

North and South. Two regional cultures of silver minting in the Levant 5th-1st century BC¹

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Introduction

The principal settlements of the Levantine coast form a dotted line of cities backed by a north-south mountain range.² These adopted the use of coinage from the fifth century BC, either through the arrival of foreign coins or by issuing their own from the middle of the fifth century. Despite common features, local identities remained strong and the study of these coinages after the time of Alexander the Great shows enduring contrasts between the northern and southern sections of the coast. Previous observations regarding standards, coin hoards, borders, and metal composition have defined micro-regions now confirmed by the new results provided by the RACOM project.

This article relies on the analyses of 116 silver coins performed by Matthew Ponting (Fig. 1). The coins were selected, identified and dated by Kevin Butcher. Frédérique Duyrat has provided the historical commentary on the results in dialogue with Matthew Ponting.

Mint	Royal/Civic	Coins Analysed
Antioch	Seleucids	47
Aradus	Alexanders	5
Aradus	Civic	24
Laodicea ad Mare	Civic	2
Ptolemais-Ake	Seleucids	7
Sidon	Seleucids	1
Sidon	Civic	1
Tripolis	Civic	1
Tyre	Seleucids	17
Tyre	Civic	11
Total		116

Fig. 1. Coins analysed by mint and category (royal/civic)

The sample distribution varies significantly across mints and between royal and civic coinages. Royal Antioch (47), Civic Aradus (24), Royal and Civic Tyre (17/11) form the bulk since the collections so far visited by Kevin Butcher and Matthew Ponting were well populated with these³, while all the other mints are rarer and underrepresented in this study.

¹ We are grateful to Julien Olivier (Bibliothèque nationale de France) and Maryse Blet-Lemarquand (CNRS IRAMAT UMR 7065) who kindly shared their data from the OPAL project (see Fig. 3).

² The populated and monetised area stretches along the coast: Duyrat 2011.

³ The coins investigated here come from the collections of Yale University Museum and Gallery, Princeton University collection and Münzkabinett Winterthur.

Therefore, the general conclusions drawn from this sample would benefit from confirmation on the basis of a more ample collection of coins, especially the civic issues of Laodicea ad Mare, Tripolis and Sidon. The sample's chronological dispersion is not intended to represent long-term trends but focuses on the Aradian Alexanders⁴ issued at the end of the fourth century and the Hellenistic issues from 138 to 47/6 BC, with a gap more than 150 years between these two groups.

The analyses by microwave-plasma atomic emission spectrometry (MP-AES) and scanning electron microscopy with energy dispersive analysis (SEM-EDS) measured a suite of fourteen chemical elements, but this paper is concerned with those that provide the most useful metallurgical data: silver, gold, copper and lead. The 116 silver coins analysed are sufficient to draw a general pattern of regional issues, characterised by a trend toward an increasingly alloyed content in every mint. But the evolution from nearly pure silver in the Alexanders, to an alloyed content, took different paths in the north and the south of the region.

1. A silver increasingly alloyed

The analysed sample of silver coins from the Levantine Coast spans the end of the fourth century BC (five tetradrachms with the types of Alexander the Great, Price 3332, c. 324/3-c. 320⁵) to 47/6 BC (a civic tetradrachm of Tyre). The graphs are based on the following coins, from left to right:

- 5 Alexanders of Aradus (c. 324/3-320 BC).
- 72 tetradrachms, didrachms and drachms of the Seleucids dated from c. 138-129 to 69-64 BC.
- 2 civic tetradrachms of Laodicea ad Mare dated to 57/6 and 51/0 BC.
- 24 civic tetradrachms of Aradus, from 118/7 to 59/8 BC.
- 1 civic tetradrachm of Sidon dated to 101/0 BC.
- 1 civic tetradrachm of Tripolis dated to 103/2 BC.
- 11 civic tetradrachms of Tyre, from 125/4 to 47/6 BC.

⁴ Five Aradian Alexanders from the RACOM project are discussed here, and compared with 70 from all mints from the OPAL project (Olivier et al, 2018).

⁵ Duyrat 2005, pp. 214-215. I do not follow the earlier dating in Price 1991, p. 415: c. 328-317 BC.

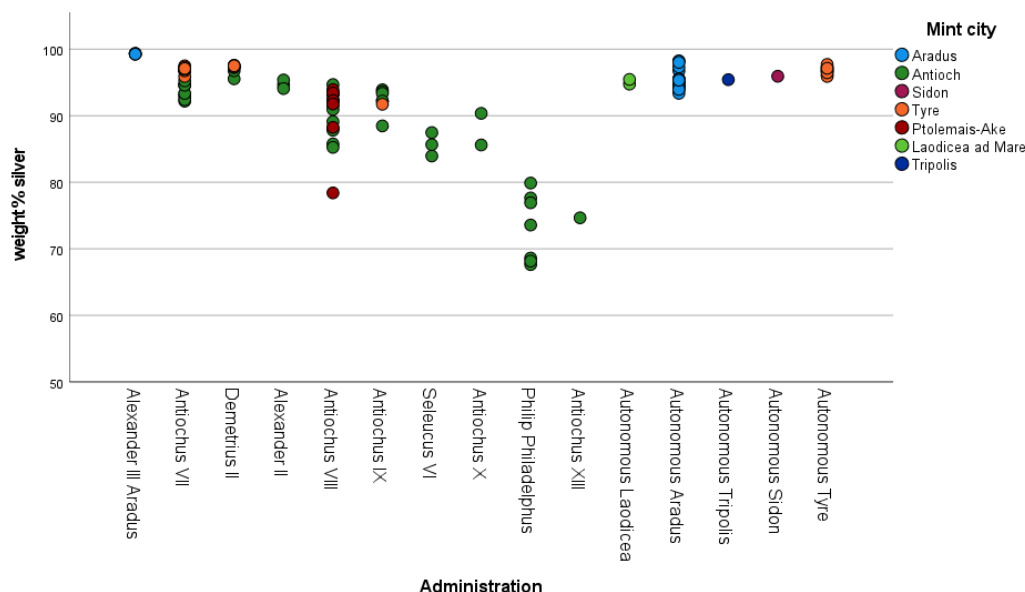


Fig. 2. Silver content (weight percentage) by mint and by period.

