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Martin Bentz and Michael Heinzelmann



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Trading in the multicultural *emporìa* of the Po Valley

Weighing systems and proto-currencies

Lorenzo Zamboni

This article offers an overview of the trade systems between the Alps and the Adriatic Sea during the 1st millennium BCE, focusing on proto-currencies and weighing systems. In this region during the Iron Age (9th to 3rd century BCE according to the local chronology), despite intensive periods of international trade towards the Mediterranean world and temperate Europe, coinage was never adopted before the Roman conquest (end 3rd – 2nd century BCE). I will try to explain the seeming contradiction of a ‘protohistoric-type’ commodification system maintained long after the introduction of money¹, looking at alternative economic models related to possible *longue durée* phenomena and superregional connections. The article thus briefly resumes some recent advancements in the studies of the beginning of European weighing systems, during the Bronze and Early Iron Age, followed by an insight on some case-studies of *emporìa* and trading-hubs of the Po valley and the Delta region, including the site of Spina, which have yielded a remarkable quantity and variety of archaeological evidence, including inscribed weighing stones, metal weights, as well as a variety of *aes*. Moreover, the aim of this paper is to set Iron Age Northern Italy into the wider ongoing debate of an updated European metrology², as a starting point for future research.

Terminology and methods

From a terminological and methodological point of view, it should be stated that, despite the introduction of writing during the 7th and 6th centuries BCE, for the purposes of a metrological research this region remained a pre-literate society until the Roman period, that is to say that we do not have contemporary, *emic*, written or epigraphical sources related to weighing and commodification³.

As Northern Italy during the 1st millennium BCE has to be considered a protohistoric region, in terms of economic culture, it should be useful to recall the theoretical framework already outlined for Bronze Age Europe. According to Christopher Pare⁴, it is possible to make a distinction between ‘commodity-money’, ‘utensil-money’, and ‘token-money’:

1) Commodity money refers to non-countable goods of any kind (raw materials, including metal, wool, and foodstuff like salt, grain, meat) measured with precision weighing scales and balances⁵. The commodification could take place in bulk transactions, where a large approximation of measuring could be supposed, or otherwise in small quantities, adopting relatively more precise weight scales.

2) Under the umbrella term of ‘utensil-money’, or *aes formatum*, lays a variety of artefact and utensils, mainly in bronze, iron, or in precious materials, including the bronze rings and ring-ingots of Bronze Age Europe⁶, the *oboloi* of ancient Greece⁷, as well as ornaments, and silver or gold vessels⁸ used for exchange. Although a debated issue, imported fine ware (e.g. Attic figured and black glazed) could be considered as a form of utensil-money as well.

¹ Gorini 2017.

² Ialongo 2018.

³ As in the ancient Near East: Powell 1996; Chambon 2011; Ialongo et al. 2018a.

⁴ Pare 2013.

⁵ Pare 2013, 508, 523.

⁶ Pare 2013, 512-514, 523; Primas 1997.

⁷ Pare 2013, 523; Teržan 2004; Barelo 2008, 157-158.

⁸ See Vickers 1992; Gill – Vickers 1994.

3) For the period and the region addressed, the conventional term ‘*token-money*’, according to Pare, could indicate rough lumps, fragmented scrap and raw metal employed as proto-currency⁹. A particular type of fragmented and signed metal ingot is that of *aes signatum*, which is known in Northern Italy from the 5th century BCE (see below). However, it remains unclear whether during protohistoric periods the *aes rude* worked only as weighted means (*per aes et libram*) thanks to precise and likely compatible weighing standards, or perhaps with some assigned value, like historical money.

The three systems are, of course, not exclusive neither consequential – in terms of dependency and evolution, being instead more often contemporary and complementary.

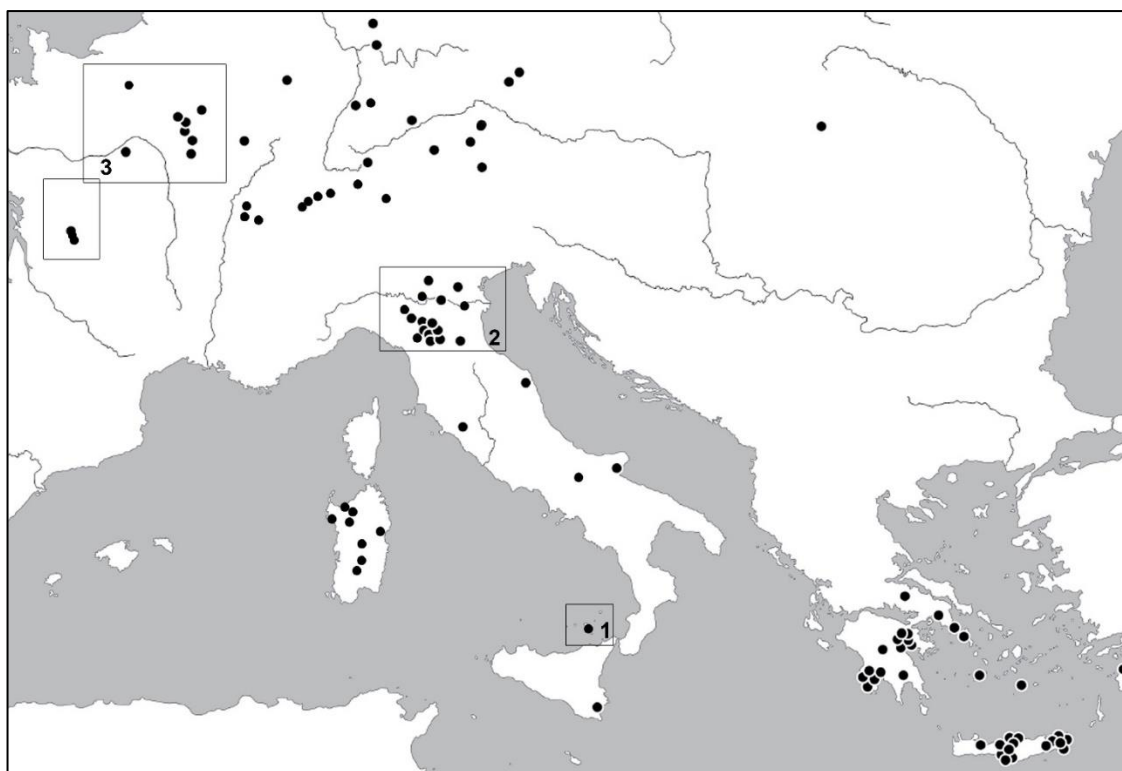


Fig. 1: Weighing equipment in Bronze Age Europe (after Pare 2013, modified after data in Ialongo 2018). Selected areas: 1 Aeolian Islands. 2 Terramare culture. 3 Late Bronze Age Western Europe with antler and bone balance beams.

