) necessarily corresponds to 100(,000) and not, for example, to 100(0,000) because 1,000,000 drachms would be exaggeratedly high and not confirmed by any other numerical notation attested in the interval between the 300,000 drachms (from the AT and $\uparrow E$ notation) and the supposed 1,000,000 drachms figure. For the same reason the $\overline{\text{BK}}$ K notation on coin no.9, fig. no.20, will be equal to 200(,000) and not to 200(0,000).

But the definitive confirmation of the numerical notations interpretation comes from the reconstruction of whole issues (not presented here for brevity). Finding as many coins as possible belonging to the same issue, we can identify all the obverse and reverse dies used in the minting. Let's just say that the final number from the numerical progression carried on the coins of a certain issue were 300,000 and indicated, therefore, a 300,000 drachms edition (like in the issue under examination) while the obverse dies found were 15. Dividing the final 300,000 drachms edition by 15 (which were the obverse dies identified) we will obtain that each obverse die would have produced in average 20,000 coins (in fact $300,000:15=20,000$): the number of coins obtained from every obverse die appears compatible with the interpretation of the issue's final numerical notation as it corresponds to the 300,000 drachms number. It would be then very suspicious the interpretation of 3,000,000 drachms as a final numerical notation because every of 15 obverse dies identified should have produced even 200,000 coins: and it is a definitely unlikely number.

The large amount of coins belonging to this issue allows us to understand better some important aspects. In particular we can observe the large amount of obverse dies and reverse dies used to

reach the 200,000 drachms²⁸: we have, in fact, the coin no.9 (fig.no.20) with numerical notation $\overline{\text{BTK}}$, the coin no.10 (fig.no.20) with number $\text{N}\Delta$, and the coins no.11 and no.12 (fig.no.20) with notation, respectively, AA e $\text{AA}-\Sigma$. Besides these at least another coin is attested with notation $\text{AA}-\Sigma$, coming from both obverse and reverse different dies (coin.no.1, fig.24), another coin with numerical notation $\overline{\text{BTK}}$ (coin no.2, fig. n.24) and again another two with the notation $\text{N}\Delta$ (coins no.3 and 4, fig.no.24) coming from obverse and reverse dies different from each other and from those that have generated the coin no.10 in figure no.20. Finally, we must also consider the obverse and reverse dies from which was obtained the coin no.8, fig.no.20, with numerical notation $\text{TE}=150(,000)$ drachms and then another reverse die which generated the third coin of the coins series in figure no.25 with numerical notation $\overline{\text{BTK}}$. Therefore, in total to mint 100,000 drachms that, combined with the first 100,000 drachms (signaled with numerical notations IK , AH , $\text{A}\Delta$ or $\text{O}\Theta$), allow to reach the 200,000 drachms edition (indicated with $\overline{\text{BTK}}$, $\text{N}\Delta$ e AA) 9 obverse dies and 10 reverse dies have been used.

That meant that every reverse die identified had minted in average 10.000 coins each and every obverse die identified had minted slightly a higher number (exactly 11.111): as you can see, these are yields absolutely close to those hypothesized by de Callatay, which speaks of an average productivity of 20,000 coins for the obverse dies used to mint the Hellenistic tetradrachms wreathed of Magnesia-on-Meander²⁹ and of an average yield of 1,500 pieces for the reverse dies used to mint the New Style tetradrachms of Athens³⁰. The biggest yield of the reverse dies used in Massalia (10,000 coins minted), compared to that used in Athens (1,500 coins minted), is explained by their different dimensions. In fact, Massalia's reverse dies had to mint small drachms with an average 15-16 mm diameter, while those from Athens had to mint big tetradrachms with a double diameter (30-31mm): it was evident that the bigger dimensions of the Athenian tetradrachms reverse dies (housed inside a punch on which the hammer struck to mint the coin) were exposed to stronger forces than those endured by the reverse dies of the Massaliote drachm which inevitably caused a faster stress and a consequent breaking.

Instead the minor yield of the obverse dies used in Massalia (11,111 coins minted) compared to those used in Magnesia-on-Meander (20,000 coins minted), despite the small size of the Massaliote drachm, is due to the fact that each obverse die in Massalia was used for a very long period of time, together with reverse dies which carried different editions, as evidenced in figure no.25, whereby their life cycle was not certainly interrupted within the part of the issue under exam (the one that goes from 100,000 to 200,000 drachms).

In Massalia, then, to mint 100,000 drachms 9 obverse dies were used: this fact is explained by thinking of a significant number of *malleatores*³¹ at work simultaneously to strike all coins of the issue. This working together surely made the coin series production go faster: but on the other hand the profile not always successful of Artemis and especially the lion on the reverse often graceless seem to betray a certain hastiness in preparing the dies.

²⁸ Obviously some minting dies have been used until they broke down even after they reached the 200,000 drachms quantitative limit: this meant that some coins continued receiving numerical indication from the 200,000 drachms limit even if they belonged to the last issue group, launched towards the 300,000 drachms.

²⁹ DE CALLATAY F. (2012), p.46.

³⁰ DE CALLATAY F. (2012), p.45.