This overview of the silver content reveals an uneven long-term pattern. The five Aradian Alexanders (c. 324/3-320 BC) have an average of 99.31% (SD 0.05) of elemental silver which is completely normal for this type of coinage. They fall in the same range as the 70 Alexanders from Babylon, Damascus, Aradus, Byblus, Sidon, Amphipolis and Pella dated to the last third of the fourth century or the first quarter of third century analysed by LA-ICP-MS by the OPAL project (Fig. 3). The OPAL Alexanders have an average content of elemental silver of 98.73%, among which the nine Aradian Alexanders reach 98.91%.

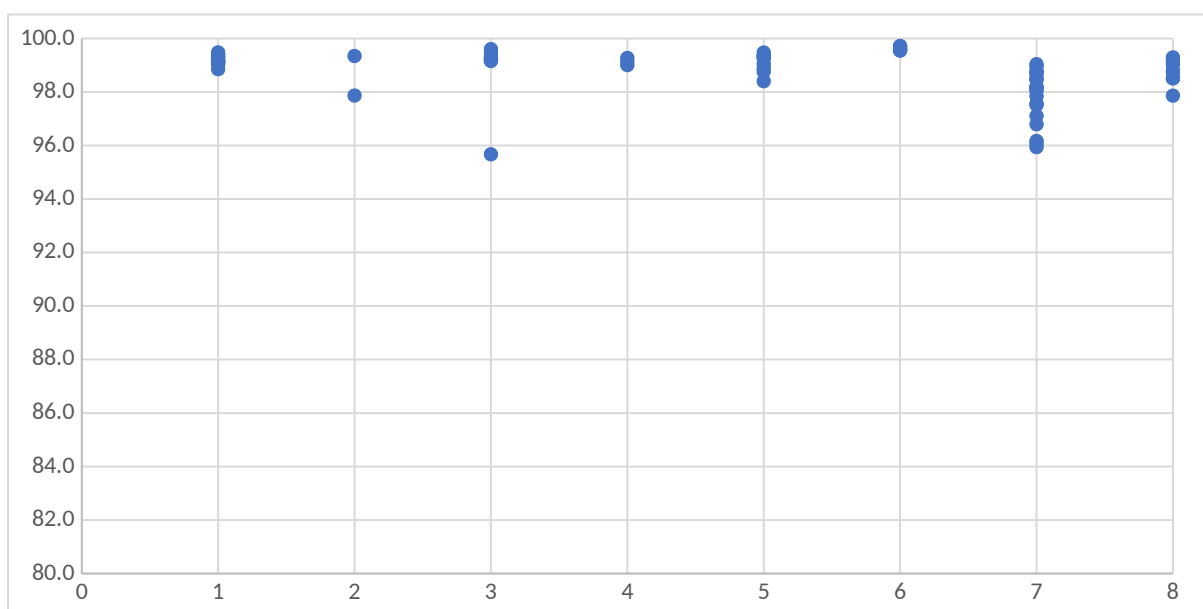


Fig. 3. Silver content (weight percentage) of tetradrachms with the types of Alexander the Great (lifetime and posthumous) analysed by LA-ICP-MS at the IRAMAT-Centre E. Babelon, Olivier et al. 2018. 1. Alexander, Babylon; 2. Philip III, Babylon; 3. Alexander, Aradus; 4. Alexander, Byblus; 5. Alexander, Sidon; 6. Alexander, Damascus; 7. Alexander, Amphipolis; 8. Alexander, Pella.

Issued between 138 and 55 BC, the Seleucid coinages analysed by the RACOM project show significant debasement (Fig. 2). This phenomenon increased under the last Seleucids, after Philip Philadelphus, whose lifetime coins do not contain more than 80% silver. In contrast with the debasement of the royal coinage, the civic tetradrachms issued at Aradus, Laodicea ad Mare, Sidon, Tripolis, and Tyre during the same period are characterized by a high silver content, always above 90%, with 69% of the sample (27 coins) containing more than 95% silver. These coins are moderately alloyed with lead or copper, dividing the region between north and south.

2. North: The Aradian area of influence

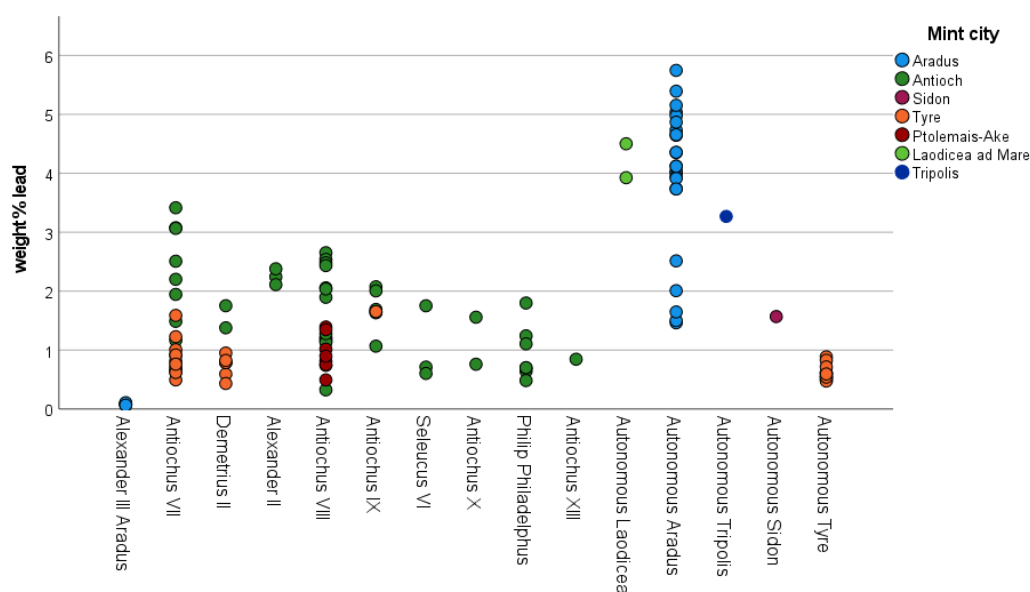


Fig. 4. Lead content (weight percentage) by mint and by period.