Moreover, regarding the metrological research in pre-literate cultures, it should be highlighted the importance of a critical approach that takes into account the concepts of ‘indeterminacy’ and ‘approximation’. Any given ‘unit’ is, in fact, an artificial construct closely related to fixed (and often written down by some authority) rules, but approximation and deviation from the norm are everyday practices that lead to statistical dispersion¹⁰. As recently suggested by Nicola Ialongo and colleagues¹¹, in previous metrological studies there was an “excessive focus on exactitude” and a misleading “reliance on supposedly exact units”¹². It has to be considered that a normal statistical dispersion falls within a range of ± 5 and 10%, with possible overlaps between two or more different unit measuring standards. More recent statistical approach, which involves mainly Frequency Distribution Analysis and Kendall’s Cosine Quantogram Analysis, points instead to concepts such as ‘quantum’ (the minimal amount of any physical entity employed in an interaction) and clusters, or peaks of range in logarithmic scales¹³.

⁹ Pare 2013, 524.

¹⁰ Ialongo 2018, 4.

¹¹ Ialongo et al 2018a; Ialongo et al. 2018b.

¹² Ialongo 2018, 4-5.

¹³ See Ialongo 2018 and Ialongo et al. 2018a-b for further discussion and detailed bibliography.

Unfortunately, it must be acknowledged that, regarding Iron Age Italy, a serious lack of published and analytical data affects the possibility to apply an adequate statistics-based metrological analysis. Precise weight measurements are to date available only for a small number of weights and *aes rude*, described below, compared to a larger part of unpublished data, or without measured weights reported.

Also considering this, the present paper is merely an introductory chapter of the state-of-the-art, based on already published data. The final goal is, therefore, to urge and promote further research for a reliable description and comprehension of the 1st millennium BCE exchange and trading systems.

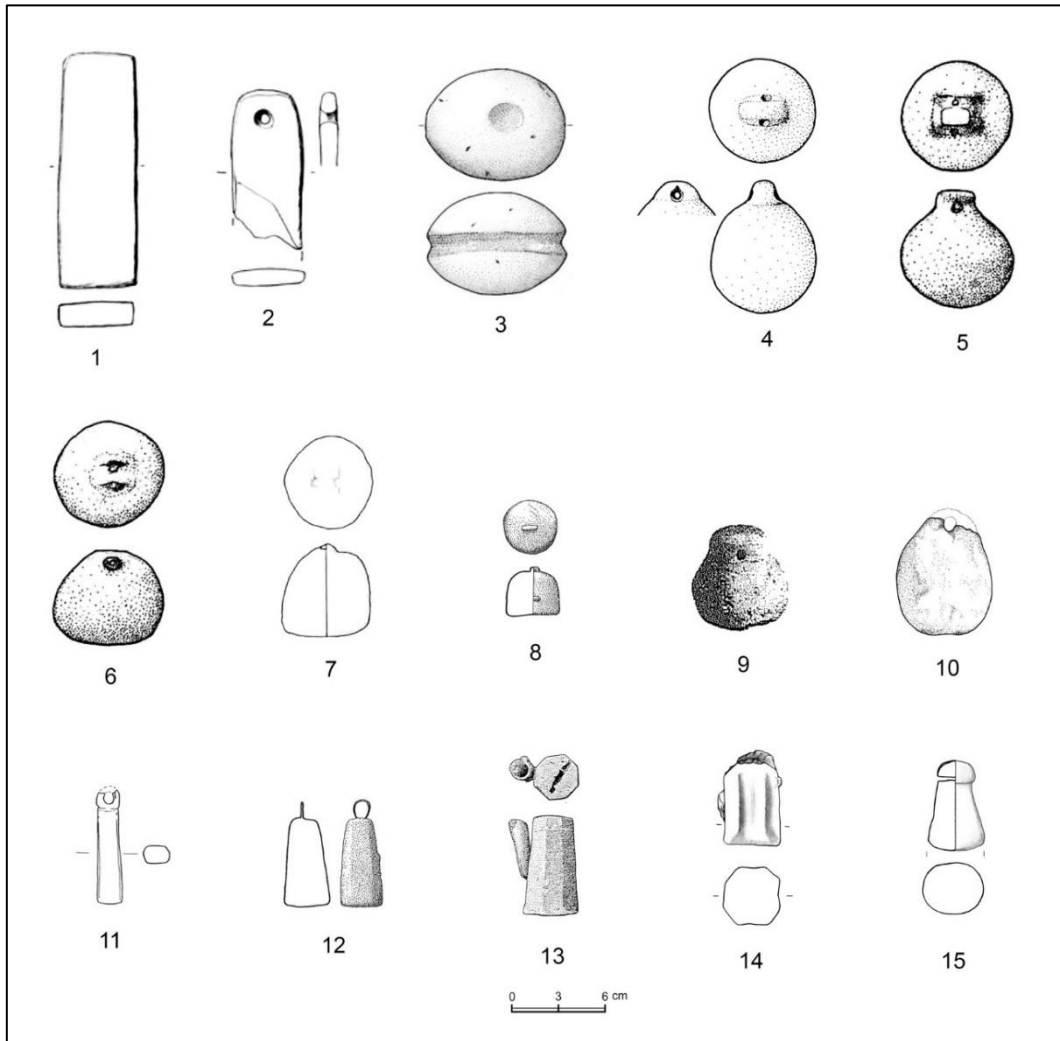


Fig. 2: 1-7 Stone weights of Bronze and Late Bronze Age Europe: 1-2 Aeolian Islands (after Ialongo 2018); 3 Hauterive-Champréveyres (after Ialongo 2018); 4 Gaggio (after Balista et al. 2008); 5 San Giuliano (after Rahmstorf – Pare 2010); 6 Bismantova (after Rahmstorf – Pare 2010); 7 Sorgenti della Nova (after Rahmstorf – Pare 2010). 8-15 Stone and metal weights of Iron Age Italy: 8 Satricum (after Nijboer 1998); 9 Roma *Comitium* (after Nijboer 2006); 10 Spina (after Zamboni 2016); 11 Monteriggioni-Campassini (after Monteriggioni 2004); 12 Satricum (after Nijboer 1998); 13 Giglio shipwreck (after Nijboer 1998); 14-15 Spina (after Zamboni 2016).

Background – The beginning and spread of weighing in Western Europe

Recent excavations and studies have provided an updated archaeological framework for an early beginning of weighing and commodification systems in the Western Mediterranean and central Europe, at least during the first half of the 2nd millennium BCE (Fig. 1). The theoretical framework is the rising of a Bronze Age ‘global’ network connecting Near East, the Mediterranean and temperate Europe, engaging long-term

trade and movements of people and goods, based on a rational and shared system of exchange¹⁴. The main evidence for this international trade is represented by a large amount of weights, of different shapes and materials, supported by the finding of several bone, antler and bronze balance beams.

