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Gold and silver ‘ingots’ across Celtic Europe. A monetary use?

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Gold and Silver “Ingots” across Celtic Continental Europe: A Monetary Use?

ENEKO HIRIART* AND JULIA GENECHESI**

Many finds of gold and silver “ingots” in Celtic Europe have been recorded recently. These “ingots” are all generally interpreted as blanks or semi-finished products related to coin production. This interpretation stems from a linear view of the evolution of coinage. However, the use of metal as money is well documented for the Mediterranean basin. But what was the situation in temperate Europe? Can a similar usage be considered there as well? The fact that the objects have been found in the earliest agglomerations of the Celtic world raises many questions. This article puts forward the first continental European-wide research into gold and silver “ingots” based on available archaeological data.

INTRODUCTION

Several forms of money have been documented at different times in many civilizations across the entire Mediterranean basin. Thanks to the precursory work that was carried out on Near Eastern money by J. Kroll (Kroll 1998; 2001; Kroll 2011) which paved the way to many interpretative models that

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have now been applied to the Bronze and Iron Ages, many trade media have been highlighted for these periods. In Mesopotamia from the first millennium BC onward, different agricultural products (barley, dates) and metals (lead, tin, silver) performed monetary functions (Graslin and Monerie 2012, 57). Concerning the Iberian Peninsula, several authors are conclusive about the monetary use of gold objects (*Hackgold*) and silver objects (*Hacksilber*), which have been found all over this territory (Ripollès 2011; Callegarin and García-Bellido 2012). Their use preceded the adoption of coins but also took place simultaneously with it. Several researchers have studied the use of rough bronze “ingots” (*aes rude*) in Central Italy between the sixth and the fourth centuries BC, and their function as a medium of exchange is now unanimously acknowledged (Bertol and Farac 2012; Lerouxel 2015). All these examples, which have been documented on a Mediterranean scale, reveal that, in many cases, weighed metal preceded the appearance of coins (see also Ialongo et al. 2018). Therefore, it seems absolutely justified to include temperate Europe in our discussion and question the different monetary uses. Many testimonies of gold and silver ingots have recently been recorded in a first inventory for Celtic Europe (Genechesi and Hiriart 2020). On this occasion, a typology was also created to organize their description (Fig. 1). A distinction is made between shapeless “ingots” (random forms), whole shaped “ingots,” and cut “ingots” (both with intentional forms). All these “ingots” are traditionally interpreted as blanks or semi-finished products: they are thought to have been metal reserves that were meant for future monetary coinage (or goldsmithery). Although this interpretation is justified in some instances, it stems from a linear view of the evolution of the monetary issue, in which minted money appears as an ultimate outcome. After commenting about the diffusion map, we will return to the different sites that provided gold and silver bullion in order to shed new light on these objects. Our ultimate aim is to ask the following question: Was weighed metal used as money in the Celtic world?

1. GOLD AND SILVER “INGOTS” ACROSS EUROPE

In a recent work, we conducted the first Europe-wide inventory of more than 500 gold and silver “ingots” (published in Genechesi and Hiriart 2020; see also Table 1, below). This inventory was based on a review of the available documentation.¹ We only retained those objects that could be positively linked to archaeological evidence of occupation from the Second Iron Age. The cataloguing

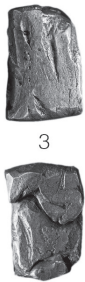
1. Finds from Great Britain have not been included, primarily because of the chronological uncertainty of certain contexts.

1. Rough or shapeless ‘ingots’ (random form)



2. Whole shaped ‘ingots’ (intentional form)

2a. Rectangular section



2b. Circular section



2c. Pellet / blank

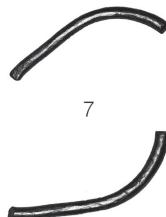


3. Cut ‘ingots’ (intentional form)

3a. Rectangular section



3b. Circular section



3c. Pellet / blank



0 1 2 cm

Figure 1. “Ingot” typology after Genechesi and Hiriart 2020. 1: La Peyrouse (FRA); 2: Manching (DEU); 3: Tayac (FRA); 4: Chevanceaux (FRA); 5: Eysses (FRA); 6: Lipec (CZE); 7: Nĕmčice (CZE); 8: Žĕhuň (CZE).

process proved difficult for several reasons. First of all, most of the “ingots” that were discovered before the 1950s, especially in hoards, were recast before any study. Firsthand data is therefore lacking. Secondly, recently discovered ingots have received uneven attention from researchers. They are not systematically published, and when they are, detailed measurements are not always included.