2.1. The Aradian civic tetradrachms

The twenty-four civic tetradrachms of Aradus analysed are dated from 118/7 to 59/8 BC. Their lead content varies from c. 1.46% to nearly 5.75% (average 3.28%), a characteristic found in none of the other coinages of the Levant analysed in the RACOM project, civic or royal. A small amount of lead is usually found in ancient silver, remaining from the refining process used in its manufacture, but this is rarely over 2% and so the higher amounts measured here must be the result of a different phenomenon: the deliberate addition of lead. This matches other original decisions made by the city for the management of its coinage.

Aradus is situated on a small island, 2,800 meters from the mainland. It is the only inhabitable island in northern Phoenicia and the only deep-water harbour between Tripolis and Laodicea ad Mare. During the Hellenistic period, the island-city controlled an extensive *peraia*, from Gabala in the north to the Akkar Valley, having absorbed Marathos in the south around 150-130 BC.⁶ The location of the island was very favourable, facing the Bargylos mountain, the northern part of the Lebanon chain. The mountain climbs to 1,000 meters at the latitude of Aradus and up to 1,500 meters in the northern part of the Bargylos, but roads cross it from

⁶ Seyrig 1964, pp. 38-39; Duyrat 2005, pp. 254-255.

west to east. The hinterland of Syria is also accessible from the south (via the Akkar valley) and the north (via the Orontes valley). Aradus was a major mint from the middle of the fifth century BC.⁷



Fig. 5. Civic tetradrachm of Aradus, 86/5 BC, 15.01g, BnF 1991.104 (this coin was not part of the sample analysed). <https://catalogue.bnf.fr/ark:/12148/cb41795919s>.

The tetradrachms analysed by the RACOM project are part of a long series (Fig. 5). The existing corpus gathers 1,218 items. The die-study identifies 105 obverse dies and 779 reverse dies from 138/7 BC to 44/3 BC.⁸ On the obverse, the bust of Tyche is turreted and veiled while on the reverse a standing Nike holds an *aphlaston* – a naval symbol – and a palm. The legend, ΑΡΑΔΙΩΝ, is completed by a date in Greek according to a local era, and control-marks in Phoenician and Greek. The whole reverse type is framed by a laurel wreath. This last feature is inspired by the wreath coinages of the cities of southern Asia Minor, common in Syria in the 150s-140s. Aradus adopted it just after they disappeared from Syrian coin hoards and decades after the end of its last civic tetradrachms with Alexander's types, in 166/5 BC.⁹ This marks an important change in the numismatic traditions of the mint: until 138 BC, the drachms and tetradrachms minted in Aradus always copied international coin types, either Alexanders or the popular drachms of Ephesus.¹⁰ By contrast, this series of civic tetradrachms is innovative in its use of local types and ethnic signature in full letters. Another innovative aspect is the rhythm of production, being low and regular, with one or two dies in use every year,¹¹ while the preceding silver coinages had variable output connected to periods of warfare, with long interruptions between issues.

The civic series with the Tyche/Nike types has another characteristic: its weight standard. From 138/7, the Aradians reduced the weight standard of their silver coinage for the second time in the Hellenistic period,¹² creating a separate monetary zone with a tetradrachm of c. 15.30g: heavier than the Ptolemaic standard in use in Syria and Phoenicia (c. 14.30g), south of the Eleutheros river, but lighter than the reduced Attic standard of the Seleucids (c. 16.80g).¹³ One of the explanations for the reduction of the Attic standard is the leading place of the fourth-century tetradrachms with the types of Alexander the Great ('Alexanders') in circulation. Issued in massive quantities between c. 332 and c. 280 BC, they were still in circulation a century later, but their number and their weight had decreased through wear. The Seleucids seem to have adapted the weight of their newly minted tetradrachms to match that of the worn Alexanders still much sought after by users. The Aradians decided instead on a local standard lighter than the Attic to create a separate monetary zone. Once the new standard had been adopted, it remained in use until the end of the Hellenistic period. No change is

⁷ Tables in Duyrat 2005 pp. 13, 37, 38.

⁸ Duyrat 2005, series VII, pp. 82-103.

⁹ Duyrat 2005, series I, pp. 38-43.

¹⁰ The only exception to that rule was a tiny series of beautifully designed tetradrachms with a head of Poseidon on the obverse and Zeus standing on the reverse (two specimens in public collections only). Duyrat 2005, series V, p. 70.

¹¹ Duyrat 2005, Fig. 12, p. 167.

¹² Duyrat 2005, pp. 258-260.

¹³ Mørkholm 1982, p. 144: around 16.80g between c. 172/1 and 105 BC.

discernible in the long series of civic tetradrachms, which were minted practically without interruption until 44/3 (Fig. 6).