The earliest presence of a rational weighing system in the Western Mediterranean is so far attested in the Aeolian Islands, where twenty rectangular and lenticular stone weights, some with holes (Fig. 2.1-2), were recovered from the Capo Graziano settlement during '50 to '80 excavations by L. Bernabò Brea. The weights, according to Nicola Ialongo¹⁵, are dated mainly to the Capo Graziano phase (c. 2300 – 1500 BCE), being less frequently attested until the Ausonio phase II (c. 1200 – 950 BCE), and show a logical sequence of multiples of a common system, with the highest quantum at 19.54 g compatible with the Aegean unit of 58-65 g.

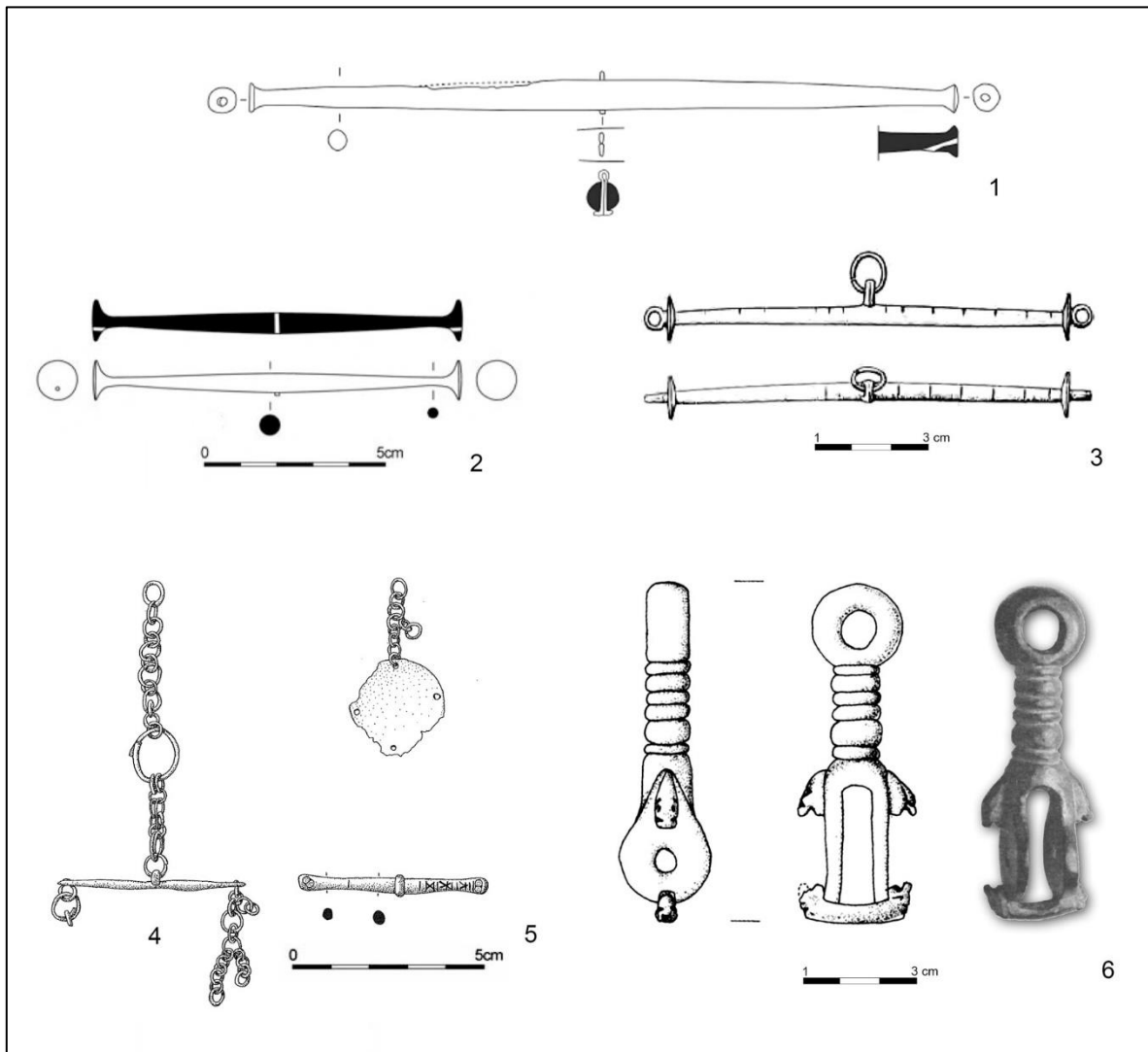


Fig. 3: 1-2 Late Bronze Age antler/bone balance beams: 1 Marolles-sur-Seine, La Croix del la Mission, grave 13 (after Pare 2013); 2 Migennes, Le Petit Moulin, grave 298 (after Roscio et al. 2011). 3-6 Iron Age bronze balance elements: 3 Eberdingen-Hochdorf (after Rahmstorf – Pare 2010); 4-5 Satricum (after Nijboer 1994); 6 Forcello (after de Marinis – Rapi 2007).

¹⁴ Peroni 2001; Renfrew 2008; Rahmstorf 2010; Pare 2013; Vankilde 2016; Kristiansen et al 2018; Ialongo 2018.

¹⁵ Ialongo 2018.

In the Italian peninsula, the Po valley has yielded early archaeological evidence of weighing system thanks to the identification, about twenty years ago by Andrea Cardarelli and colleagues¹⁶, of several stone weights from the settlements of the so-called *Terramare* culture in the middle Po Valley, between 15th to 13rd cent. BCE. These weights are mainly of spheroid shape with a suspending hole (appiccagnolo, Fig. 2.3), and also of lenticular shape (Fig. 2.4), with a suggested unit standard around 6.1 grams (again comparable with the Aegean unit).

In Central Europe, Christopher Pare¹⁷ has suggested the compresence of different weighing systems during the 2nd millennium BCE, from the ‘utensil-money’, like the copper and bronze rings and ring-ingots, to metal and stone weights of various shape, to the *aes rude*. Among the balance weights, the rectangular ones, similar to those seen from the Aeolian Islands, are well attested during the Late Bronze Age. In the same period, stone or lead spheroid weights seem to show some dependency from the previous *Terramare* models, with statistical clusters attested around 48.8 and 104 g.

A suggestive evidence for an early measuring system is also in the numerous equal-arm balance beams discovered in central Europe, mainly as grave goods of the Late Bronze Age connected with metallurgy, like the spectacular tomb 298 of Migennes (Yonne, north-eastern France), where an entire set for weighing equipment was buried inside a wooden box, including two antler balance beams (Fig. 3.2), rectangular stone weights and unfinished bronze and gold objects¹⁸.

During the Final Bronze Age period (12th – mid-9th cent. BCE), despite a general lack of data from the regions south of the Alps, the previous systems based on precise stone weights, both with the spheroid shape with suspending hole and the lenticular one, seems to continue, as suggested by findings from the settlements of Frattesina, Bismantova, San Giuliano (Imola), and Sorgenti della Nova¹⁹ (Fig. 2.7), in parallel with the framework outlined for central Europe²⁰. Moreover, the possible peak of 370 g suggested for the lenticular weights from Frattesina²¹ is noticeably interesting, because is near to the ‘italic libbra’ of 380 g identified for the later etruscan period (see below).