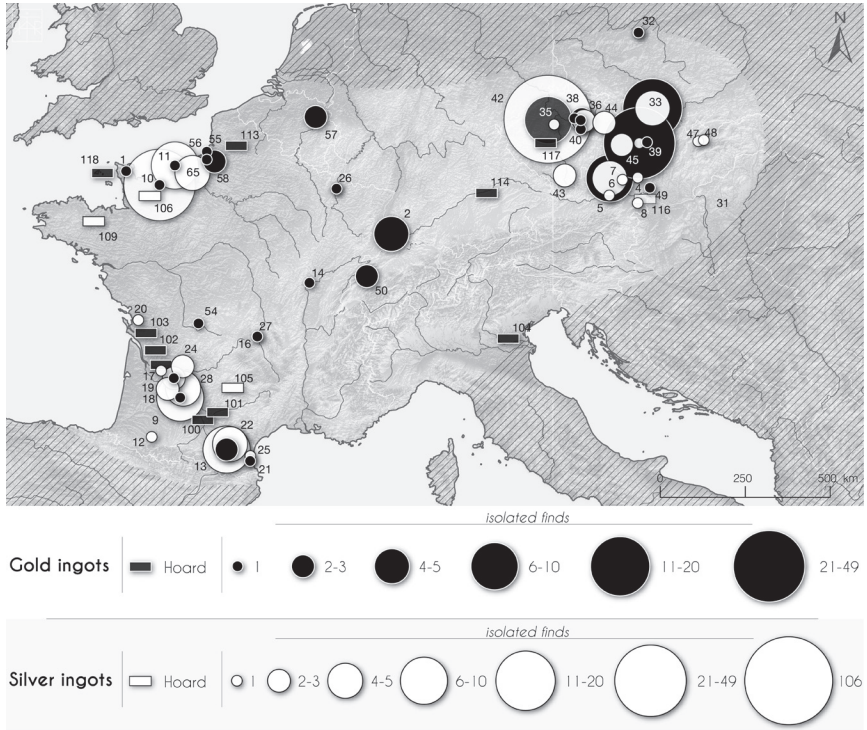


Figure 2. Spatial distribution of gold and silver “ingots.”

This new inventory enables the first map of these items on a European scale (Fig. 2). Nevertheless, we tread lightly in this venture because this map remains a snapshot that reflects our incomplete knowledge of this type of objects. While keeping in mind this documentary bias, the spatial approach raises several questions and warrants a series of observations.

Firstly, three main concentration points have emerged: one is located in southwestern Gaul, around the Aude-Garonne axis, on a diagonal between the Atlantic and the Mediterranean; one extends along the Channel and the final one is found in Central Europe, around the *Amber Road Corridor* (Smělý 2017), between the valleys of the Danube and the Oder. It becomes obvious that they are concentrated in three main areas that are located at the western and eastern ends of Celtic Europe, on the fringes of this geographical and cultural domain. We can see quantitative differences where isolated finds are concerned. There have been more finds in Central Europe than in Gaul. There is no guarantee that this reflects a fundamental trend, as many discoveries in

Central Europe have been made with metal detectors, which could affect the large number of known objects.

On the other hand, the map suggests that gold and silver “ingots” may have their own dynamics. Gold “ingots” predominate on the sites in the *Amber Road Corridor* (Roseldorf in Austria, Němčice in the Czech Republic and Nowa Cerekwia in Poland). Stradonice (Czech Republic), which was occupied later, differs from these trends. Silver “ingots” have been found mainly at sites in Western Gaul, close to the Channel (Blainville-sur-Orne, Bordeaux-Saint-Clair) and around the Aude-Garonne axis (Bourrière, L’Ermitage in Agen, Eymet, etc.).

However, it should be emphasized that the main sites in Western and Eastern Europe that have contained “ingots” are not exclusively monometallic. Furthermore, in southwestern Gaul, although mainly silver “ingots” were found on sites, a reverse trend has been observed in hoards, where apparently the preference was to hoard gold “ingots.” Monometallism is a constant in the hoards that have been documented. Furthermore, in these assemblages, coins often seem to be associated with “ingots” and/or fragmented objects. Finally, it is worth noting that there is a probable east/west opposition: in the western half of the study area, many “ingots” were found in hoards and their average weight is comparatively higher, while in Central Europe, “ingots” have almost exclusively been documented in settlements.