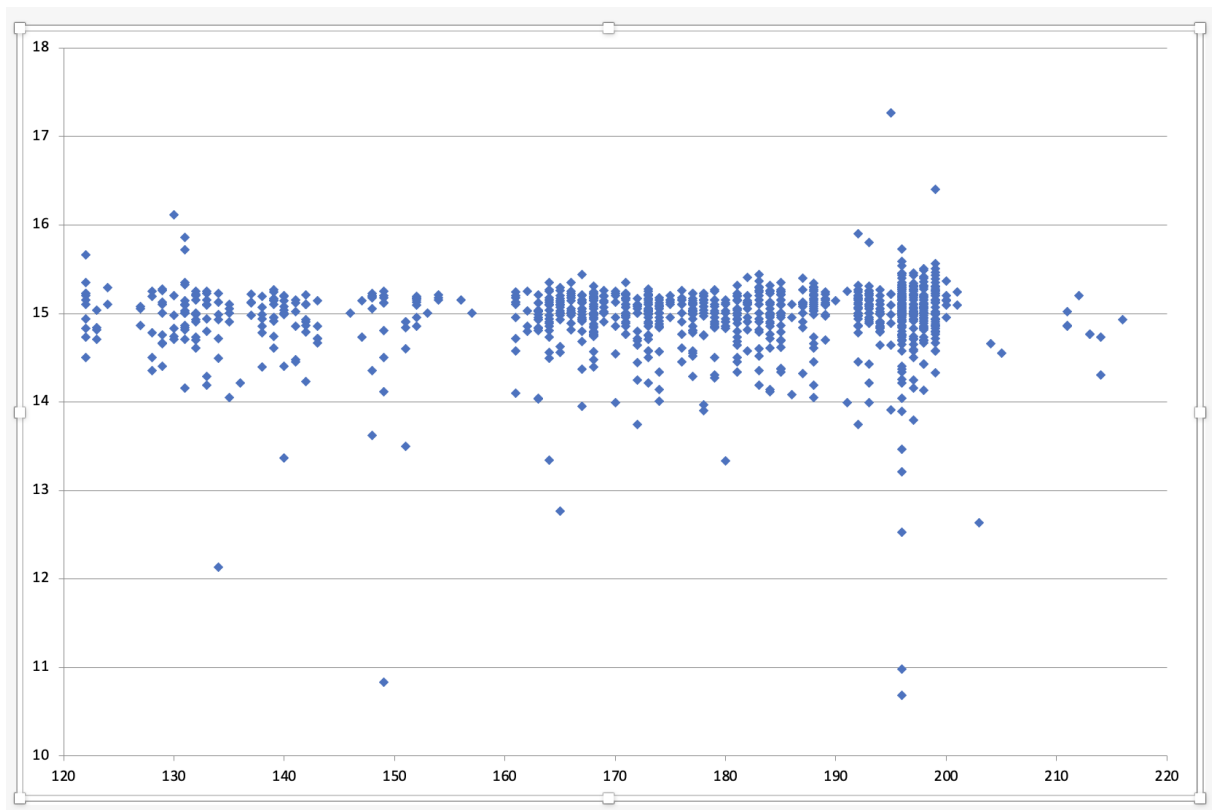


Fig. 6. Weights of the Aradian civic tetradrachms in Duyrat 2005 by years of the Aradian Era.

As a consequence of this modification of the city's standard, the circulation of its silver is limited to the area dominated by Aradus: its continental *peraea*. This represents a complete change with the previous silver coinages of the city: civic Alexanders and pseudo-Ephesian drachms on the Attic standard could circulate in any area using this common standard.

To summarise, the Tyche/Nike series represents a complete change in Aradian monetary history. The rhythm of production is characterised by regular issues of limited quantities, contrasting with previous issues associated with military events, sometimes in significant quantities, followed by complete interruptions. The series follows a local standard instead of the Attic or light Attic standard of the Seleucids. These tetradrachms have a limited regional circulation in contrast with previous Aradian silver coinages. The results of the RACOM project show that they are made of a silver rich in lead, between 2% – like other cities in the area – and 6% – unlike any other coinage of the area except royal Ptolemaic issues during the third century BC.

2.2. Laodicea ad Mare and Tripolis

Two other mints of the same region also add lead to the silver of their civic tetradrachms: Laodicea ad Mare (Fig. 7)¹⁴ and Tripolis (Fig. 8).¹⁵ One is located north of the Aradian *peraea*, the other south. This observation relies on a very small sample with only one coin from

¹⁴ Mørkholm 1983.

¹⁵ Callataÿ 1993 and 2002.

Tripolis and two from Laodicea (Fig. 4). However, this feature shared with the Aradian civic tetradrachms is confirmed by other characteristics.



Fig. 7. Tetradrachm of Laodicea ad Mare, 59/8 BC, BnF R1681, 14.53g (this coin was not part of the sample analysed). <https://catalogue.bnf.fr/ark:/12148/cb41744529q>



Fig. 8. Tetradrachm of Tripolis, BnF Armand Valton 528, 15,21g (this coin was not part of the sample analysed). <https://gallica.bnf.fr/ark:/12148/btv1b84809827>

Indeed, not only Laodicea ad Mare and Tripolis, but also Seleucia Pieria,¹⁶ used the Aradian weight standard for their own civic tetradrachms. In 1982, O. Mørkholm summarised the new situation at the end of the second century: “Aradus quite clearly used its own weight standard, and the importance of this Aradian standard, as we have to call it, is demonstrated by the fact that it was adopted by other neighbouring cities, when they began issuing civic silver.”¹⁷ In fact, Tripolis used the Aradian standard while Seleucia and Laodicea had a slightly lighter one called “reduced Aradian standard” by O. Mørkholm, but still distinct from the lower Ptolemaic standard (14.30g). Tripolis left the Ptolemaic standard zone once it started issuing its civic coinage during the first century BC, while Seleucia and Laodicea left the Seleucid standard zone, the three of them choosing a regional standard determined by Aradus at the latest from 138 BC. This situation is typical of the end of the Hellenistic period. The Seleucid kingdom dissolved in the dynastic struggles exacerbated by the Ptolemaic kings. Local particularisms became increasingly vigorous, and the most powerful cities created their own areas of influence. It seems that Aradus was in a prominent position during that period, having tamed its principal rival on the mainland, Marathus.

Thus, there appears to be a common policy adopted by Aradus, Laodicea ad Mare and Tripolis that involved the maintenance of a high silver standard giving an average in this sample of 95.98% elemental silver. These issues are characterised by a high level of added lead that is significantly greater than the ~1.5% that is expected in ancient silver as remaining from refining and therefore would appear to constitute a form of debasement using lead instead of copper; indeed, the copper contents of these issues is only 0.33% (0.18% SD), low enough to be a natural contaminant of the ores.

3. South: from Koile Syria to Syria and Phoenicia

¹⁶ Callataj 2002.

¹⁷ Mørkholm 1982, p. 145.