³¹ This was the name of the Roman minting workers specifically involved in the coin beating; those that overheated the flans and positioned them with tongs on the anvil mintage were called *suppostores*, while the *scalptores* were engravers. The Roman mint organization is known for some inscriptions the more complete is that of Caelian Hill (*CIL* VI,1641).



Fig. 24. Silver "light" drachms minted in Massalia (Gaul) in 125-90 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder. Rev.: lion right with raised left paw; ΜΑΣΣΑ-ΛΙΗΤΩΝ, "(coin) of Massalia's citizens"; numerical notations above the line of exergue. No.1 (Charra 1604): Gorny & Mosch Giessener Münzhandlung, Aution 233, 6 Oct. 2015, lot 1058 (2.73 g); no.2 (Charra 1630): CGB.fr, E-auction 23-6547, 23 Sept. 2013 (2.69 g); no.3 (Charra 1623): Artemide Aste, Asta 21E, 23-24 March 2013, moneta 3 (14.50 mm, 2.62 g); no.4 (Charra 1623): Artemide Aste, Asta 21E, 23-24 March 2013, moneta 4 (15.50 mm, 2.74 g).



Fig. 25. Subsequent use of different reverse dies by the same malleator from the Massalia's mint. No.1: Aurea Numismatika, Auction 71, 1 May 2015, lot 2056 (2.67 g); no.2: Classical Numismatic Group, Auction 22, lot 61517 (2.62 g); no.3: Fritz Rudolf Künker GmbH & Co. KG, Auction 216, 8 Oct. 2012, lot 42 (2.61 g).

To coin the issue of figure no.20 every *malleator* always used the same obverse die together with many reverse dies that followed each other in the issue's course. A succession of reverse dies is, for example, illustrated in figure no.25: the *malleator* that beats the coin uses the obverse die from which the first piece is obtained and then combines it to the reverse die with numerical notation ΠΚ = 100,000 drachms; when this edition is reached and the reverse die is damaged, it goes on with an sequence order and uses the other two reverse dies with an updated edition ΒΤΚ = 200,000 drachms.

In the interpretation of numerical notations of the issues analyzed up to this moment, a large recourse is made about the interpretation of the letter A intended not as indicating the number 1 from the Alphabetical or Ionic numeral system, but like 1,000 drachms from the original numeral system of Andania. But is there any evidence that certifies the validity of this interpretation?

Well, a clear proof of the wide use of numerical notation A to express the 1,000 drachms amount exists in the Velia coinage: although this proof does not concern the Phoceans of Massalia but those of Velia, it must be taken in consideration because it was seen about the alphabetic numbering of Massalia's issues of the early second century BC that there were many contact points similar between to the way of counting of Massalia's citizen and their cousins which settled in Lucania.

In an issue of didrachms minted in Velia in 300-290 BC, distinguished by the ear of corn symbol, on some pieces (coin no.1, fig.no.26) we can notice that the edition is noted on the obverse behind the goddess neckroll by means of two figures in ligature, **Α** (1,000 drachms from the Andania numeral system) that multiplies with H (100 from the Attic system) the result is 1,000,00(0) drachms, while the Φ (= 500 from the Ionic system), on the bottom right, does not indicate the edition in drachms but in didrachms so it should be understood as 500 thousands of didrachms, that means 500,(000) didrachms (since a didrachm coin's value is 2 drachms, 500,000 didrachms are equal to a million drachms). On other coins of the same issue (coin no.2, fig.no.26) we find the same previous numerical notations but with only one difference inside the notation behind Athena's neckroll: the simplification of **Α** in A without the dot. This demonstrates the accuracy of the hypothesis that in many cases the number A is not equal to 1 but to 1,000 drachms since it is an A simplified form of the figure **Α**. The didrachms edition is repeated on the reverse with the figure ΦΙ (located on the side of the issue symbol, the ear of corn) that corresponds to Φ (500) for I (10) the result is 5.000 hundreds (*hekatontades*) that then corresponds to 500,0(00) didrachms (as we already said, the notation ΦΙ, at the same time characterizes even other issues with identical size; see fig.no.19). To dispel any possible doubts on the issue's edition even a third numeral notation is given: under the lion's belly, in fact, we find even Π, the number 5 from the Attic system that stands for 5(00,000) didrachms.



1) OBV.: **Α** = **Α** (1,000 dr.) x H (100) = 1,000,00(0) dr.
REV.: ΦΙ = 500,0(00) didr.; Π = 5(00,000) didr.



2) **OBV.:** $\text{AH} = (1,000 \text{ dr.}) \times \text{H}(100) = 1,000,00(0) \text{ dr.}$
REV.: $\Phi\text{I} = 500,0(00) \text{ didr.}; \text{II} = 5(00,000) \text{ didr.}$

Fig. 26. Silver didrachms minted in Velia (Lucania) in 300-290 BC. Obv.: head of Athena right, wearing crested Attic helmet decorated with a wing on olive branch; numerical notations behind the neckroll of Athena and in the bottom right field. Rev.: lion stalking right; ear of corn above between two numbers; number even under the belly of the lion; YEΛHTΩN, "(coin of Velia's citizens)". No.1: Classical Numismatic Group, Mail Bid Sale 84, 5 May 2010, lot 90 (7.51 g); no.2: Ancient Coins, Edward J. Waddell, Ltd, lot 40053, Apr. 1998 (7.32 g).