Balancing the Iron Age

For the following period of the early Iron Age (mid-9th – 8th cent. BCE) a serious lack of data is probably affected by the scarce number of sites exhaustively published. Only between the late 8th and the 7th century BCE onwards, an increasing evidence of different weighing units comes from the Italian Peninsula. For example, an early 7th cent. BCE finding from the island of *Pithekoussai*, a lead and bronze disc of 8,79 g interpreted as a small weight, has already been emphasized for its possible connection with the Euboic-attic stater²².

In Latium, from the settlement and votive deposits of Satricum the presence of two lead weights of 267 and 340 g (Fig. 2.8, 2.12), along with two balance beams and a large amount of *aes rude*, has been highlighted by A. Nijboer²³. In northern Etruria, the late-8th and 7th century settlement of Monteriggioni-Campassini²⁴ yielded a lead weight of 109.65 g, of an elongated rectangular shape with a suspending hole (Fig. 2.11).

Metal hoards are also to be noticed, such as Ardea or the huge deposit of Bologna S. Francesco (late 8th – early 7th cent. BCE), for which Renato Peroni has pointed out the presence of at least two comparable

¹⁶ Cardarelli et al. 1997; Cardarelli et al. 2001; Cardarelli et al. 2004; Peroni 2004.

¹⁷ Pare 1999; Id. 2013.

¹⁸ Roscio et al. 2011.

¹⁹ Cardarelli et al. 2001; Nijboer 2006; Pare 2013.

²⁰ Rahmstorf – Pare 2007, 273-275, Abb. 5.

²¹ Bellintani, in Cardarelli et al 2001, 45, fig. 17.

²² Nijboer 1998, 67 (with previous references).

²³ Nijboer 1994; Id. 1998.

²⁴ Monteriggioni 2004, 67-68, 80-82.

units of 106.4 and of 114.7²⁵. For the 6th and 5th cent. BCE, a metal weight of 352 g is known from the Giglio shipwreck (Fig. 2.13), while in Rome, from the old excavation in the *Comitium*, it is to be mentioned the presence of some stone and lead weights with suspending hole (Fig. 2.9), with reported measures of 321 and 327 g²⁶.

Bronze balance beams of the same period are also attested, including the mentioned examples from Satricum, and also from Chiusi and Forcello (Mantua)²⁷ (Fig. 3.6). North of the Alps, amongst other examples, a cast balance beam with precision scale was discovered in the settlement of Hochdorf²⁸ (Fig. 3.3), a site that shows wider relationships with Northern and Central Italy²⁹.

Regarding the etruscan world, between the 6th century and the Hellenistic period, recent studies by Adriano Maggiani³⁰ provided a significant corpus of evidence, including metal and bronze weights. Maggiani has proposed a complex system of eleven weighing standards, all possible fractions of the unit 5.73 (close to the so-called micro-asiatic unit of 5.76 g). The two most relevant etruscan standards are the so-called 'light libra' of 287 g, and the 'heavy libra' of 358 g. It is possible to recognize the presence of some of these standards also north of the Apennines, for example in the sites of Marzabotto and Spina.

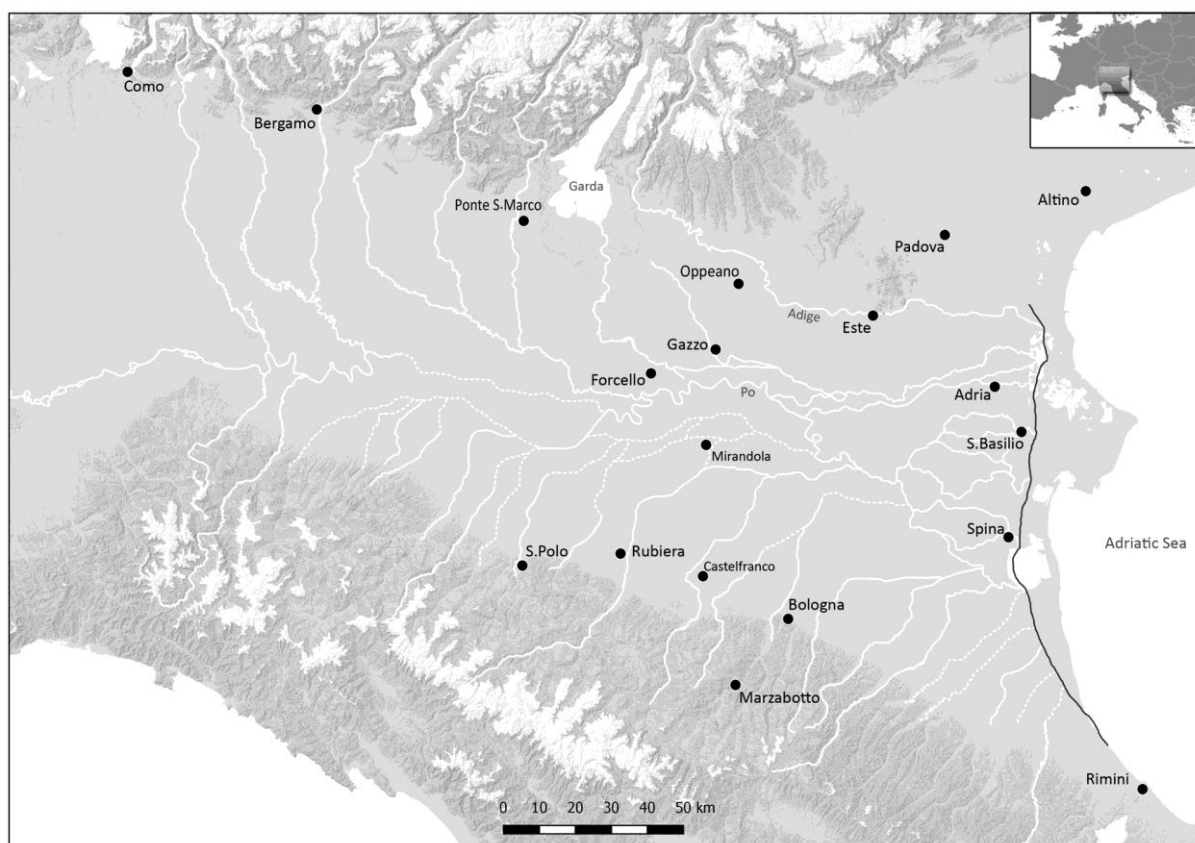


Fig. 4: Northern Italy between the 6th and 5th cent. BCE, main sites and *emporia* (author).

²⁵ Peroni 2001. The two supposed units could have the same value, considering an average error of $\pm 5\%$ (N. Ialongo, pers. communication). Note also the presence in the S. Francesco hoard of an *aes rude*, with the inscription *aie*, of 161,15 g (Colonna 1986).