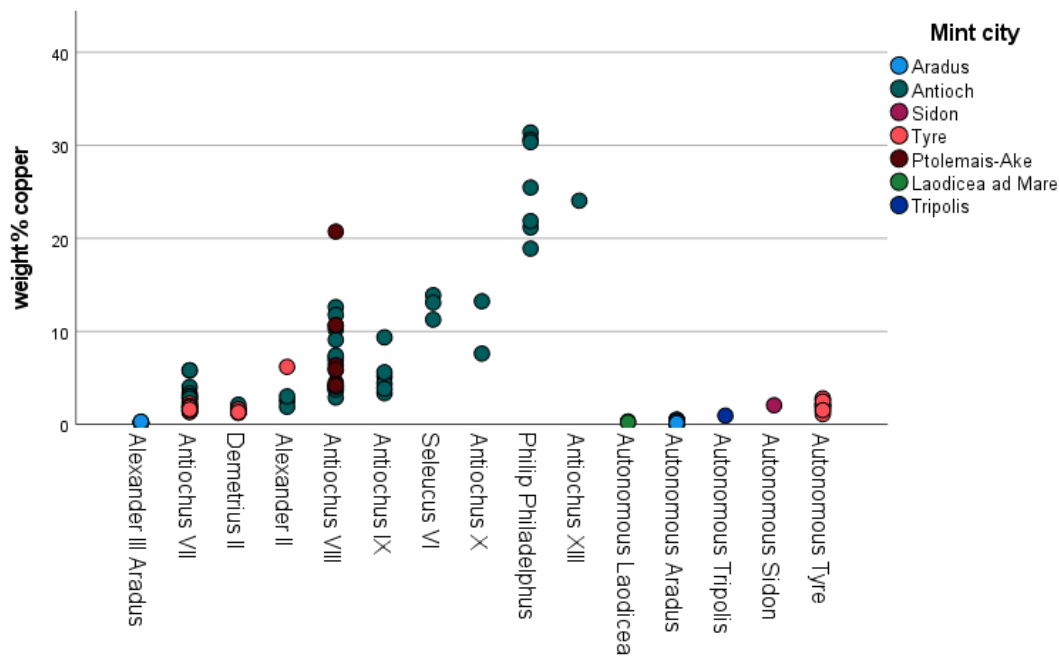


Fig. 9. Copper content (weight percentage) by mint and by period.

The civic mints south of Tripolis have a different alloy signature. At Sidon and Tyre, the lead content is low: 1.57% in the first mint (one coin only), and an average of 0.62% in the second (11 coins, SD 0.13%). But their silver is also alloyed with copper (Fig. 9): 2.08% at Sidon, and an average of 2.02% (SD 0.53%) at Tyre. By comparison, the highest proportion of copper in silver in the north is reached by Tripolis (0.96%), all the other specimens being below 0.54%.

These results match the broader historical monetary landscape of the South Levant. The region retained the Ptolemaic standard after the Ptolemies were defeated by the Seleucids in 198 BC. If Tripolis abandoned that standard for the Aradian from the first century BC, when it started minting civic tetradrachms, it is not the case for the more southern mints that aligned with Tyre's Ptolemaic standard.¹⁸

The Seleucid silver minted at Ptolemais-Ake, Sidon and Tyre also contains low quantities of lead (from 0.43 to 1.65%) and higher levels of copper. This metal represents 1.25 to 6.20% of the alloy of Sidon and Tyre royal issues. It ranges from 4.23 to 20.73% at Ptolemais-Ake. Substantial additions of copper – rising over time from 1.51 to 31.38% – make Seleucid Antioch an exception in the north.

A graph in Julien Olivier's doctoral thesis shows that the addition of copper is indeed a southern (and Cypriot) feature.¹⁹ His work is dedicated to the Ptolemaic gold and silver issues of the second century BC, with an emphasis on metal analyses performed by LA-ICP-MS. His Figure 332 puts together the lead and copper contents of Cypriot tetradrachms, Alexandrian tetradrachms and Ptolemaic Uncertain Era didrachms minted in 150/49-146/5 as well as Ptolemais tetradrachms with the types of Ptolemy VI issued in 149/8 and Alexander Balas tetradrachms minted in Syria and Phoenicia (i.e. South Levant) in 151/0-147/6. The two last

¹⁸ Callataÿ 2002, p. 85.

¹⁹ Olivier 2012, p. 762.

samples and the Cypriot issues share contents of copper situated between 1 and 2.5%, not found in the other coins analysed.²⁰ Interestingly, the third-century coinage of the Ptolemies in Syria and Phoenicia is characterized by the addition of lead, a specificity unique to that region among the Ptolemaic mints, and an uncharacteristic choice for the mints of Syria and Phoenicia.²¹ Indeed, in the second and first centuries BC, both Seleucid and civic issues at Sidon, Tyre and Ptolemais-Ake are alloyed with copper, a long-term feature of the coinage of this region.

4. A long-term pattern

In the last ten years, chemical analyses performed on much earlier silver found in different *Hacksilber*²² hoards in the South Levant have given a sense of what that ‘bullion money’ was originally made of, and therefore some idea of the pre-existing silver-alloy stock in the region. The jewellery in the Samaria (CH 8.587 = CH 9.413, c. 352 BC) and Nablus hoards (IGCH 1504 = CH 9.440, c. 331 BC) has been examined by non-destructive surface analysis using SEM-EDS.²³ The shiny surface of these objects purchased in commerce shows that they have been cleaned and polished, modifying or removing the natural surface enrichment. The results are inevitably very variable, ranging from 1.5 to 30.6% of copper in the jewellery of the Nablus hoard and from 1.5 to 38.6% in the jewellery of the Samaria hoard (including soldering and joints in both cases). The authors observe that “the average measured copper concentration in the jewelry (base metal) from the SH [Samaria Hoard] and the NH [Nablus Hoard] (excluding local corroded areas, electrum alloys, and joining areas) was 5.8 ± 3.0 wt% Cu and 5.0 ± 3.2 wt% Cu, respectively.”²⁴ Lead values are not reported with the exception of one object and we would assume that this indicates that the levels of lead in the metal are below the limits of detection of the techniques (approx. 1%). We do not know where this *Hacksilber* was produced, only where it was buried, but the rather high content of copper matches the silver quality of coins of the South Levant buried in the same hoards and issued by regional mints as demonstrated in the same publications. Two thirds of the Persian period coins analysed by the same authors and using the same technique have copper contents between 1.1 and 5.0%.²⁵