2. THE CASE OF NĚMČICE (CZECH REPUBLIC)

Issues related to the use of “ingots” have recently been given a new lease on life following the many finds that have been made in Němčice in the Czech Republic. This site is an open agglomeration whose occupation began during La Tène B2. The settlement reached its peak during La Tène C and seems to have been abandoned towards the end of the second century BC (Salač 2012, 325–327). The area of the site is estimated to be 50 ha. Although no excavation has been carried out yet, the archaeological finds, which are very abundant, reflects intense craft (mainly metal and glass) and trading activities, with imports from all over the Celtic and Mediterranean world (Pierrevelcin 2010, 143). The economic importance of the site is confirmed by the thousands of coins that have been discovered on the location.

To date, 50 “ingots” have been discovered in Němčice (Fröhlich 2012; Kolníková 2012, 169; information from T. Smělý). They are nearly all gold (48 gold as opposed to 2 silver). In addition to these “ingots,” there are many pieces of fragmented coins that are not included here. Views diverge as to the

possible functions of these objects. E. Kolníková interprets these “ingots” as semi-finished products that entered the operating chain of coin production. The author considers this to be proof of the existence of a monetary workshop in Němčice (Kolníková 2012, 68). J. Fröhlich puts forward the assumption that they were used as money. He notes that the “ingots” were fragmented so that their weight corresponded to small gold denominations, especially the 1/8 and 1/24 staters of Athena Alkis type, which were the most widely used gold coins at Němčice (Fröhlich 2012, 149).

3. OPEN AGGLOMERATIONS: A MEETING POINT BETWEEN INGOTS AND THE FIRST STAMPED COINS

Open agglomerations developed all over temperate Europe from the late fourth to the first century BC (Salač 2012; Fichtl 2013). Němčice stands out as belonging to the earliest phase of these sites, which emerged in the late fourth or during the third century BC (almost two centuries before the *oppida*). Additional “early” sites have been documented in Europe. Apart from Němčice, we can mention Roseldorf (Austria), Manching (Germany), Nowa Cerekwia (Poland), Saint-Gence (France), Lacoste (France), La Peyrouse (France), Eymet (France) and Eysses (France). All these sites share the same profile: they are open agglomerations (without fortifications) that housed intense trading and especially handicraft activities. In terms of organization, demography and area, they can be seen as true full-fledged cities (Salač 2012; Fichtl 2013). It was also from these sites that the first evidence for the monetization of trade in temperate Europe towards the middle of the third century BC emerged (Hiriart 2019a; Hiriart 2019b; Hiriart et al. 2020).

Open agglomerations are essential for understanding the economic transformation of Celtic societies. In addition, the distribution of “ingots” according to their archaeological contexts shows that most of them come from these open agglomerations (Fig. 3). In Central Europe, it can be seen that, apart from Němčice, the other “early” open agglomerations also delivered “ingots.” Although no inventory of these finds has been made, we know that several dozens of “ingots,” mostly made of gold, have been discovered at both Nowa Cerekwia and Roseldorf (Rudnicki 2014; Jandrasits 2012). “Ingots” have also been documented in the “early” open agglomerations of southwestern Gaul and in considerably smaller quantities at Eysses (4), Eymet (3), Mas-d’Agenais (3), La Peyrouse (2), Lacoste (1) and Saint-Gence (1) (Fig. 2, above). The Bordeaux-Saint-Clair site in Normandy (France) on the shores of the Channel has delivered abundant archaeological material, mainly from illicit excavation,