²⁶ Nijboer 2006, 110-115; Rahmstorf – Pare 2010.

²⁷ de Marinis – Rapi 2007.

²⁸ Rahmstorf – Pare 2010.

²⁹ Verger 2006.

³⁰ Maggiani 2001; Id. 2002; Id. 2009; Id. 2012. Further evidence from Etruria settlements are in Cappuccini 2014, 142-143; and Pulcinelli 2017.

Spina and the *emporìa* of the Po Valley (6th – 4th cent. BCE)

During the second half of the 6th century BCE the economic expansion of the Greeks in the Western Mediterranean drastically changed the cultural, societal and economic picture. New urban and trading centres were established at the crossroads of multidirectional trade routes, either on the northern Adriatic coast (Adria, Spina), along the course of the Po river (Mirandola, Forcello di Bagnolo S. Vito), and also along the main Apennine valleys (S. Polo d'Enza, Marzabotto) (Fig. 4).

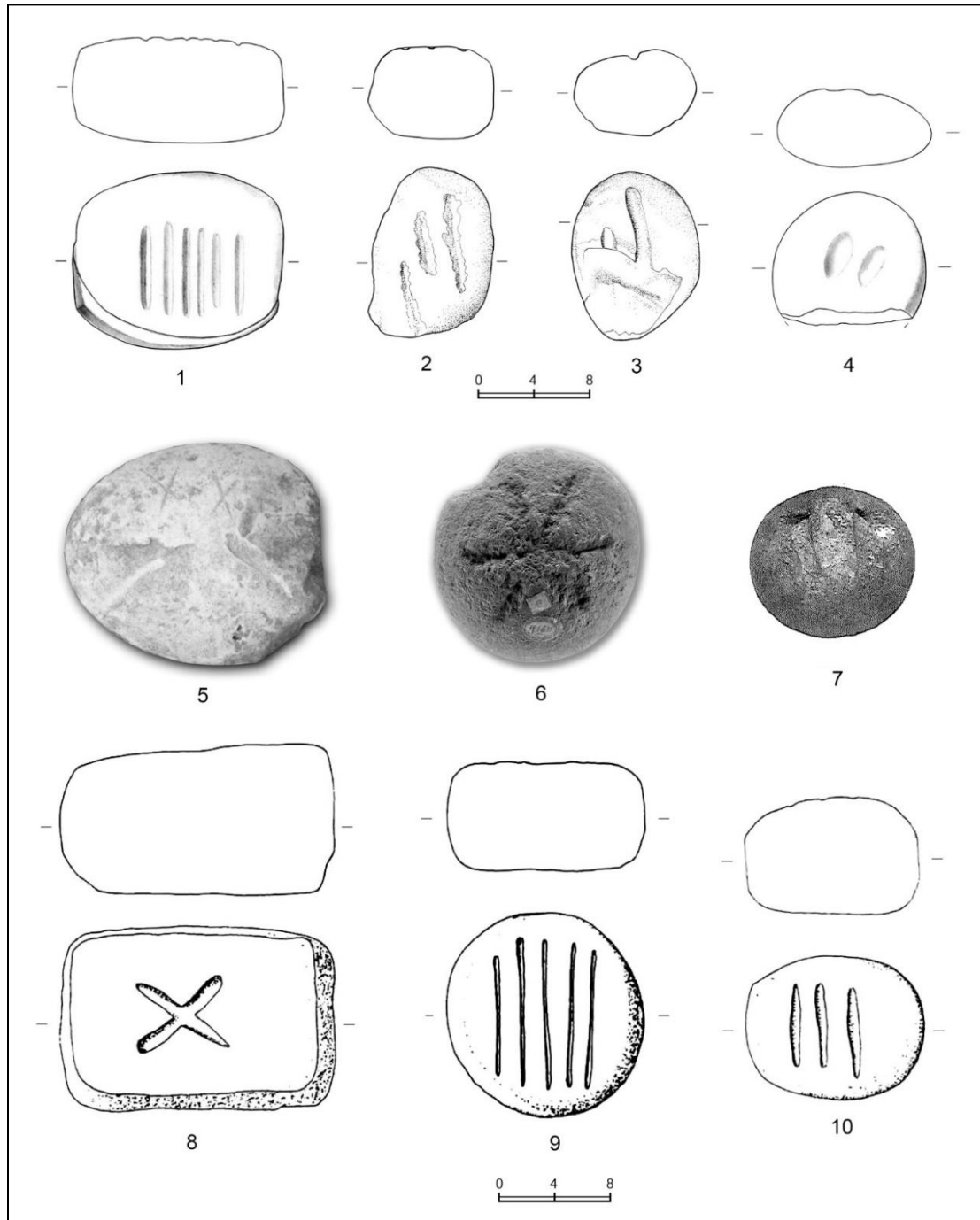


Fig. 5: Stone weights with inscriptions: 1-5 Spina (after Zamboni 2016, Cornelio – Giannini – Malnati 2013); 6 Montecchio, Reggio Emilia (Museum of Reggio Emilia); 7-10 Marzabotto (after Cattani 1995) (5-7 out of scale).

The case-study of Spina, in particular, shows a complex picture of a multicultural society, with a strong interaction between Greeks and Etruscans, which is archaeologically highly visible based on the impressive amount of greek imports and local production. Between its foundation, during the second half of the 6th, and at least the mid-4th cent. BCE, Spina was an international trading hub, one of the main commercial partners of Athens in the Western Mediterranean, and a gateway to temperate Europe³¹.

Recent excavations and new studies on the settlement area³² have provided a large amount of data regarding, for example, the urban regular planning, the system of water management – based on a grid of larger and minor canals, the development of building architecture, everyday life and economic activities. Regarding the latter, it is confirmed that coinage was never adopted in Spina: After more than eight decades of excavations, both in the settlement area and the cemetery, with more than 4.000 graves, just one coin was discovered from a surface layer, a drachma of the 3rd cent. BCE³³.

The study of the findings from the '70s excavation in the Spina settlement has instead highlighted the presence of several metal and stone weights, along with two different types of *aes rude*.

Two lead weights were discovered from settlement layers of the late 6th and 5th cent. BCE³⁴, one of octagonal shape, of 328 g, the other truncated-pyramidal (Fig. 2.14-15), with a weight of 505 g. In addition, a stone weight of spheroid shape with a suspending hole, of 255 g³⁵.

More numerous, at least eight, in Spina are pebble stones with numeral inscriptions on one face, interpreted as standard weights (Fig. 5.1-5). The different numeral signs could indicate at least three overlapping weighing units, of 353, 366 and 380 g³⁶. This type of stone weight is very common in the Po valley (Fig. 5), and especially inside the main trading sites of the region between the mid-6th to the 4th cent. BCE. According to Maurizio Cattani³⁷, the specimens from Marzabotto show a peak around 360 and 380 g (the so-called 'italic libbra'), which matches with the unit VIII according to Maggiani³⁸.