The partition between north and south mints of the late Hellenistic period seems to have deeper historical roots, at least on the Phoenician coast. Josette and Alain-Gérard Elayi have worked with Jean-Noël Barrandon and Maryse Blet-Lemarquand on the composition of Persian period silver coinages of Arwad/Aradus, Gebal/Byblus, Sidon and Sur/Tyre. Their results are in agreement with the picture provided by the RACOM Project for the late Hellenistic period: Arwad’s silver coins of the fifth and fourth century are generally of high-quality bullion with a small amount of lead (no more than 2%) and almost no copper (Fig. 10).²⁶ South of the Eleutheros, the three other mints, when their coinages are not almost pure silver, all include copper in varying proportions.

²⁰ The latest thoughts about the complex question of the Uncertain Era issues are to be found in Olivier 2018.

²¹ Olivier 2018, pp. 38-39.

²² Pieces of silver used as weighed money from the twelve to the fourth century BC, mostly in the East and in Egypt.

²³ Ashkenazi et al. 2017, Ashkenazi et al. 2018; Ashkenazi et al. 2019b, pp. 154-157.

²⁴ Ashkenazi et al. 2019b, p. 181.

²⁵ SEM-EDS chemical analysis results of Persian period silver coins (Cu wt%), fourth century BCE silver coins belonging to the Nablus and Samaria hoards and an additional Persian coin from the IMJ collection. Ashkenazi et al. 2019a, pp. 129-138, table 1.

²⁶ Elayi et al. 2012b, pp. 135-6, table 1.

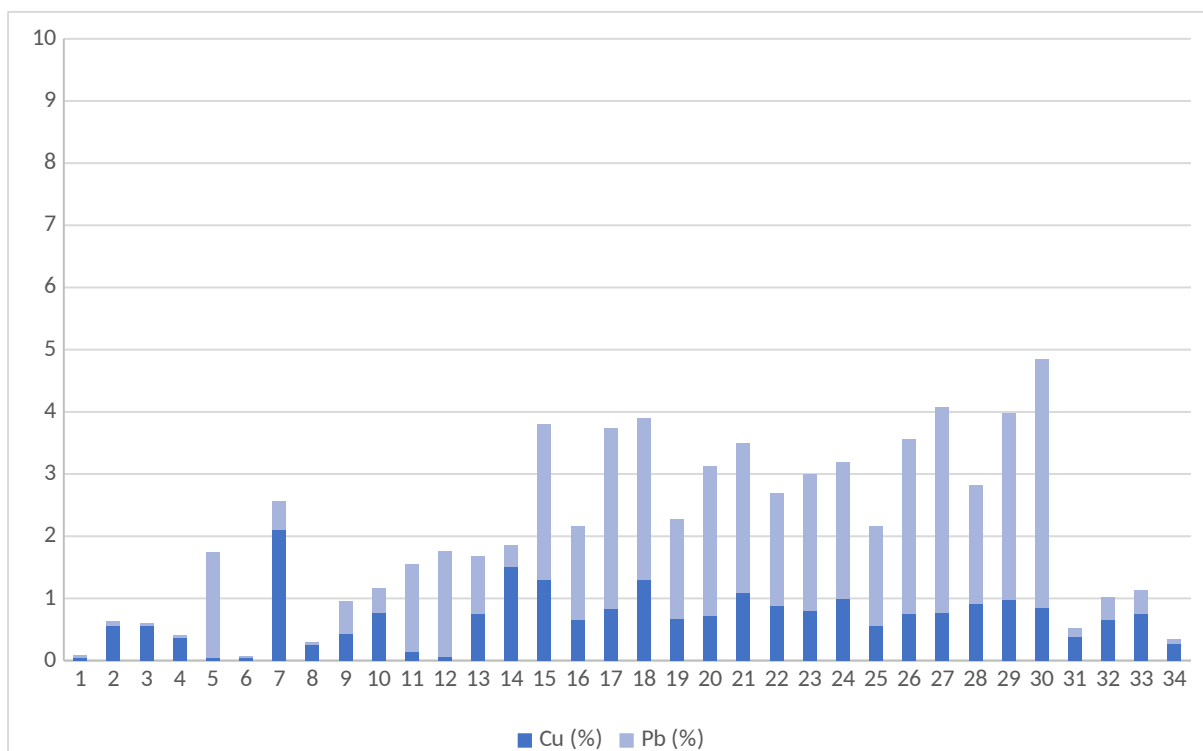


Fig. 10. Copper and lead (weight percentage) in the silver Persian period coinage or Arwad/Aradus according to Elayi et al. 2012b (34 coins analysed)

In Byblus, Series IV.1 (end of the fifth century) was the most alloyed with 1.4 to 5.7% copper (Fig. 11). Despite lead never being above 2%, except for 3 coins, Byblus's coinage has the highest lead content in southern Phoenicia.²⁷ In Sidon, copper additions range from 0.51 to 6.6% before the standard devaluation of c. 365 BC, while the coins contain almost no lead (Fig. 12). After 365 BC, they are almost pure silver (above 98.2% silver).²⁸ Tyre presents an extreme case: before a change of standard (c. 357), its silver coinage is sometimes heavily debased: copper can reach up to 56% in a fraction of a shekel and is otherwise often around 25-30%. But lead is never above 2% (Fig. 13).²⁹ The further south the mint is, the less lead and the more copper there is in its coinage. Lead contents of 2% or less are probably the amount remaining from the cupellation process. We may therefore be seeing two phenomena: an increase in the use of copper to alloy silver and the use of more rigorously refined silver leading to smaller amounts of lead.

²⁷ Elayi et al. 2012a, p. 6, Fig. 1.

²⁸ Elayi et al. 2007, p. 3, table 1.