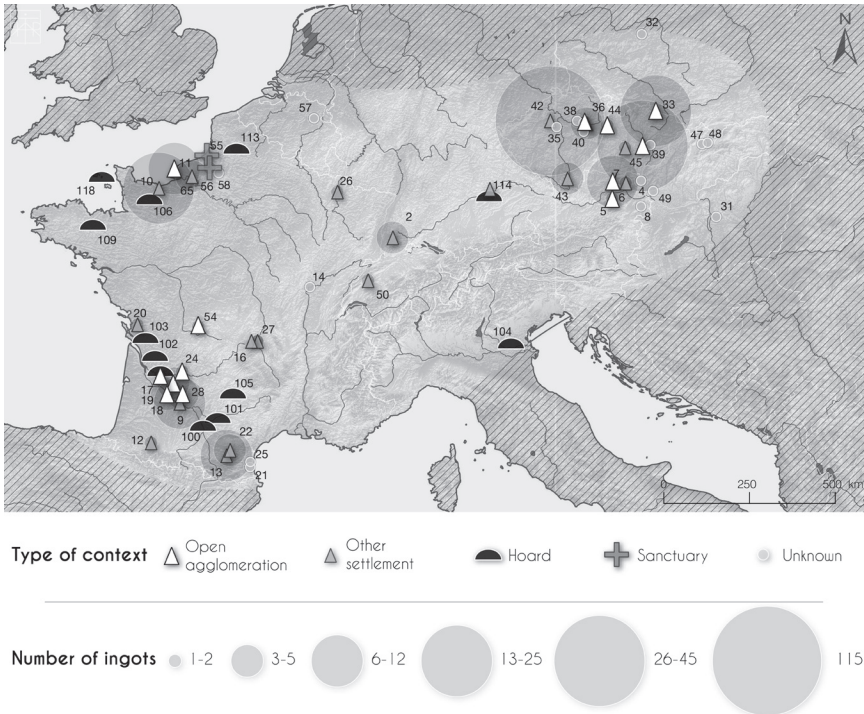


Figure 3. Distribution of “ingots” according to the archaeological contexts in which they were found.

which testifies to intense occupation in the third and second centuries BC. Given the chronology of occupation, the collected material and the characteristics of the site (a large area, with no massive fortification), Bordeaux-Saint-Clair could be included in the category of open agglomerations. L.-P. Delestrée and F. Pilon published about eleven “ingots” that originated from the site but indicate that many additional finds from the site are now missing (Delestrée and Pilon 2011).

4. SEMI-FINISHED PRODUCTS

It is obvious that the same function cannot be assigned to all “ingots” found in temperate Europe, as they show heterogeneous realities in terms of their morphology, composition and contexts of discovery.

On the one hand, some “ingots” were certainly involved in a chain of operation linked to coin production or, more broadly, to goldsmithery. This may be the case for the rough “ingots” that were discovered at La Peyrouse (Fig. 1-1, above), Corent, Tongres and Kirchzarten. An “ingot” that was found

near Tongres (Belgium), which appears to have been cast in a mould, could be linked to craftsmanship (Scheers 2000, 39). Similarly, the context of discovery and physical analyses suggest that the Corent “ingot”, probably the bottom of a crucible, is most certainly related to coin production (Barrandon and Nieto 2005, 418).

On the other hand, a significant number of “ingots” are probably related to the metal trade (Militký 2013; Cauuet et al. 2018). The casting of an “ingot” is the end of the gold ore extraction process. To control production (and limit the risk of theft), it is likely that the gold recovered at the end of the ore process was immediately melted into small “ingots,” near the mining sites (Cauuet et al. 2018). The distribution of “ingots” seems to support this theory. In Central Europe, “ingots” are distributed along the Amber Road, the main trade route. In Gaul, it can be seen that “ingots” have been discovered mainly between Normandy and the Aude-Garonne axis. This distribution may suggest a connection to the famous Tin Route between the Mediterranean and the British Isles.

5. FINISHED PRODUCTS WITH MONETARY FUNCTIONS

Researchers have often advanced the hypothesis that “ingots” are semi-finished products that are designed for monetary or jewellery production. However, many cases clearly fall outside these traditional interpretations. There is strong evidence to conclude in favor of the possible use of weighed metal as currency among the Celtic populations:

1) The metallic compositions. We know that the gold coins that circulated at Nĕmčice (Athena Alkis series) had a high percentage of gold, generally above 95% (Fröhlich 2012; Kolníková 2012; Smělý 2017). However, the percentage of gold in “ingots” is very variable. Physical analyses that were carried out by X-ray fluorescence (XRF) on 31 “ingots” from Nĕmčice revealed that the amount of gold contained in the “ingots” could fluctuate between 23% and 100% (Fröhlich 2012, 159). These clues contradict the exclusive association of these objects with monetary production.