Aes rude and signatum

As seen before, the presence of fragmented scrap and raw metal is attested in Europe and in Italy since the 2nd millennium. Fragments of small ingots, more or less regular, or bronze lumps of various shapes and dimensions, are increasingly present during the Iron Age in Northern Italy. From the 7th century BCE onwards, high amounts of *aes rude* are found in large 'proto-urban' and urban sites, both in settlement areas and within grave goods, where they are interpreted as 'Charon's *oboloi*'³⁹. Before the 3rd century BCE, *aes rude* is the only form of proto-currency known in Northern Italy. The '70 excavations in Spina brought to light 34 *aes rude* from households and canals of the 5th and 4th cent. BCE⁴⁰ (Fig. 6.1-9). At least 109 *aes rude* come also from burials, only considering the cemetery sector of Valle Trebbia⁴¹.

³¹ Berti – Harari 2004.

³² Zamboni 2016; Id. 2017; Reusser 2017.

³³ A drachma of 'celtic-padan' production, near the 'Arslan VII' type (Arslan 2006). Another possible, albeit indirect, and vague, evidence for the presence of coinage in Spina could be provided by two different stamps made, before firing, on the bottom of two bowls in the local fine ware (so-called 'etrusco-padana' ware): both the stamps are likely to be made with two coins, one with an hippocampus, the other with a chimera (see Zamboni 2016, 212, tav. 100, no. 1252-1253)

³⁴ Zamboni 2016, 226-231.

³⁵ Another spheroid stone with appiccagnolo comes from Forcello (de Marinis – Rapi 2007, 249, fig. 49).

³⁶ Zamboni 2016, 228-229; for the stone with two inscribed crosses (Fig. 5.5) from the 2009 excavation, the weight measurement is not available.

³⁷ Cattani 1995; Id. 2001.

³⁸ Maggiani 2009.

³⁹ Gorini 2017. Normally only one piece per grave is attested.

⁴⁰ Zamboni 2016, 224-226.

⁴¹ Gorini 2017.

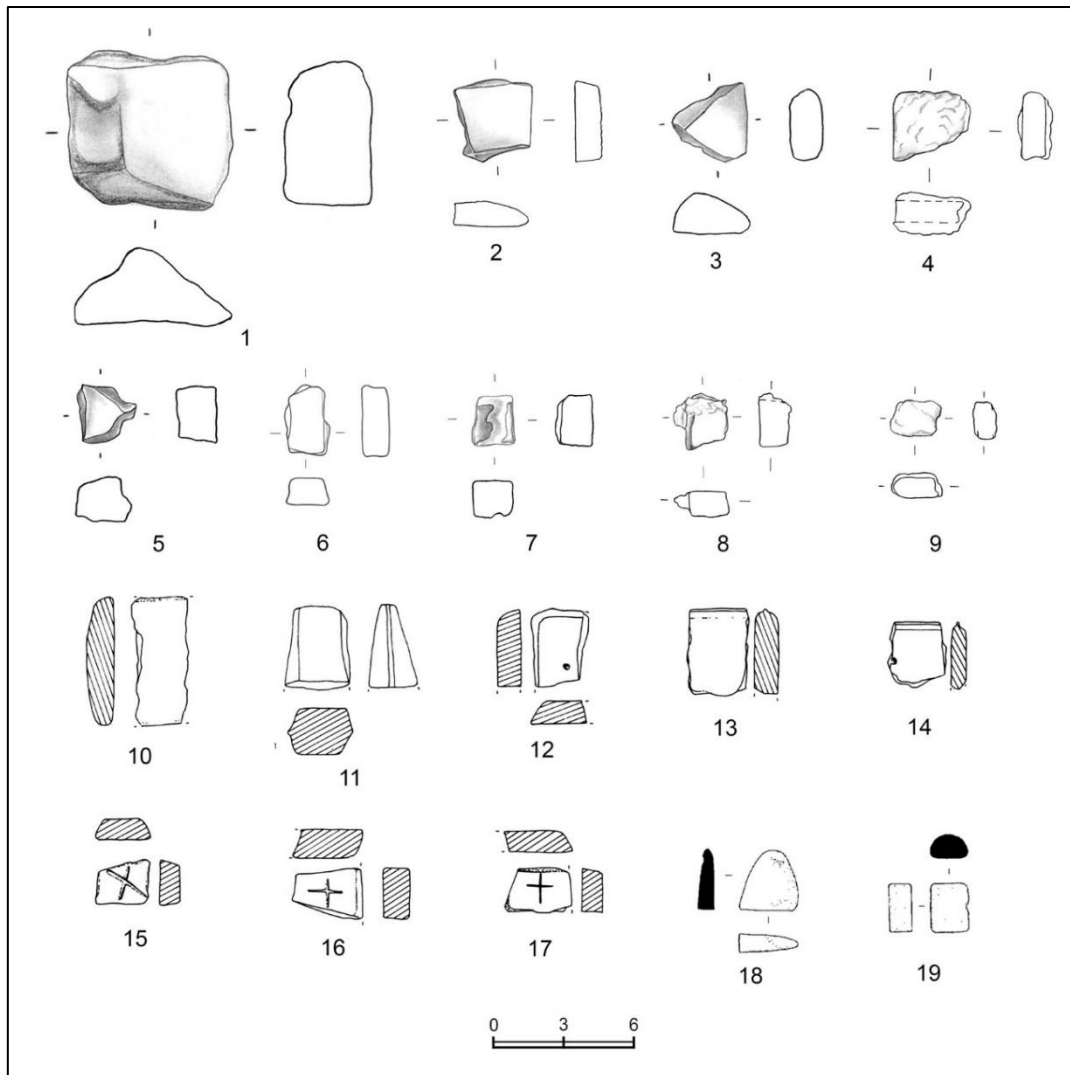


Fig. 6: *Aes rude*: 1-9 Spina (after Zamboni 2016); 10-17 Forcello (after Cattani 1988); 18-19 Ponte S. Marco (after Poggiani Keller 1994).

From Spina a different type of *aes rude* is also attested, albeit not recognized in previous studies. The form is that of thin bronze sheets, in rectangular or irregular shapes (Fig. 7), probably fragmented from larger thin ingots. This special kind of thin *aes rude* is attested, besides Spina, in other trade centres of the Po Valley, including Forcello⁴², Adria, S. Polo d'Enza⁴³, Marzabotto⁴⁴, and Ponte S. Marco⁴⁵.

Regarding the *aes rude* metrology, several attempts have been made in previous studies to identify one or more regular weight units. In Forcello, for example, Maurizio Cattani pointed out clusters around 16 and 31 g⁴⁶, while in Marzabotto a unit of 5.2 g (eventually related to the phoenician system) has been proposed⁴⁷. In Spina I suggested, instead, a possible cluster around 4 g, near to a fraction of the euboic-attic stater of 8.79 g. However, without a reliable statistical analysis, all the tentative identifications of weighing units so far mentioned are to be considered approximate.