Massalia's minting activity reached its final phase which ended in 49 BC, when Caesar conquered the city³². In this period a group of issues from the 200,000 drachms edition were coined³³ reporting in more and different ways both on the obverse and reverse of the issue's edition. In these issues the additional sign which appears on the reverse (under the lion's belly or more often in front of the animal's chest, in the right field) is not another number but a letter destined to act as a further distinctive element in different minted coins groups and which we will call a "control letter".

On one of these issues (coin no.1, fig.no.27) the 200,000 drachms edition is marked on the obverse with a monogram M in which number 5 from the Attic system (II) is written in ligature with the number 40 from the Ionic system (M) indicating that they are multiplied together with the result of 200 *chiliades* (thousands) i.e. 200,(000) drachms. The same amount of money is indicated on the reverse in the exergue with the number 20 from the Attic system ($\Delta\Delta$) x 1.000 drachms from the Andania system (A): the result is 20,000 drachms and it is expressed in tens so the numbers correspond to 200,00(0) drachms. The following issue pieces (coin no.2, fig.no.27) show the same numerical notation on the obverse as the previous (M) and on the reverse the symbols $\Delta\Delta\Theta$ where the number 20 from the Attic numeral system ($\Delta\Delta$) is multiplied by Argos' 10 drachms symbol (Θ) to give the result of 200 thousands of drachms, equal to 200,(000) drachms. On the following coins (coin no.3, fig.no.27) we always find on the obverse the same kind of notations like the previous coins and on the reverse the figure $\Theta\text{K}\Theta$ in which the number 20 from the ionic system (K) is multiplied two times in a row with 10 drachms from the Argos' numeral system (Θ) the result is 2,000 hundreds of drachms, equal to 200,0(00) drachms. A engraved letter on the reverse, under the lion's belly, helps to distinguish even more the series coins: on the first two coins there is A, and on the third coin there is a retrograde Γ .

The numerical notations are put together with a similar criterion on the following issues apart for the notations on the obverse that become progressive. So, on the obverse of coin no.1 fig. no.28 the initials AH are formed by the number 100 from the Attic system (H) multiplied with the number 1000 from the Andania's system (A) with the result of 100,000 drachms that does not need to imply tens, hundreds or thousands. The notation $\text{PII}\Delta$ in the exergue on the reverse, instead, should be

³² About this see BARRANDON J.-N., PICARD O. (2007), p.114.

³³ They are different issues and not a large single issue with at least 60 dies as instead believes DEPEYROT G. (1999), p.88.

dissolved in 100 from the Ionic system (P) x 5 from the Attic system (Π) x 4 from the Ionic system (Δ) = 2,000 hundreds of drachms that correspond to 200,0(00) drachms.

The following coupling of dies (coin no.2, fig. no.28) has on the obverse an indication of the amount of drachms that represents the issue's quantitative limit: it is the Attic number 100 (H) coupled with the number 2 from the Ionic system (B) as the multiplier; the result of 200 is expressed in thousands and could be written as 200(,000) drachms. The figure in exergue is ΠΑΔ that needs to be dissolved in 5 (Π) x 1.000 (Α) x 4 (Δ) = 200,00(0) drachms.

The control letter, positioned on the reverse in front of the lion, is M on the first coin and X on the second.

It's time for a new 200,000 drachms series in which the obverse's numerical notations are collocated, like the previous editions, with the figure H (the Attic 100): on the obverse of the first pairing of dies (coin no.1, fig.no.29) there is the notation composed by the number 400 from the Ionic system (Y) multiplied by 100 from the Attic system (H): the result is 40,000 and indicates how many pieces make up the first batch of the new issue coins being minted. On the reverse in exergue, instead, as already was the case in the two previous issues, is signaled in drachms the total amount of coins programmed for this new series which is 5 (Π) x 4 (Δ) x 1,000 (Α) = 200,00(0) drachms. Very clear is the notation on the obverse of the coin that finishes the series (coin no.2, fig.no.29) where for effect of the multiplication between 20 Ionic (K) x 100 Attic (H) 100 Ionic (P) we get the result of 200,000 drachms which is the exact amount of coins involved in the issue (as in previous cases). On the reverse in the exergue we find another way to reach the 200,000 drachms amount minted: 100 Attic (H) x 20 Ionic (K) x 10 Attic (Δ) = 20,000 tens of drachms, corresponding to 200,00(0) drachms. The control letters, instead, are A on the first coin and E on the second.



Fig. 27. Silver "light" drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue, a letter above. No.1 (Charra -): CGB.fr, Web Shop 2016 (15.50 mm, 2.52 g); no.2 (Charra 1841): CGB.fr, Monnaies 29, 19 Apr. 2007, lot 566 (14.8 mm, 2.62 g); no.3 (Charra -): CGB.fr, Web Shop 2016 (15.50 mm, 2.78 g).