2) Intentional fragmentation, probably to obtain a targeted weight. Even though there is still a lack of evidence, the example of Nĕmčice should be taken into consideration. We do not know whether it is the (individual) mass of the ingot that counts or the total mass of a batch of ingots, in which case the mass of an ingot alone tells us nothing, as it is disconnected from the batch to which it belongs. The fact of chiselling nevertheless testifies to an intentional act, a deliberate will to modify the object. The typological variability of “ingots”

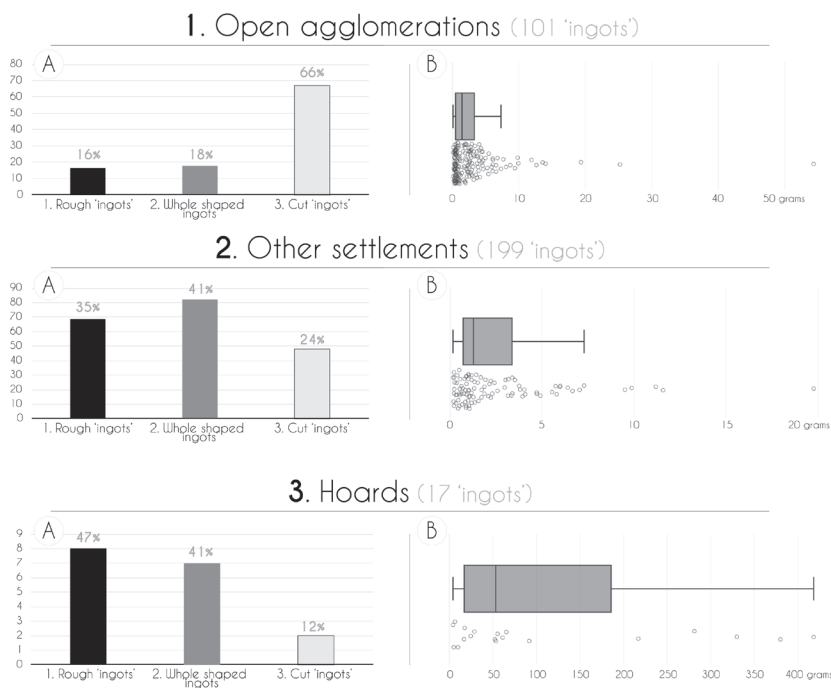


Figure 4. Comparison between finds in open agglomerations (1), other settlements (2) and hoards (3): A. Proportion of different categories of “ingots”; B. Box-plot comparison between the weight of the ingots and to the context of discovery.

must be considered: differences in shape certainly reflect different kinds of uses and functions. Consequently, it is necessary to question both the types of “ingots” and the type of contexts (Fig. 4). On the one hand, “ingots” that are found in open agglomerations have lower masses (median: 1.17 g) and limited weight variability (IQR: 0.64–3.14 g) (Fig. 4, 1B). These mechanisms contrast with those that are observed in hoards where masses are high and there is great variability (Fig. 4, 3B). On the other hand, we notice that cut metal is predominant in open agglomerations (2/3 of the “ingots”) (Fig. 4, 1A). Other sites, especially *oppida* (whose chronology is later), have opposite dynamics: cut “ingots” represent less than 1/4 of the ingots (raw and whole ingots are predominant) (Fig. 4, 2A). The clear chisel cuts observed on some “ingots” are proof that the fragmentation was intentional, perhaps indicating a desire to adjust them to a particular weight and value.

