

# One Authority - One Idea - One Order. The Monetary System of the Amber Road as a Testimony of Greek Influence on Social and Economic Activities of central European Celts

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## ABSTRACT

Based on a unique bimetallic coinage system, an extensive coin production occurred in Central Europe in the Amber Road region, after the middle of the 3<sup>rd</sup> century BC. The entire area is characterised by uniformity of the coinage in multiple production sites. The ability to formulate a complex economic programme and, in particular, the implementation of such a programme for a long time, spanning several generations, and maintaining it politically as well as logistically, is a testimony of a strong central authority.

## KEYWORDS

Celts; coinage; gold; silver; monetary system; Amber Road; lowland central settlements.

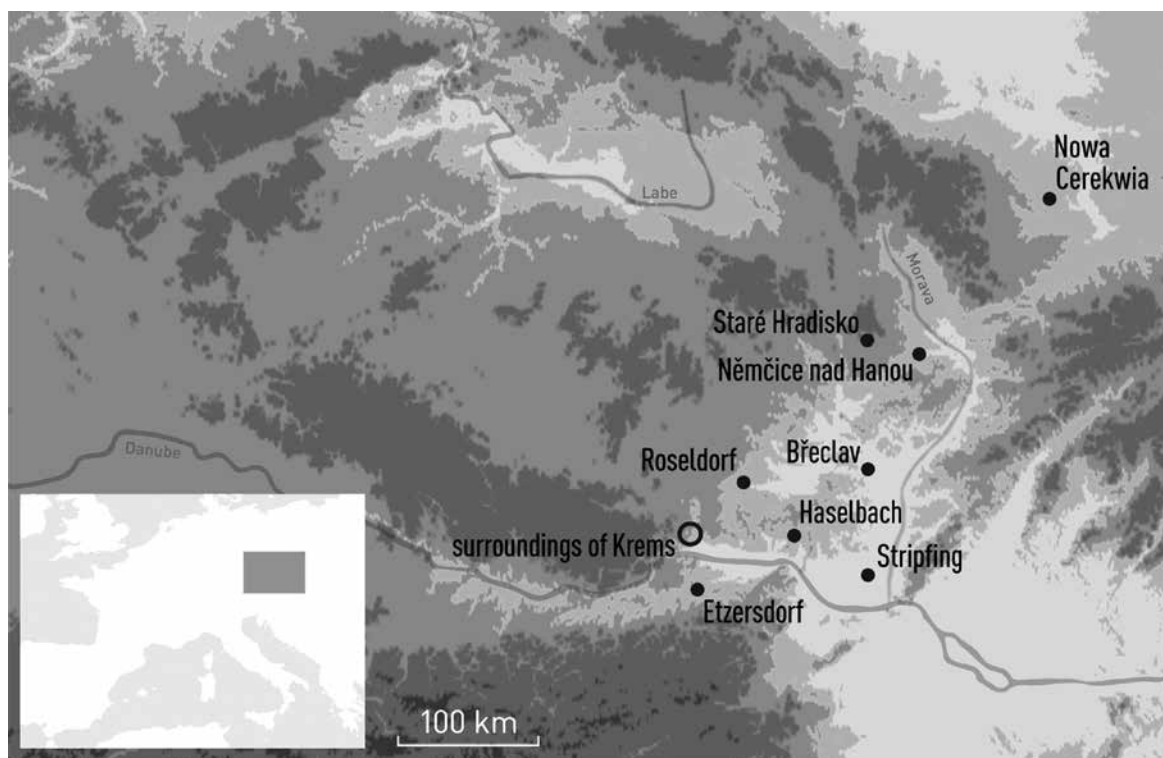
## INTRODUCTION

More than eighty years ago, the pioneering work on Celtic coins, *Die Münzprägungen der Boier* (PAULSEN 1933), was published by the German scholar Rudolf Paulsen. Paulsen collected the images and basic metrological and identification data of approximately 1,200 Celtic coins struck in Bohemia, Moravia, south western Slovakia, the Austrian Danube region as well as in adjacent territories. This number represented a significant majority of all such coins known from European collections at the time. Paulsen associated the coinage of the defined area with the power and economic activities of the Boii tribe. The extraordinary methodical contribution of Paulsen's work was the emphasis on find-spots of individual coins and the arrangement of the collected material into a logical and clear-cut system, which is, in its fundamental features, still valid today. Paulsen's work was followed several decades later by Karel Castelin. Castelin knew very well that coinage represented a major economic instrument for the Celtic elite, whose function was implicitly based on respecting the principles and requirements of the money market. He realized that weight, metal fineness and, to a certain extent, the appearance of the coins, is a reflection of a clearly defined, yet progressively transforming, monetary system. In his principal work, *Die Goldprägung der Kelten in den böhmischen Ländern* (CASTELIN 1965), he organized the Celtic golden coinage into a chronological and metrological system and typologically arranged them into two principal groups termed *Athena Alkidemos*, and the *Shell type* ('*Muscheltyp*').<sup>1</sup> Apart from these two he iconographically and metrologically distinguished a very heterogeneous, but sparse, coin group labelled 'parallel' series ('*Neben-*

1 For Castelin (1965) the types *Athena Alkidemos* and *Shell* represented a single coin series sharing the same iconography. The current numismatic research identifies coinage of *Shell* types with oppida coin production and perceives them as a separate type group. Castelin's view was based on the fact