Fig. 28. Silver “light” drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue; a letter in right field. No.1 (Charra 1811): <http://www.cgb.fr>, bga_340258 (15.5 mm, 2.72 g) ; no.2 (Charra 1805): Heidelberger Münzhandlung Herbert Grün e.K, Auction 48, 15 Nov. 2007, lot 8 (2.71 g).



Fig. 29. Silver “light” drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue; a letter in right field. No.1 (Charra 1806): Classical Numismatic Group, online shop n.152550 (16 mm, 2.66 g); no.2 (Charra -): UBS Gold & Numismatics, Auction 77, 9 Sept. 2008, lot 65 (2.67 g).

These control letters seem to be out of tune in this “numerical” context but can be explained thinking they are placed precisely in order to provide additional elements of differentiation of the masses of coins that were obtained from different combinations of dies. In this period, besides all these different numbers that express (sometimes in a really complicated way) the same amount of 200,000 drachms, the control letters are introduced for the express purpose of creating always different codes’ combinations. In fact if we rewrite first the codes found on the coins of the issue in figure no.28 and then those on the coins of the issue in figure no.29 we see that they are very different from each other while belonging to emissions by the same edition of 200,000 drachms and by rather “similar” numbers:

AH / ΠΠΔ – M	HB/ΠΑΔ–X
YH/ΠΔΑ – A	KHP/ΗΚΔ–E

As you can see, the introduction of additional letters remind us of the criterion used to create alphanumeric codes which today identify our modern banknotes. In fact, as previously stated, the function of the initials used on the Massaliote coins is not (or only) to remember the issue’s final edition or the amount of coins being minted at the moment, but most of all to make useful elements to distinguish subgroups of coins within a large group (issue) that otherwise would be composed by objects totally alike and indistinguishable from each other. Thanks to these initials the coins from the issue became distinguishable, the coins could be separated by using the abbreviations that reported as originating from a particular pair of dies and counted group by group. It is a method we follow unconsciously even nowadays: for example, when we have to count 10,000 euro we make ten piles of 1,000 euro because, if we make a mistake counting, we don’t have to recount all 10,000 but only the single pile thousand euro in whose count we have fallen into error; besides after

counting a pile we can even stop for awhile without forgetting the whole amount already counted. In the coin's case, then, it might be confusing not only the counting of different subgroups from the same issue but even different issues minted in close manner.

It is probable that the coins were separated by the number combinations they had and counted group by group. The process had to be this: while all the coins with a certain combinations of codes were minted they were separated from those bearing different combinations, minted previously. When the minting of pieces bearing a certain combination of codes (because the obverse die or the reverse die was replaced or both) was finished, all the batches of coins were counted and the amount was written in proper registers: by adding up all the numbers of the coins in every batch they knew exactly how many coins were minted and compared them to the total planned for the issue, always noted for reminders on the coins. Besides, doing this was very easy for the minting officials to report their work to the authorities: it was enough to sum the number of pieces that were in every bunch with different code combinations to obtain the number of drachms programmed for the issue.



Fig. 30. Silver "light" drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue; a letter in right field. No.1 (Charra 2202): Fritz Rudolf Künker Münzenhandlung, Auction 115, 25 Sept. 2006, lot 41(2.75 g); no.2 (Charra 2208): Münzen & Medaillen Deutschland GmbH, Auction 15, 21 Oct. 2004, lot 969 (17 mm, 2.59 g).

The series in figure no.30 belongs to a group of issues minted in the final activity phase of the Massalia mint and is characterized by neglected style. On the obverse of coin no.1, on the right there is an A =1,000 drachms which expresses the issue's edition in hundreds which, therefore, is only 100,0(00) drachms; on the obverse of the second coin the edition is indicated with AP where the 1,000 drachms amount, expressed with Andania's original notation A which is multiplied by the number 100 from the Ionic system (P) with the result of 100.000 drachms.

The edition is confirmed on the reverse of the first coin with ΠE, the original symbol of Thespieae for 500 drachms³⁴ which is multiplied with 2 (B) with the result is 1,000 hundreds of drachms, equal to 100,0(00) drachms. On the second coin, instead, the numerical notation EKA is made up by 5 from the Ionic system (E) x 20 from the same system (K) x 1,000 drachms from the Andania's system (A) the result corresponds exactly to the amount of 100,000 drachms. But if we look at the numerical notation EKA not only like figures made up of numbers but even like a word made up of letters, we notice that it corresponds to initial part of the adjective numeral cardinal EKATON, "hundred", which is nothing else than an alternative quantity indication of 100,(000) drachms, the announced limit for that issue.

³⁴ On this sign we see TOD M.N.(1979), p.70.