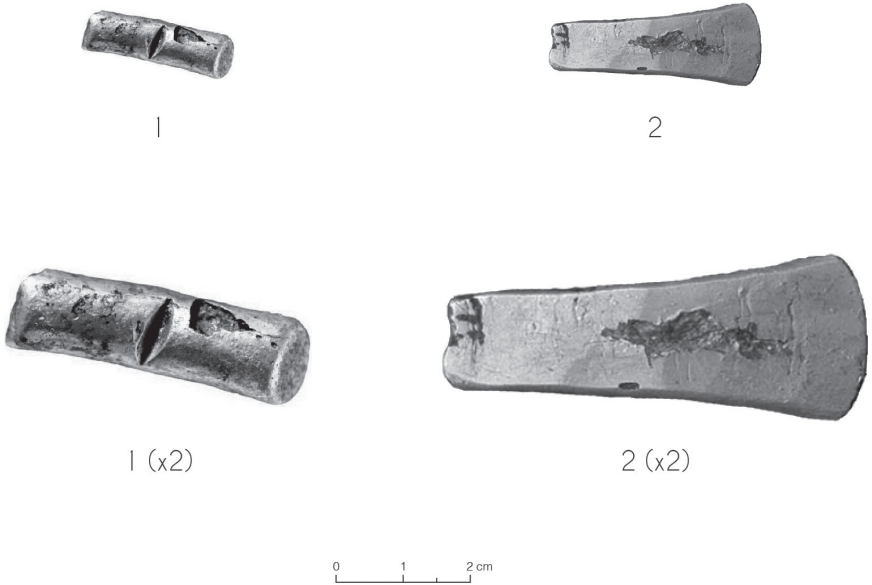


Figure 5. Plated “ingots”: 1. Gold-plated “ingot” from Roseldorf (6.34 g; Dembski 1999); 2. Gold-plated “ingot” from Roseldorf (11.58 g; Jandrasits 2012)

3) **The existence of plated ingots.** The main evidence is provided by a gold-plated “ingot” that was discovered in the Roseldorf agglomeration (Dembski 1999, 109) (Fig. 5, 1). This circular-section “ingot” was chiselled with a “test cut” that reveals the copper core of the object (it is also visible at another place where the surface layer has burst). A second plated “ingot” with a rectangular cross-section also comes from Roseldorf (Jandrasits 2012, 29) (Fig. 5, 2). These objects are valuable testimonies. On one hand, plating (a complex process that is regularly used for Celtic coins) could reflect a desire to conceal the real precious-metal content of the “ingot.” This method shows considerable skill and provides evidence of a long and significant process in which the symbol has become more important than the quality (Pernot 2013). The uneven quality (grade) of “ingots,” which potential users must have known about, leads us to question their symbolism. We cannot assume that they were merely used as weights. On the other hand, they are proof that these “ingots” are not semi-finished products linked to monetary production (Dembski 1999, 119). They must be considered as finished products, which were intended to be used—and circulated—in this form.

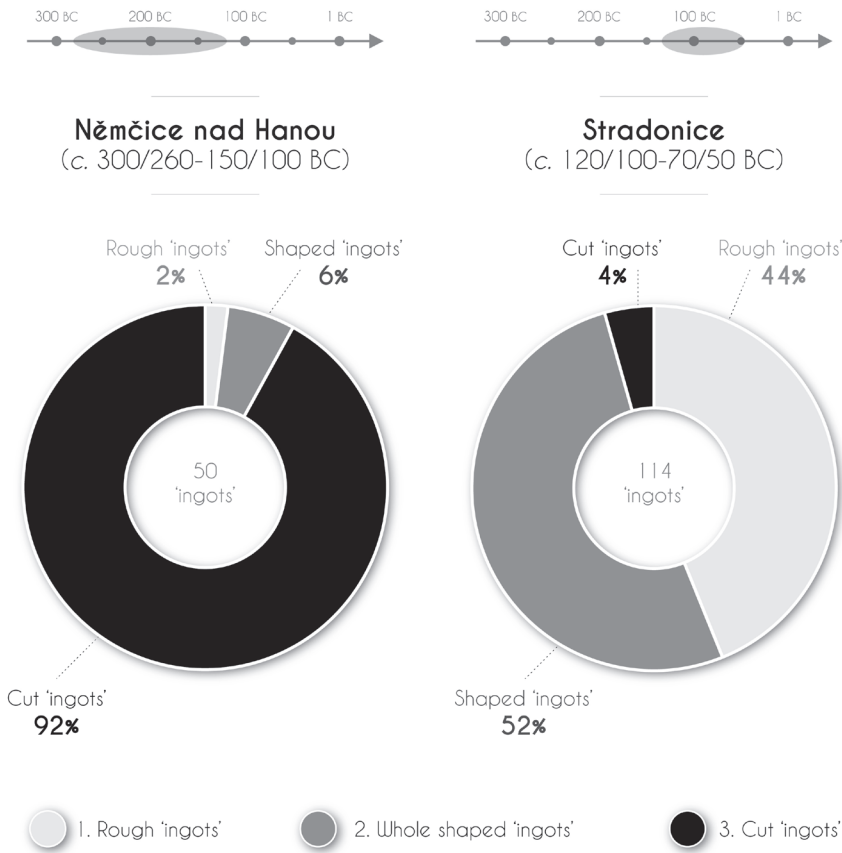


Figure 6. Proportion of different categories of “ingots” in the open agglomeration of Němčice nad Hanou and the *oppidum* of Stradonice.