*reihen*'). The lack of coins with an accurate find context did not allow Castelin to understand that coinage of the so-called parallel series represented the coin production of Bohemia in the pre-oppida period, iconographically very different from Moravian production. He regarded the oppida period as the peak of coin production, not realizing to what extent it took place already in the pre-oppida trade and production centres of 'the Amber Road corridor', that is in the area between southern Silesia and the Austrian Danube valley. Sites such as Němčice nad Hanou, Nowa Cerekwia or Roseldorf were well known to archaeological research, but their significance for understanding the Celtic settlements of central Europe seemed at that time completely marginal.

A dramatic change occurred with the expansion of amateur metal detector surveys in the last decade of the 20<sup>th</sup> century. It was the amateur metal seekers who first discovered the immense archaeological wealth of the social and economic centres along the corridor of the Amber Road. With the extensive use of the metal detectors the quantity of finds increased steadily to at least hundreds of thousands of individual objects. The large number of what were apparently individually lost coins is telling evidence of extensive economic activities, not only in the central sites, but virtually in all settlements. This sudden increase of evidence made for describing a previously unknown archaeological phenomenon. Sometime in the 3<sup>rd</sup> c. BC, the settlement pattern of the Amber road corridor (**Map 1**), consisting beforehand exclusively of dispersed single farmsteads or small villages, becomes more complex with the appearance of large agglomerations concentrating occupation but also crafts and other economic activities (ČIŽMÁŘ – KOLNÍKOVÁ – NOESKE 2008; TREBSCHKE 2014). There seems to have been a certain



**Map 1: The Amber road corridor territory and the principal sites mentioned in the text (base map by [www.unc.edu/awmc](http://www.unc.edu/awmc), modified by J. Lehký).**

that, strictly from the point of view of the coin iconography, the Shell type is continually derived from the latest iconographically deteriorated variants of the Athena Alkidemos type series.

size and functional hierarchy among these settlements (TREBSCH 2014), this however remains to be precisely investigated. The largest settlements such as Roseldorf, Němčice, and Nowa Cerekwia, reaching up to 40 ha of surface area can be considered real centres of production and of interregional trade whereas others may have been significant rather on a regional or local level (Etrzersdorf, Stripfing, Haselbach). Due to these uncertainties we will use in what follows the generic term 'central settlements' to describe these sites as a whole.

This change in the material basis provided also a fundamental source for numismatic research in understanding the characteristics and importance of coinage, and the coin circulation in the La Tène societies during this period and it definitely refuted former notions of the primarily social or cultural role of money in the La Tène culture society (e.g. NEMEŠKALOVÁ-JIROUDKOVÁ 1997, 211–212).