The particularity to assemble the numerical notations so they were able to be intended not only like figures made up of numbers, but even beginnings of words or names made up of letters, was widespread among many Greek mints and reveals another Greek passion, a kind of puzzle game highly appreciated. For example, on an Athenian tetradrachms issue in 158-157 BC, to indicate the amount of 100,000 drachms instead of the usual notation ΣΦ, that represents 200 (Σ) x 500 (Φ) with the result of 100,000 drachms, we find the numerical notation ΔΙΟ that remembers Zeus's genitive, ΔΙΟΣ, which assumes the meaning of "Zeus's (coin)". The reference to Zeus is confirmed by the issue symbol: the eagle and the thunderbolt that are Zeus' attributes.



Fig. 31. Silver "light" drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue; a letter in right field. No.1 (Charra 2003): Gorny & Mosch Giessener Münzhandlung, Auction 237, 7 March 2016, lot 10120 (2.71 g); no.2 (Charra 2005): Solidus Numismatik, Auction, Online-Auktion 9, 7 Oct.2016, lot 19 (16 mm, 2.72 g).

Εἰρηναῖος Πρω(τάρχῳ) τρα(πεζίτη) χα(ίρειν)
 χρη(μάτισον) Σαραπίωνι τῶι
 παρὰ Θεῶνος χα(λκοῦ) π τέσσαρας / δ̄.

Fig. 32. The text transcript of an Egyptian papyrus dated 86 BC, under the reign of Ptolemy IX, containing a payment order for a banker which says: "Eirenaios to Protarchos, banker, greeting. Pay to Serapion the agent of Theon four copper talents, that is, 4" (BAGNALL R.S., BOGAERT R., 1975, p.84).

In another Athenian tetradrachms issue in 137-136 BC, instead of the usual figure ΑΠ = 80,000 is reported the most contorted figure ΣΟΛ that's equal to 270 (ΣΟ) x 30 (Λ) = 81,00(0) because the figures that make up the numerical formula ΣΟΛ, if understood as letters, recall the name of Solon which that issue would commemorate: the issue's symbol, in fact, is the Tyche that lays the ballot and vote and gives a tribute to Solon, who was a great democratic reform father³⁵.

As we see, many are the elements that make us believe that the Massaliote coins are numbers: it's very clear, for example, that the first issues of the second century BC follow each other according to a numbering (alphabetic but still numbering); positive proof is then provided by the coin no.14 figure no.20 that has the sign ⤴ that could only be a number. And then there is the coin just analyzed (coin no.2, fig.no.30) in which it is obvious the willingness of the mint employees to make us understand that the signs on the coins are numbers because the set of signs EKA, whether it is understood as composed of numbers, whether it is understood as composed of letters, indicates the same amount: the two different possible signifiers have the same meaning, a specific number.

³⁵ This kind of puzzle game, based on the continuing changing between Greek letters and numbers, is treated in De LUCA F. (2013), p.168-182.

But beyond what we saw on figure EKA there is another case of virtuosity in the figure's indication which is really significant. In fact on the obverse of the coin no.1 figure no.31, first piece of a series immediately preceding the issuing group with 200,000 drachms edition (figure no.27-29), brings, on the right bottom, the sign $\overline{\Lambda}$ interpreted like the letter Π by Depeyrot³⁶ and like $\Gamma\Lambda$ by Charra³⁷. But this sign is none other than a symbol, widely certified in ancient papyri, of the talent's monetary unit, corresponding 6,000 drachms³⁸. Practically, rather than indicating in figures the first group of 6,000 drachms to mint in the new issue, it is preferred to introduce the astute variation to indicate the symbol of the talent, which corresponds to 6,000 drachms.



Fig. 33. Silver "light" drachms minted in Massalia (Gaul) in 90-50 BC. Obv.: diademed and draped bust of Artemis right, with bow and quiver at shoulder; numerical notation in right field. Rev.: lion right; ΜΑΣΣΑ; numerical notation below the line of exergue; a letter in right field. No.1 (Charra 1804): Classical Numismatic Group, Electronic Auction 302, 8 May 2013, lot 3 (17 mm, 2.68 g); no.2 (Charra 1802): Classical Numismatic Group, Triton XVI, 8 Jan. 2013, lot 171 (16 mm, 2.81 g).

To be sure that the talent symbol is correctly interpreted on the reverse of the coin no.1, fig.no.31, the expression TAA is shown that, for once, is not a number but the initial part of the word TAAANTON, "talent", that is an alternative way to reaffirm the amount 6,000 drachms which the mint was working on at the moment: more clearly than that...

The numerical progression continues on the following coin (coin no.2, fig. no.31) that brings on its reverse numbers expressed in thousands, hundreds and tens which don't follow a decreasing or increasing order from left to right but are expressed in a mixed manner: it is the number 1,305 expressed with the Andania symbol (A) for 1.000 drachms, 5 from the Ionic system (E) and 300 from the Ionic system (T); since it's a number expressed in hundreds it has to be understood as 130,5(00).

The talent's sign is found even in the group of successive emissions (that to which belong the emissions of figure no. 27-29) and even here is skillfully matched and "camouflaged" with the following notations: on the issue in figure no.33, for example, is followed by the monogram $\overline{\Lambda}$ composed by Γ and Λ which are multiplied together to give the result of 90 thousands of drachms, equal to 90(,000) drachms. On the reverse of both coins the number 100,000 drachms is indicated: on the first coin with the multiplication between the Ionic 20 (K) x Ionic 5 (II) x Andania's 1,000 drachms (A) and on the second coin with the multiplication between 1 Ionic (A) x 100 Attic (H) x 1,000 Attic (X). The control letter on both coins is the A in front of the lion.