²⁹ Elayi et al. 2008, p. 20, table I.

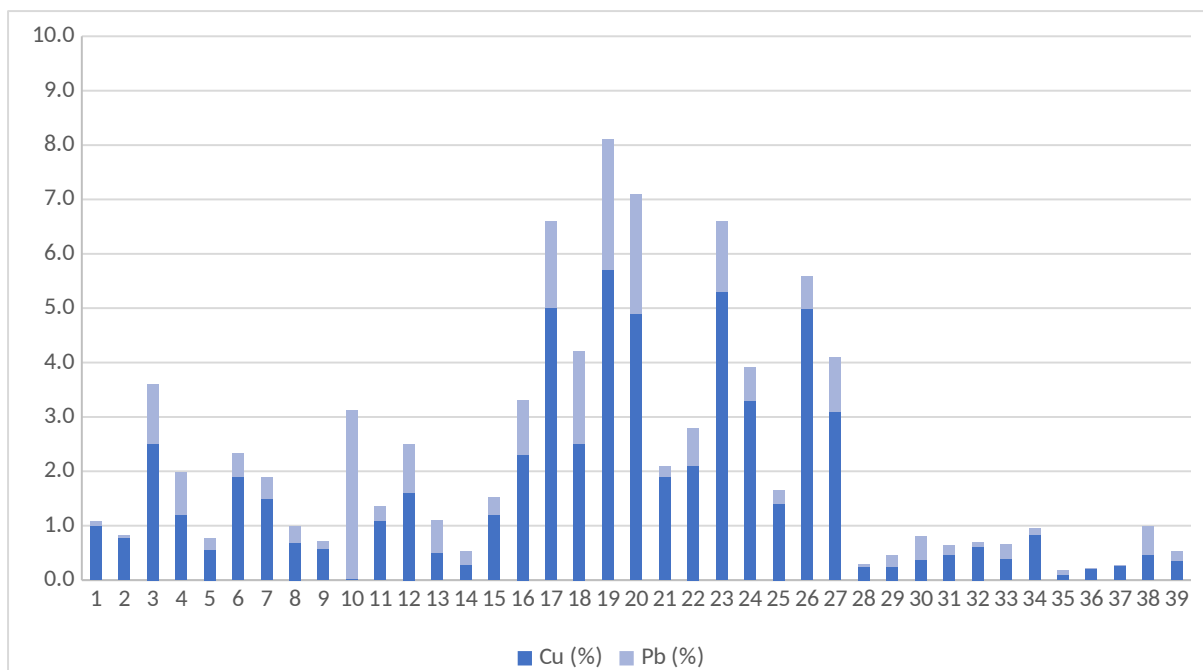


Fig. 11. Copper and lead (weight percentage) in the silver Persian period coinage or Gubal / Byblus according to Elayi et al. 2012a (39 coins analysed).

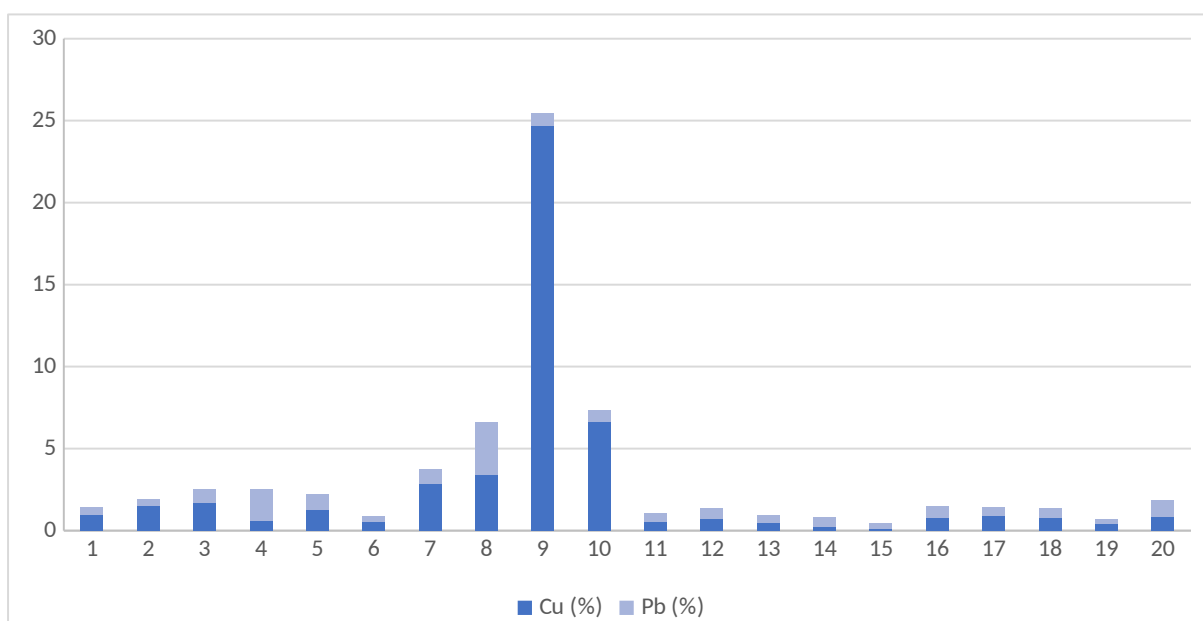


Fig. 12. Copper and lead (weight percentage) in the silver Persian period coinage or Sidon according to Elayi et al. 2007 (20 coins analysed)