⁴² Casini – de Marinis – Fanetti 1999.

⁴³ The findings from S. Polo and Adria are unpublished.

⁴⁴ Burgio 2010.

⁴⁵ Poggiani Keller 1994.

⁴⁶ Cattani 1988.

⁴⁷ Marzabotto 1997.

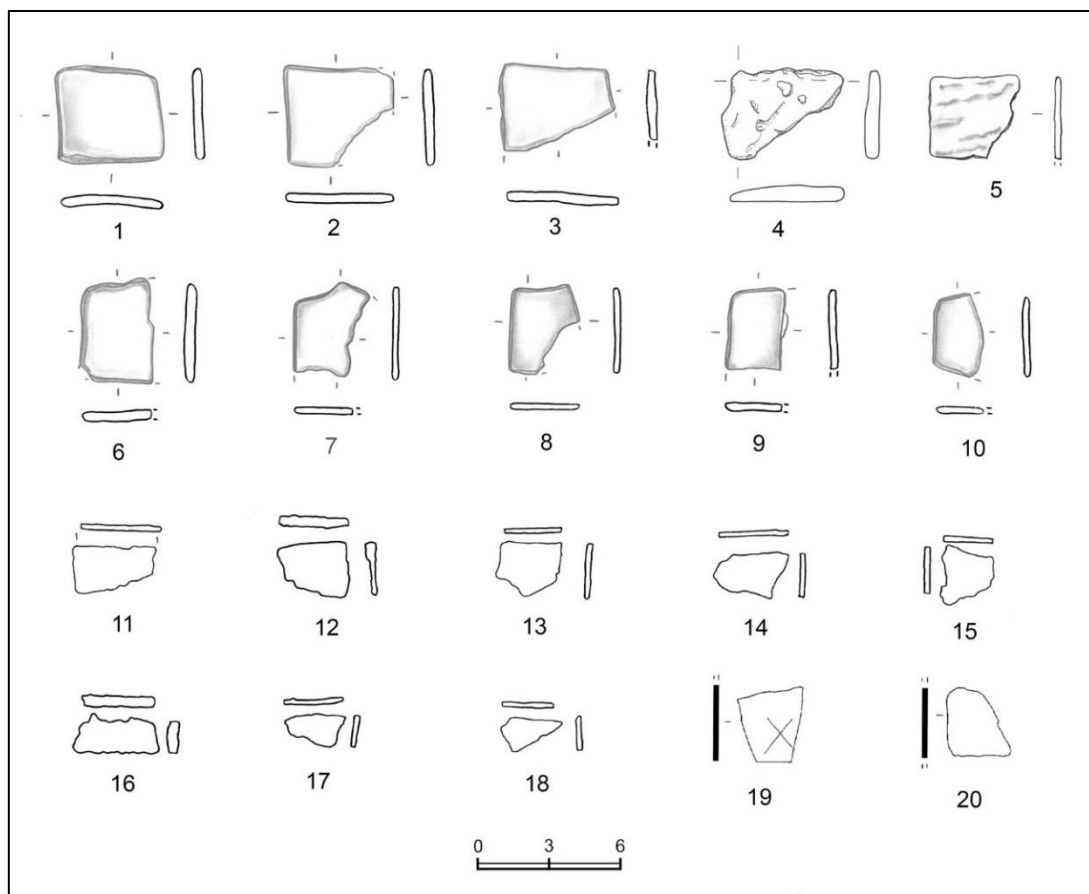


Fig. 7: Thin *aes rude*. 1-10 Spina (after Zamboni 2016); 11-18 Forcello (after Casini – de Marinis – Fanetti 1999); 19-20 Ponte S. Marco (after Poggiani 1994).

Another relevant and distinctive aspect of the Po valley is the abundance of the so-called *ramo secco* ingots, or *aes signatum* (Fig. 8), namely cast lumps of bronze of measured quality and weight, with the sign of “dry branches” usually on both sides (a symbol still of unclear significance)⁴⁸. These ingots are usually made in copper-iron alloy, often with a high percentage of iron. In most cases they are found broken into subdivisions, in quarter, half or three-quarter bars. Weights clusters are approximately around 800/900 and 1200/1400 g.

Ramo secco ingots have been discovered across the Po Valley during the 5th century BCE⁴⁹, both in metal hoards or in larger settlements (Marzabotto, Forcello), including the north-eastern Veneto region. Notably, no specimen was identified in Spina so far. Other examples come from Etruria and central Italy⁵⁰, while the southernmost presence is in Bitalemi (Gela, Fig. 8.4)⁵¹.

⁴⁸ Neri 1998; Pellegrini – Macellari 2002.

⁴⁹ See also Zamboni 2018, 229-230.

⁵⁰ Murgan 2014.

⁵¹ Tarditi 2016.