³⁶ DEPEYROT G. (1999), p.90.

³⁷ CHARRA J. (2000), p.140-144.

³⁸ On the talent's symbol written on some Egyptian papyri of the I century BC see BAGNALL R.S., BOGAERT R. (1975), p. 84-88; BILABEL F. (1923) 2307. It is possible to consult online many sites like, for example, <https://stephanus.tlg.uci.edu/encoding/unicode/proposals/final/numerals.pdf>.

Numerical progressions similar to those already analyzed are also found on small bronze coins that show on the reverse side a butting bull, traditionally named “small bronzes”. On an issue of 100-70 BC³⁹ (figure no.34), for example, we find on the obverse numbers that indicate the issue’s edition expressed in drachms. The letter Ξ on the left, in fact, is the number 60 from the Ionic or Alphabetical numeral system that indicates in *chiliades* (thousands) the issue’s edition and, it should read as 60(,000) drachms. If the opinion of J.-N. Barrandon and O.Picard’s⁴⁰ is well-founded these small bronze coins had the value of an hemiobol and, so, 1/12 of drachms, whereby 60,000 drachms corresponded to 720.000 small bronzes: in fact, 60,000 drachms x 12 (the number of hemiobols present in each drachm) = 720,000 small bronzes or hemiobols.



1) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi M = 60(\Xi) \times 40(M) = 2,400$ dr.



2) O: $\Xi = 60(,000)$ dr.;
R.: $\Sigma M = 200(\Sigma) \times 40(M) = 8,000$ dr.



3) O: $\Xi = 60(,000)$ dr.;
R.: $\Sigma E = 200(\Sigma) \times 5(E) = 10,00(0)$ dr.



4) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi \Lambda = 60(\Xi) \times 30(\Lambda) = 18,00(0)$ dr.



5) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi E = 60(\Xi) \times 5(E) = 30,0(00)$ dr.



6) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi \Pi = 60(\Xi) \times 5(\Pi) = 30,0(00)$ dr.



7) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi \Phi = 60(\Xi) \times 500(\Phi) = 30,000$ dr.



8) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi \Omega = 60(\Xi) \times 800(\Omega) = 48,000$ dr.

³⁹ This dating is proposed by FEUGÈRE M., PY M. (2011), p.143.

⁴⁰ BARRANDON J.-N., PICARD O. (2007), p.114.



9) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi X = 60(\Xi) \times 1,000(X) = 60,000$ dr.

10) O: $\Xi = 60(,000)$ dr.;
R.: $\Xi A = 60(\Xi) \times 1,000(A) = 60,000$ dr.

Fig. 34. Bronze coins minted in Massalia (Gaul) in 100-70 BC. Obv.: laureate head of Apollo right; numerical notation in left field. Rev.: bull butting right; ΜΑΣΣΑ; numerical notation in exergue. No.1: CGB.fr, Monnaies 15, 30 Sept. 2002, lot 146, 14.5 mm, 2.02 g (FEUGÈRE M., PY M., 2011, PBM-53-10); no.2: FEUGÈRE M., PY M. (2011), PBM-53-21; no.3: FEUGÈRE M., PY M. (2011), PBM-53-23; no.4: FEUGÈRE M., PY M. (2011), PBM-53-17; no.5: FEUGÈRE M., PY M. (2011), PBM-53-9; no.6: FEUGÈRE M., PY M. (2011), PBM-53-16; no.7: CGB.fr, Web Shop, N° bga_209506, 14.5 mm, 1.62 g (FEUGÈRE M., PY M., 2011, PBM-53-11); no.8: FEUGÈRE M., PY M. (2011), PBM-53-22; no.9: FEUGÈRE M., PY M. (2011), PBM-53-12; no.10: FEUGÈRE M., PY M. (2011), PBM-53-8.

On the number Ξ of the obverse are modeled eight of the ten progressive figures reported on the reverse in the exergue that allow to divide the bronzes issue in as many groups easier to manage than single, indistinguishable pile of coins. The numerical progression of the figures found on the reverse (almost all expressed according to the Ionic numeral system) are the following. On the coin no.1 the figure ΞM is broken up by $60 (\Xi) \times 40 (M) = 2,400$ drachms; on the coin no.2 the numerical notation ΣM is not other than $200 (\Sigma) \times 40 (M) = 8,000$ drachms; the figure ΣE that instead is shown on the coin no.3 corresponds to $200 (\Sigma) \times 5 (E)$ that gives place to the result of 10,00(0) drachms, while the figure $\Xi \Lambda$ on the coin no.4 is broken up in $60 (\Xi) \times 30 (\Lambda) = 18,00(0)$ drachms. The amount of 30,000 drachms, that corresponds to the exact half of the issue, is indicated in three different ways: on the coin no.5 with ΞE equivalent to $60 (\Xi) \times 5 (E) = 30,0(00)$ drachms; on the coin no.6 with $\Xi \Pi$ which is the multiplication between 60 (Ξ) with 5 from the Attic or Acrophonic system (Π) from which the amount of 30,0(00) drachms are obtained; on the coin no.7 with $\Xi \Phi$ that should be dissolved in $60 (\Xi) \times 500 (\Phi) = 30,000$ exact drachms. Follows on the coin no.8, the notation $\Xi \Omega$ that stands for $60 (\Xi) \times 800 (\Omega) = 48,000$ drachms. The final issue edition is then indicated in two alternative ways: on the coin no.9 with $\Xi X = 60 (\Xi) \times 1,000$ from the Attic system (X) = 60,000 drachms and on the coin no.10 with $\Xi A = 60 (\Xi) \times$ the Andania's symbol of 1000 drachms (A) = 60,000 drachms.