6. INGOTS AND MONEY IN A CHRONOLOGICAL PERSPECTIVE

The hypothesis of a monetary use of ingots becomes even more relevant if we adopt a diachronic view on the scale of European protohistory. Chisel-cut “ingots,” or artefacts such as torcs and bracelets found in deposits that date from the Bronze Age and the Early Iron Age illustrate the use of weighed metal as money (Fröhlich 2012; Milcent 2017; Rahmstorf 2019, 1207). These examples may echo the same phenomenon observed in the Second Iron Age. They demonstrate that it is essential to reflect on the diachrony of “monetary” uses. Gold and silver bullion has been documented in temperate Europe since

the Bronze Age. It cannot be ruled out that some of these objects may have had monetary functions. Due to the existence of other currencies and certain practices (especially social ones), a suitable *terroir* for the emergence of coins may have existed before the Iron Age.

If we focus on the Second Iron Age in Central Europe, there is a clear development in the forms and uses of “ingots” between the third and first centuries BC. The finds at Nĕmčice and Stradonice reveal two different realities at two different times. On the one hand, at Nĕmčice, which was occupied between 300/260 BC and 150/100 BC, there are almost exclusively cut “ingots” (92%) (Fig. 6, above). In contrast, cut “ingots” are virtually absent from the Stradonice *oppidum* (which was occupied between 120/100 BC and 70/50 BC), where rough and shaped “ingots” predominate (both represent 96% of the finds) (Fig. 6, above). The presence of “ingots” in open agglomerations is a fundamental trend, especially in Central Europe. It is in these oldest agglomerations that the majority of cut ingots have been found and they have a very small weight range with a small standard deviation. These specific objects with intentional cuts were created to correspond to a weight standard. According to T. Smělý, this would suggest that hackmetal may have been used as a currency, at a time when coins were still in their infancy (Smělý 2017).

7. A PHENOMENON RELATED TO THE CELTIC FRINGE?

The use of metal by weight seems to be reflected in the many fragmented silver and gold coins that have been found, especially in Central Europe, where there have been very many of these discoveries (cut coins are sporadically attested throughout Celtic Europe). Especially in Roseldorf, it was mainly “foreign” pieces from Eastern Europe that were fragmented so that they could be adapted to local needs through various reductions (Dembski 1999, 118). A parallel with the dirhams that were imported into Northern Europe and cut during the Viking era immediately comes to mind (Kershaw 2017, 174). In the Iberian Peninsula, hoards including a mixture of coins, cut coins and “ingots” have been found in areas where no coins were minted (Ripollès 2011; Callegarin and García-Bellido 2012). In these fringe areas, money was used by weight. In temperate Europe, the spatial distribution of “ingots” shows that the main concentrations are found along the southwestern periphery (bordering the Aquitanians, Iberians, and Celtiberians) and in the northeastern area (bordering the Germans). These dynamics, and the fact that the center of the continental Celtic domain is excluded, raise a question: Can this be a phenomenon that is related to the fringes of the Celtic world—in places of contact with other populations who did not mint coins?

“Ingots” might have been used by the exogenous populations, in the context of their transactions with the Celts, in those places of exchange and trade that are represented by the open agglomerations. Weighed metal could have been used as a medium for trade by neighboring populations that did not have coins. In some agglomerations where two different systems (monetized/non-monetized) converged, users agreed about the weight of precious metal, equating it with the weight of coins that were made of the same metal.

CONCLUSION

As it stands, in the absence of systematic analyses and clear stratigraphic contexts, it is still difficult to distinguish between an “evolutionary” approach (progressive transition from “ingots” or weighed metal to coins) and the “cultural” approach (distinct use according to cultural groups). Perhaps the two realities are complementary and concomitant. “Ingots” are, or can be, at the same time: 1) transitional objects towards coins; 2) temporarily accepted in the same way as coins (in a period of transition within a community); 3) an “ethnic” marker, a kind of “middle ground” that allowed contact and trade between two distinct cultural groups (“indigenous” and “non-indigenous” communities).