The best documented coin assemblage, that from the settlement in Němčice nad Hanou, contains over a thousand coins struck predominantly during the period of a century, approximately between the mid-3<sup>rd</sup> and mid-2<sup>nd</sup> centuries BC. However, the amount of coins actually found on the site is much higher, and according to even low estimates it can account for several tens of thousands of pieces.<sup>2</sup> Having been found by amateur metal detectorists, and given the formerly not very welcoming attitude of many professional archaeologists to such procedures, the vast majority of objects thus found disappeared without proper archaeological documentation and even without much interest from the majority of specialists.<sup>3</sup>

A significant increase in the material basis over the last two decades has both quantitatively and qualitatively created new assumptions for studying the economic and social activities of the central European communities in the territory of the Amber Road corridor during the LTC period. Identifying coin production of central settlement has led to the finding that this entire area is characterised by a largely unified coinage (MILITKÝ 2015a, 75; MILITKÝ 2015b, 39). However, any further knowledge is contingent on the study of sufficient sets of coins from the various sites. Only on the basis of statistically significant assemblages of hundreds and thousands of items is it possible to describe in detail the coinage of individual settlement centres and to understand the detailed development of coinage in the entire area. Finds discovered in Austrian sites have only been partially published. The lack of publications on the majority of collections from the central settlements in Lower Austria is a particularly grave research drawback. Also insufficient is the condition of publications of the finds from Polish sites, particularly from the Silesian central settlement of Nowa Cerekwia. On the other hand, a recently revised description of the treasure of gold coins from Gorzów (RUDNICKI 2013) is very valuable.

For understanding the finds in the Moravian collection, a sample of more than one thousand coins found in the central settlement of Němčice nad Hanou (KOLNÍKOVÁ 2012; MILITKÝ 2012a) and several published collections from smaller sites, is available. The lack of published material is partly balanced by the field documentation of finds obtained through amateur surveys in some sites.<sup>4</sup>

2 The author's estimate is based on the long-term documentation of finds acquired through amateur exploration at the site. Miloš Čižmář, who was credited for saving a large number of artefacts from the site believed that more than 10,000 coins were found in the area prior to 2012 (KOLNÍKOVÁ 2012, 8).

3 The author of this article is deeply convinced that the most effective way to protect the unique source material, is proactive and positive communication between professional archaeologists and amateur metal detectorists.

4 In the past few years, the author of this article managed to document several hundreds of coins discovered in the sites of the Amber Road corridor. For exceptionally valuable information regarding a large number of other discovered coins, the author is indebted to Jiří Militký.

The aim of this study is to contribute to the knowledge of coin production and monetary exchange in the corridor of the Amber Road, and through numismatic research to understand the extremely advanced forms of social and economic organization of communities residing in the area. This study does not claim completeness, and its conclusions cannot be perceived as other than the current state of rapidly changing knowledge.

## THE BEGINNINGS OF COINAGE IN LA TÈNE CENTRAL EUROPE – THE STATER OF THE NIKE TYPE

The beginning of coin production in central Europe is closely tied to the coinage of the Ancient Mediterranean, especially Greece. It is likely that the power and trade elites in central European La Tène societies got acquainted with the functioning of developed Greek states at the latest during their south-eastern expansion in the first quarter of the 3<sup>rd</sup> century BC. Part of the Celtic experience with the Greek environment was a thorough acquaintance with a monetary economy and with the social benefits the coin production and use have in day-to-day economics and in the political functioning of a society. Undoubtedly, the conclusion of this experience developed into their own coinage in the native Celtic territories.

The oldest Celtic coins copied Greek models, not only metrologically but also visually. In central Europe, the staters of Alexander III of Macedon and his successors became the models of the oldest Celtic coins – the golden staters of the Nike type. The obverse carries a depiction of Athena's head in a Corinthian helmet, the reverse portrays a standing figure of the goddess Nike. With exceptions, the weight of the Nike type staters fluctuates in the wide range of 8.0–8.6 g. The image style varies greatly, and sites of discovery are scattered throughout the wider area of central Europe and the Carpathian basin. Their typology and chronology is yet to be systematically processed. It is not even clear where these coins were struck.<sup>5</sup> The noticeable variability of the image, considerable weight range and huge geographic dispersion of find spots provides evidence for long-term production taking place in more locations across a larger area. It is likely that a considerable amount of Nike type staters were struck in Bohemia, Moravia or the Lower Austrian Danube region (cf. ZIEGAUS 1997, 214, 218; KOLNÍKOVÁ 2006, 5–8; KOLNÍKOVÁ 2010, 10–11; KOLNÍKOVÁ 2012, 12; MILITKÝ 2008, 122; MILITKÝ 2011, 141–142; MILITKÝ 2012b, 111–112; MILITKÝ 2013, 104–105; MILITKÝ 2015a, 70–71; MILITKÝ 2015b, 37–38; FRÖHLICH 2014, 11; HOLODŇÁK – MILITKÝ 2014, 573–574; VENCLOVÁ – MILITKÝ 2014, 395).