As seen, once again very similar numerical notations are able to express with few and imperceptible variations both a global figure (the one on the obverse) and various progressive numbers (brought on the reverse) that tend to that figure. When temporarily missing the omnipresent figure Ξ , the notations are still assembled in a way to recall another notation which it contains: it happens to the notation ΣM that remembers the notation ΞM and for the notation ΣE that recalls the notation ΞE . The numerical notation for the half edition (30,000 drachms) is expressed in three alternative ways and in two different ways for the final edition (60,000 drachms) while in the numeral sequence number 8 returns many times: precisely in the groups of the 8,000, 18,000 and 48,000 drachms.

The stylistic yield of these small bronzes series remind us of the drachm's issue in figure no.27: to this issue, in fact, it is also united by the numerical notation fixed in the obverse indicating the issue edition (numerical notations on the reverse, however, are progressive on small bronzes, indicating the issuing final edition but always different on drachms).



1) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma M = 200(\Sigma) \times 40(M) = 8,000 \text{ dr.}$



2) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma E = 200(\Sigma) \times 5 (E) = 10,00(0) \text{ dr.}$



3) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma E = 60(E) \times 5(E) = 30,0(00) \text{ dr.}$



4) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $A\Phi = 500(\Phi) + 1(A) = \text{over } 50,0(00) \text{ dr.}$



5) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma \Delta = 200(\Sigma) \times 4(\Delta) = 80,0(00) \text{ dr.}$



6) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma \Phi = 200(\Sigma) \times 500(\Phi) = 100,000 \text{ dr.}$



7) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma \Pi = 200(\Sigma) \times 80(\Pi) = 160,00(0) \text{ dr.}$



8) O: $\Sigma = 200(,000)\text{dr.}$;
R.: $\Sigma I = 200(\Sigma) \times 10(I) = 200,0(00) \text{ dr.}$



9) O: $\Sigma = 200(,000) \text{ dr.}$; R.: $\Sigma A = 200(\Sigma) \times 1,000(A) = 200,000 \text{ dr.}$

Fig. 35. Bronze coins minted in Massalia (Gaul) in 100-70 BC. Obv.: laureate head of Apollo right; numerical notation in left field. Rev.: bull butting right; MAΣΣA; numerical notation in exergue. No.1: FEUGÈRE M., PY M. (2011), PBM-53-2; no.2: FEUGÈRE M., PY M. (2011), PBM-53-4; no.3: FEUGÈRE M., PY M. (2011), PBM-53-7; no.4: FEUGÈRE M., PY M. (2011), PBM-53-13; no.5: FEUGÈRE M., PY M. (2011), PBM-53-20; no.6: FEUGÈRE M., PY M. (2011), PBM-53-6; no.7: FEUGÈRE M., PY M. (2011), PBM-53-1; no.8: FEUGÈRE M., PY M. (2011), PBM-53-19; no.9: FEUGÈRE M., PY M. (2011), PBM-53-3.

A greater edition instead had the issue of small bronzes rebuilt in figure no.35 contemporary or slightly later to the one just analyzed: well 200,000 drachms, equal to 2,400,000 hemiobols (in fact, 200,000 drachms x 12 – the hemiobols number present in each drachm– has as result 2,400,000 small bronzes or hemiobols). The number Σ (200 from the Ionic system), which is engraved on the obverse of all the issue coins, in fact, is expressed in thousands and therefore should be understood as 200(,000) which is precisely the edition in drachms of this new issue. On the reverse in the exergue a new numeral sequence instead begins, it is almost entirely hinged on the figure Σ , destined to clearly differentiate this issue from the previous, characterized by a numeral sequence centered on the figure Ξ . Even this sequence uses in most part of the cases figures expressed according to the Ionic numeral system.