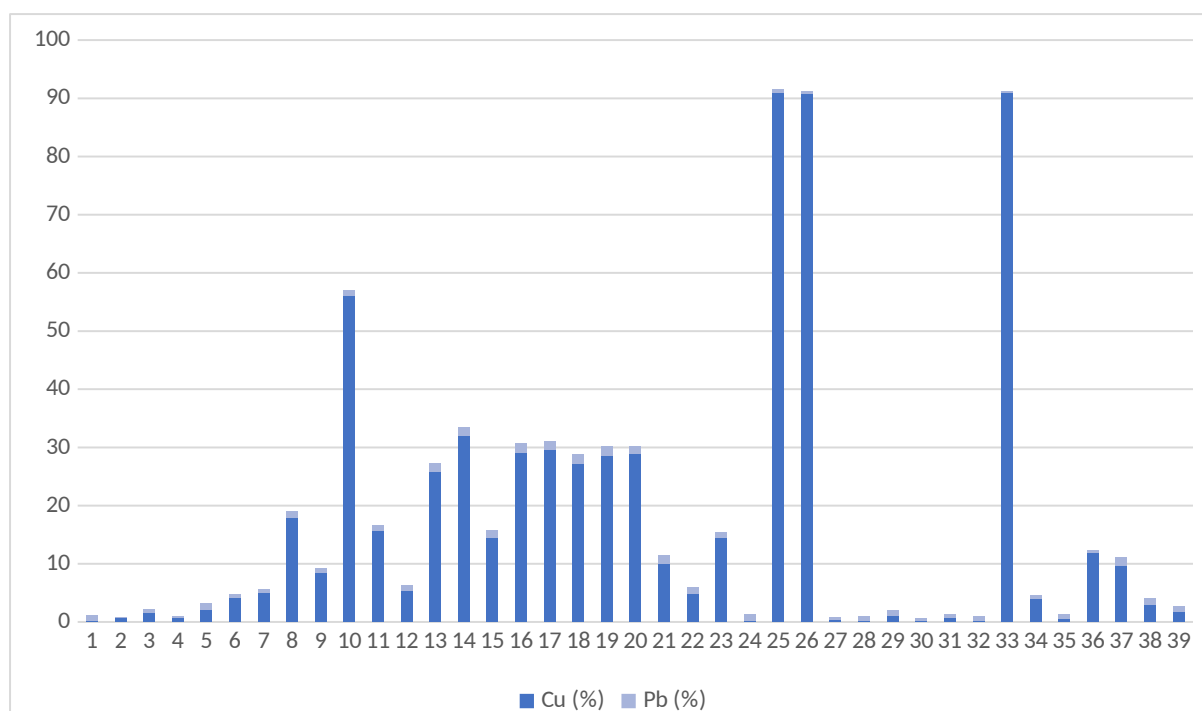


Fig. 13. Copper and lead (weight percentage) in the silver Persian period coinage or Sur / Tyre according to Elayi et al. 2008 (39 coins analysed)

Conclusion: a post-Alexanders world

After 198 BC and the conquest of Syria and Phoenicia by Antiochus III, the dispersion of silver and bronze coins in Levantine hoards and excavations shifted. Before 198 BC, Attic standard coins were found only north of the Eleutheros river, while Ptolemaic standard coins dominated the south. After 198, some mixed hoards appear around the border, despite the fact that the Seleucids maintained the Ptolemaic standard for silver in their new possessions. However, the Ptolemaic bronze coinage was quickly replaced by Seleucid issues.³⁰

From 150 BC, the region was marked by the fratricidal wars of the Seleucids, the rise of the Hasmonean dynasty and the attrition of the number of Alexander tetradrachms in circulation. At the beginning of this period, the reign of Alexander I Balas was pivotal.³¹ He began issuing many coins of Ptolemaic weight bearing his portrait and name, at a time when Ptolemaic currency was becoming locally scarce. North of the Eleutheros, where the Attic standard was used, non-Syrian tetradrachms of Attic weight were also rarer and began to be replaced by Seleucid issues produced in greater numbers. From this point on, the royal Seleucid coinage played a preeminent role that it never had before, at a time when the dynasty refocused on Syria after losing Mesopotamia to the Parthians. At a monetary level, this was a post-Alexanders world: tetradrachms with the types of Alexander issued *en masse* c. 333-280 BC were worn and less available, triggering the rise of Seleucid and, from the end of the second century, civic tetradrachms.

From the 130s, three monetary standards coexisted in the region. The light Attic standard was used in the royal mints of Syria (c. 16.80-16.00 g), the Ptolemaic standard was maintained in Syria and Phoenicia (c. 14.30 g) and the Aradian standard was adopted by the cities of

³⁰ Duyrat 2013.

³¹ Duyrat 2016, p. 388.

Northern Phoenicia (c. 15.30 g).³² The fragmentation of monetary standards was a broader phenomenon in the Hellenistic world from the second century. It is also observed in Asia Minor with the emergence of the cistophoric standard, or in Macedonia under the reign of Perseus. All of these kingdoms previously used the Attic standard for international coinages. The more fragmented coin circulation that resulted probably restricted the movement of currencies across borders. This occurred in a time when silver coinage was less plentiful compared to the third century.

North Phoenicia, from the 130s, chose an organised answer to the challenges of the time, with good control and regularity in production. It was led by Aradus with a new lightened epichoric standard soon adopted by neighbouring cities, new civic types adapted to tetradrachms meant to circulate mostly locally, a complex system of control-marks, a limited debasement and a steady, long-standing production. These new features established a closed regional monetary system, unlike the previously-used, open, Attic standard.

The RACOM project shows that late Hellenistic silver coins from the Levantine coast were often debased. This ranges from modest additions of copper or lead to series that were heavily debased by comparison with the purity of the fourth-century Alexanders (average silver >98%). The use of lead in the north and of copper in the south to debase silver is a long-term pattern, already identified in fourth-century civic coinages. The level of debasement was in general more pronounced in Royal coinages than in civic issues. Two major exceptions to these geographical features should be noted. Antioch under the Seleucids used copper, while the third-century Levantine issues of the Ptolemies were made of lead-debased silver.³³

Silver debasement was also a way of counteracting silver flows. In an open Attic system, coins tended to travel to regions where the price of silver was higher. The circulation of debased coins minted on lighter standards was limited. In a world where there were fewer tetradrachms of Alexander, there was generally less monetary silver available. Hence debasement, with copper or with lead, should be understood as one of the tools available to restrict the circulation of silver coins to their region of origin.

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³² Mørkholm 1982; Callataÿ 2002, p. 85.

³³ The Ptolemaic uncertain Era coins had various profiles: Olivier 2018.

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