It has been established that open agglomerations—the first cities in temperate Europe—played a fundamental role in the circulation of “ingots.” The latter were probably used there as a medium of exchange (weighed metal), perhaps before (or at the same time as) a political authority struck coins by affixing its mark and guaranteeing their value. Confidence plays a role here.

Whatever the case may be, these first cities in temperate Europe were a laboratory of economic practices, which paved the way for the monetarization of trade on a continental scale.

Table 1. An overview of gold and silver “ingots” that have been discovered in temperate Europe (after Genechesi and Hiriart 2020)

Site No.	Country	Site	Gold “ingots”	Silver “ingots”
ISOLATED FINDS				
1	FRA	Valognes	1	
2	DEU	Kirchzarten, Tarodunum	4	
4	AUT	Drösing		1
5	AUT	Haselbach	1	1
6	AUT	Oberleiserberg		1
7	AUT	Roseldorf	several	several
8	AUT	Winden am See		1
9	FRA	Agen, L’Ermitage		9
10	FRA	Blainville-sur-Orne, ZAC Terre d’Avenir		25
11	FRA	Bordeaux-Saint-Clair	1	7
12	FRA	Bordes, Bois de Bordes		1
13	FRA	Bouriège	3	7
14	FRA	Bagny-sur-Saône	1	
16	FRA	Corent		1 (Ag-Au alloy)
17	FRA	Eymet, Blis-Roc de Salomon	1	2
18	FRA	Mas-d’Agenais		3
19	FRA	Mouliets-et-Villemartin, Lacoste		1
20	FRA	Muron, La Couture		1
21	FRA	Perpignan, north-east	1	1
22	FRA	Pomas, La Lagaste		5
24	FRA	Saint-Félix-de-Villadeix, La Peyrouse		2
25	FRA	Salses-le-Château		1
26	FRA	Scy	1	1
27	FRA	Vieille-Toulouse	1	
28	FRA	Villeneuve-sur-Lot, Eysses		4
31	HUN	Peštianskej		1

Site No.	Country	Site	Gold “ingots”	Silver “ingots”
ISOLATED FINDS				
32	POL	Jankow Drugi	2	
33	POL	Nowa Cerekwia	several dozens	4
34	CZE	Broader catchmen area	2	
35	CZE	Kněževés	1	1
36	CZE	Lipec	2	2
37	CZE	Němčice nad Hanou	48	2
38	CZE	Nymburk	1	1 (?)
39	CZE	Pravcice, surrounding area	1	
40	CZE	Roztěž	1	
41	CZE	Sány	1	
42	CZE	Stradonice	9	106
43	CZE	Trisov		3
44	CZE	Vraclav		2
45	CZE	Zavist		2
46	CZE	Zěhuň	3	
47	SVK	Likavka		1
48	SVK	Liptovská Mara		1
49	SVK	Slovenský Grob	1	
50	CHE	La Tène	2	
52	AUT	Lower Austria, south of the Danube	5	8
53	AUT	West of Roseldorf	1	
54	FRA	Saint-Gence	1	
55	FRA	Eu, Bois-l'Abbé	1	
56	FRA	Fesques	1	
57	BEL	environs de Tongres	several	
58	FRA	Le Caule-Sainte-Beuve	several	
59	CZE	Bohemia		2 (?)
60	CZE	Hradec Králové area		3 (?)
61	CZE	Kladno	1	1
62	CZE	Kouřim	1	2 (?)

Table 1 (continued). An overview of gold and silver “ingots” that have been discovered in temperate Europe (after Genechesi and Hiriart 2020)

Site No.	Country	Site	Gold “ingots”	Silver “ingots”
ISOLATED FINDS				
63	CZE	Křeslice	1	
64	CZE	South Bohemia	1	
65	FRA	Saint-Pierre-de-Varengeville		5
HOARDS				
100	FRA	Fenouillet, Les Maouris	2	
101	FRA	Montans	1	
102	FRA	Chevanceaux	2	
103	FRA	Courcoury	several	
104	ITA	Este	2	
105	FRA	Goutrens		14
106	FRA	Plessis-Grimoult		1
109	FRA	Saint-Gouéno		1
112	FRA	Tayac	3	
113	FRA	Warlincourt	2	
114	DEU	Manching	1	
116	SVK	Southwest Slovakia or Lower Austria		1
117	CZE	Podmokly	1	
118	UK	Sark Island	1	

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