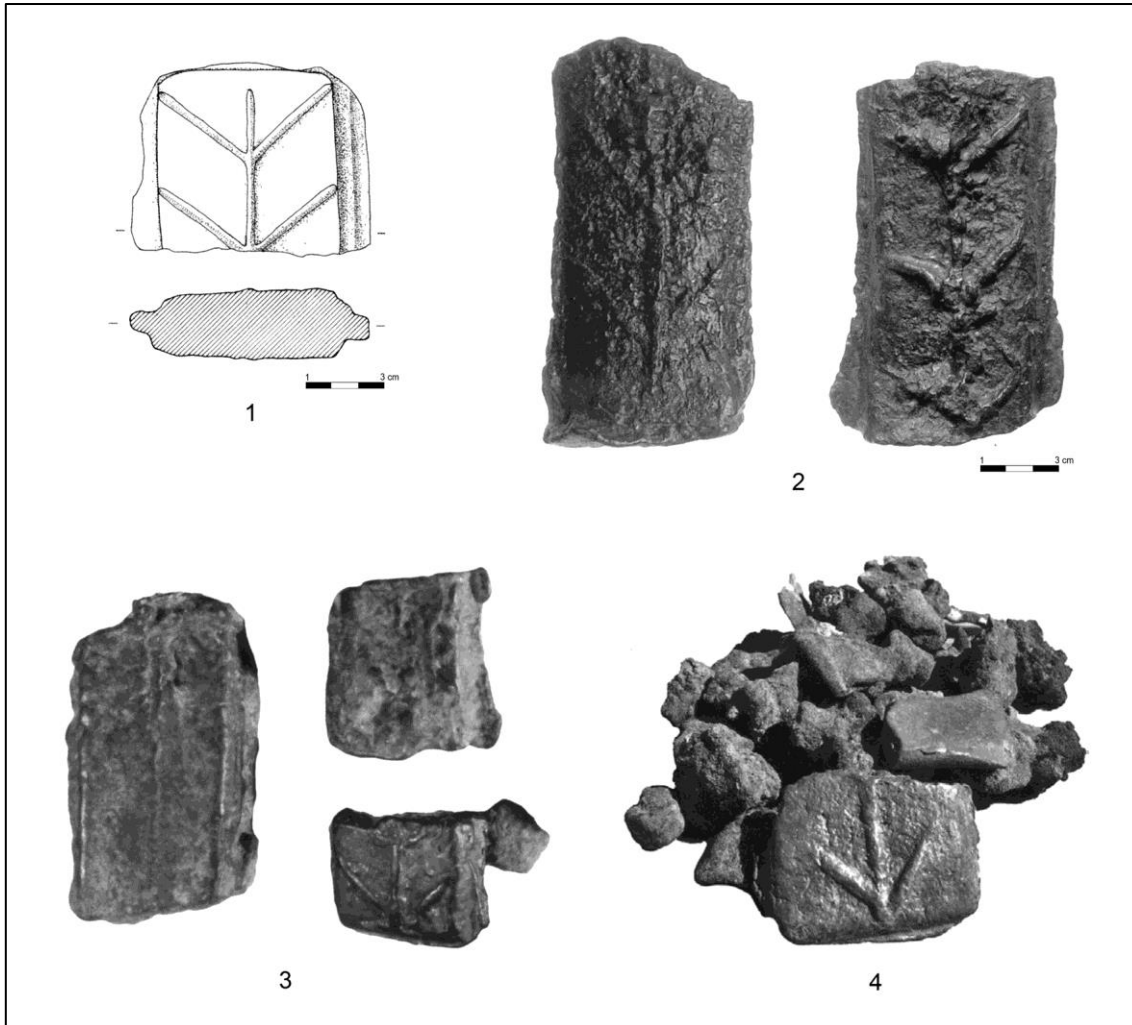


Fig. 8: *Aes signatum*: 1 Forcello (after de Marinis – Rapi 2007); 2 Castelfranco Emilia (after Neri 1998); 3 Quingento, Parma (after Locatelli – Malnati – Maras 2013); 4 Bitalemi (after Tarditi 2016) (3-4 out of scale).

Discussion. The absence of coinage in the Po valley

It is possible to explain the absence of coinage in Iron Age Northern Italy by addressing different perspectives. On the one hand, we have seen that in the Western world, and especially in the Po Valley, a long-term tradition of regularized barter, based on relatively accurate weighing systems, is attested at least from the mid-2nd millennium BCE. Despite the scarcity of archaeological evidence for certain periods (Early Iron Age), as a working hypothesis it seems possible to infer a continuity between the Late Bronze Age weights (spheroid and lenticular stones) and elements (balance beams), and the Iron Age weighing tools⁵². According to this framework, the Po valley could be characterized by a well-rooted tradition of exchange, also involving wide-ranging and established commercial relationship between the regions north and south of the Alps, with particular regard to metal circulation.

Even after the opening of new commercial routes during the 6th cent. BCE, the Greeks opted for the local way of commutation, probably most flexible and suitable for local encounters. The quantity of metal and stone weights, and the variety of their weighing standards, as well as the presence of proto-currencies (*aes rude*) inside the main trade centres of the Po valley between the 6th and the 4th cent. BCE, are testifying a large-scale exchange, favoured by the possibility of conversion between different exchange systems.

⁵² Peroni 2001, 23-24.

Coinage began to circulate in Northern Italy only after the La Tène ‘conquest’ of the 4th cent. BCE⁵³, but in few contexts, such as hoards⁵⁴ and scattered finding in settlements (as seen from Spina). Between the second half of the 4th and the 3rd centuries BCE, however, the economic model still remained the same as before, and money appears to be mainly related to warfare and mercenary service⁵⁵.

On the other hand, previous scholars who have already outlined the absence or the late appearance of mints and coinage in certain Greek cities and colonies, including Sparta, Locri Epizefiri, Tanais, Naronia or Naucratis, have put forward different cultural and political explanations for the ‘refuse of coinage’, including the idealized, utopian and traditionalist ideas of isonomy, equality and the social stigma imposed to the ostentation of wealth⁵⁶. Furthermore, another possible reason for Iron Age Northern Italy is the absence of centralized institutional authorities, able to promote and coin money. However fascinating, these scenarios are not verifiable for the Iron Age pre-literate societies in central Europe and in Northern Italy.

Conclusion

To summarize, a preliminary analysis of the archaeological evidence related to weighing and trading suggests that the exchange in Spina and in the other *emporìa* of the Po Valley worked with a specialized form of barter. This form of commerce seems to be rooted in long-term traditions within the Po valley and central Europe, at least since the late Bronze Age period, involving at the same time:

1) Different kinds of ‘commodity-money’, such as salt, grain, meat, and other fundamental non-countable goods and raw materials, which remain poorly visible in archaeological terms. Their commodification was possible only through the adoption of a rational system, based on stone or metal weights and equal-arm balances, referring to different weight units and, more important, to compatible multiples and fractions;

2) As suggested⁵⁷, it is also very likely the presence of ‘utensil-money’, for example gold, silver and other prestige goods, and, in second place, of imported (Attic) pottery;

3) Finally, the use of proto-currency is testified by the wide presence of *aes rude*, including the special thin type, and of *aes signatum*. However, it remains unclear whether these ‘tokens’ were employed only as weighted means (*per aes et libram*), or perhaps with an assigned value.

Besides the absence of coinage, that is probably a misleading problem, since money remains not completely appealing and widespread in the Mediterranean world during the period addressed, as linked to specific aspects of social life (sanctuaries, mobility, warfare, prestige, centralized authority), what is more intriguing is the possibility to trace and describe ‘self-regulated’ international trade networks “based on customary commercial relationships”⁵⁸, on mutual interaction, and on the possibility of normalization and conversion between different commodification systems.

Only further research, based on wider and analytical data collection, along with a new approach based on appropriate and reliable statistical processing, could confirm and improve the proposed framework.

Acknowledgments

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⁵³ Arslan 2006. A silver drachma from Como, dating to the 5th c. BCE, remains so far isolated.

⁵⁴ For example, the hoard of Castelfranco Emilia (Neri 1998).

⁵⁵ Gorini 2017. See Rahmstorf 2016 for further general considerations.

⁵⁶ Barello 1993; Gorini 2017, 556.

⁵⁷ Vickers 2017.

⁵⁸ Ialongo 2018, 4-5.

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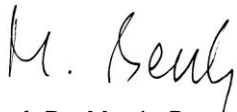
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Confirmation of contribution

I hereby certify that the article *Trading in the Multicultural emporia of the Po Valley Weighing Systems and Proto-Currencies* by *Lorenzo Zamboni* has been accepted within the framework of the publication of the 19th International Congress of Classical Archaeology. The article will appear as part of the panel "Trade and Cultural Contact in the Iron Age and Archaic Mediterranean" published by Propylaeum (Heidelberg) as an open access online publication with print on demand option. The release year will be 2020.



Prof. Dr. Martin Bentz