So, on the coin no.1 the numerical notation ΣM represents 200 (Σ) x 40 (M) = 8,000 drachms; on the coin no.2 the figure ΣE is 200 (Σ) x 5 (E) and the result is 10,00(0) drachms; on the coin no.3 ΞE corresponds to 60 (Ξ) x 5 (E) = 30,0(00) drachms; the notation $A\Phi$ that we find on the coin no.4, instead, is dissolved in the 501 retrograde (500+1) which, in the context in which it is inserted, assumes the meaning of “beyond 50,0(00) drachms”. The following notations are $\Sigma\Delta$ = 200 (Σ) x 4 from the Attic or Acrophonic system (Δ) = 80,0(00) drachms (coin no.5); $\Sigma\Phi$ = 200 (Σ) x 500 (Φ) = 100,000 drachms (coin no.6) and $\Sigma\Pi$ = 200 (Σ) x 80 (Π) = 160,00(0) drachms (coin no.7). The final issue notation is doubly indicated with ΣI = 200 (Σ) x 10 (I) = 200,0(00) drachms on the coin no.8 and with ΣA = 200 (Σ) x Andania 1,000 drachms symbol (A) = 200,000 drachms on the coin no.9.

Even in this new sequence when a numerical notation does not have a central figure Σ it is assembled to recall another notation which contains it: this happens for the figure $A\Phi$ that brings to mind the notation $\Sigma\Phi$ and for ΞE that recalls the notation ΣE . The figures ΣM (8,000 drachms), ΣE (10,000 drachms) and ΞE (30,000 drachms), then, return identical in the issue in figure no.34 and in that in figure no.35.

A confirmation that the initials applied on these small bronzes are effectively numbers derives from the fact that the numerical notation $\Sigma\Phi$ on the coin no.6 in figure no.35 is also found on the Athenian “new style” tetradrachms: from some tetradrachm’s issue reconstructions it seems that the notation $\Sigma\Phi$ indicates the 100,000 drachms amount⁴¹.

If the drachm issue in figure no.20 provided us some types of figures closely alike in the same numerical progression, the two examined small bronzes issues shown us an entire numerical sequence made up of different but similar numbers because they almost all contain a certain number. Similar sequences of numbers, understood as composed of letters and not of numbers, gave rise to some real tongue twister: the characteristic of the tongue twisters, in fact, it is the repetition of the same sound or a small number of sounds. Let’s see the examples in figure no.34: the tongue twister is ΞM , ΣM , ΣE , $\Xi\Lambda$, ΞE , $\Xi\Pi$, $\Xi\Phi$, $\Xi\Omega$, ΞX , ΞA . Even for this type of tongue twister exists other testimonies in the Greek world: a tetradrachm issue minted in the name and types of Alexander the Great in Corinth in 310-290 BC (see fig.no. 36), for example, is marked by four consecutive notations ΔE , HP , NO , ΔO that appear clearly selected because, read like words made up of letters, are very similar to each other (with the exception of the second notation).

⁴¹ In this regard see DE LUCA F. (2015a), p.53-86.



Fig. 36. Alexander III 'the Great' (336-323 BC), silver tetradrachms, posthumous issue of Corinth (Corinthia), ca. 310-290 BC. Obv.: head of Herakles right wearing lion's skin. Rev.: Zeus enthroned left holding scepter and eagle; aphlaston in left field; ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ, "King Alexander's (coin)"; numerical notations under Zeus' throne and namely on coin no.1: ΔΕ= 10 (Δ) x 5 (Ε) = 50(0,000) drachms, equal to 125,000 tetradrachms; on coin no.2: ΗΡ = 100 of the Attic system (Η) 100 of the Ionic system (Ρ) = 1,000,0(00) drachms correspond to 250,000 tetradrachms; on coin no.3: ΝΟ = 50 (Ν) x 70 (Ο) = 3,500(,000) drachms, equal to 875,000 tetradrachms; on coin no.4 : ΔΟ= 4 (Δ) x Argos' symbol of 10 drachms (Ο)= 4,0(00,000) drachms, equal to 1,000,000 tetradrachms. No.1: Ira & Larry Goldberg Coins & Collectibles Inc., Auction 42, 23 Sept. 2007, lot 40 (17.14 g); no.2: Classical Numismatic Group, Mail Bid Sale 72, 14 June 2006, lot 324 (17.13 g); no.3: American Numismatic Society's Collection (16.62 g); no.4: Fritz Rudolf Künker GmbH & Co. KG, Auction 115, 25 Sept. 2006, lot141 (17.22 g).

As seen, there are enough elements to believe that the monograms on the Massaliote coins are numbers indicating the edition of various issues. But are they really numbers, is not the volume of coins excessive for the city of Massalia? The answer is: absolutely no. Let's not forget, in fact, that Massalia was the naval empire's capital that extended from Liguria to the Spanish coasts and that "les populations indigènes locales d'abord, puis les cités les plus éloignées utilisèrent le numéraire marseillais, puis l'imitèrent"⁴².

On the other hand if they were not numbers, we just do not understand what else might be these monograms, because when we read them as words, very often they become unpronounceable (ΔΔΑ, ΘΚΘ, ΡΠΔ, ΠΔΑ, ΚΠΑ, etc.).

The monograms on the Massaliote coins, therefore, no longer appear like mysterious sequences of letters but figures composed by numbers, functional codes which have a specific purpose: identify the minted coins nothing less than what happens nowadays for our banknotes.

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⁴² DEPEYROT G. (1999), p.5.

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Article received: 31/01/2017

Article accepted: 21/04/2017