Hypothetically, the production of the earliest Nike type staters could have started at the turn of the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC, almost certainly in the first half of the 3<sup>rd</sup> century BC. The necessity of early dating was first urged by Polenz (1982, 57–58, 101–102; cf. ZIEGAUS 1999, 108–112) based on the discovery of two staters placed in a grave in Dobian in eastern Thuringia during the LT B2/C1 period. One of the coins is heavily worn out and has two test cuts, so it is assumed it was used for a longer period and placed in the grave with a certain delay from its minting. In Gaul, the first production of staters imitating those of Philip II of Macedon, is dated back to the middle of the 3<sup>rd</sup> century BC, most precisely in the period around the year 275 BC (SILLS 2003, 107–124). Such dating need not necessarily correspond to the beginnings of coinage in the wider area of central Europe, it nevertheless, clearly evidences profound changes in the behaviour of La Tène power elites, based on their Greek experience and affecting large areas of La Tène Europe.

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5 Paulsen's work from 1933, still remains the most thorough inventory (PAULSEN 1933). New inventory will be published by Jiří Militký (MILITKÝ 2018, in print).

In the initial period associated with the production of Nike staters, the production and use of coins did not constitute a versatile economic tool (though managed by elites for their political aims) but was used exclusively by the highest social strata for settling large transactions and preserving wealth. It is possible that payment in gold staters was preferentially demanded for mercenary services from the time that Celtic mercenaries acquainted themselves with this practice in the Mediterranean. The origins of the oldest staters in Gaul are in particular associated with the sale of mercenary services (SILLS 2003, 117–119). It is likely that the Nike type staters were a generally accepted, but not commonly available, means of exchange. In any case, the production of Nike type staters must be regarded as the first step of the central European La Tène society towards a fully monetized economy.

## GREAT ECONOMIC REFORM – CREATION OF THE MONETARY SYSTEM OF THE AMBER ROAD CORRIDOR

All the available evidence suggests that, at the latest, around the middle of the 3<sup>rd</sup> century BC the power and economic relations in the Amber Road corridor formed favourable conditions for large scale coin production and their massive introduction into circulation. The Amber Road corridor covers a vast area between the southernmost regions of Upper Silesia and the Lower Austrian Danube region, including the fertile lowlands in the Danube, Morava/March, Dyje/Thaya and Upper Oder river basins. The area clearly stands on the crossroads of two strategically important communication corridors, one heading in the north-south direction between the Baltic and the Adriatic Sea and the other in the west-east direction between southern Germany and the Carpathian basin.

The intensive development of lowland settlement agglomerations with a high level of development of commodity production and trade that took place in this region during the 3<sup>rd</sup> century BC, indicates an above-standard position of this region within Central Europe. The most recognizable settlement centres, referred to as production and trade centres, include Nowa Cerekwia, Nĕmčice nad Hanou, Roseldorf, Stripfing, Etzesdorf, Haselbach and the most recently published site in the broad area of Krems an der Donau (MILITKÝ 2016, 145). It is obvious that some settlement centres (or their significance) have not yet been archaeologically recognized.

Probably after the middle of the 3<sup>rd</sup> century BC an extensive coin production occurred in the Amber Road region, based on a unique six-denomination bimetallic coinage system, labelled in the following text as the *monetary system of the Amber Road corridor*. Lower denominations – obols, hemidrachms and drachmas – were struck from silver, while higher denominations minted in gold included 1/24-staters, 1/8-staters, 1/3-staters, and staters.<sup>6</sup> From the point of view of iconography, gold coinage is represented by the *Athena Alkidemos* type series (Figs. 2–5), while silver coinage begins with the *Horse with a rosette* type series (mit *Stern*; *Leierblume/Stern* etc.) transitioning later to the *Nĕmčice / Roseldorf* type series (Figs. 6–8). Based on their iconographic similarity, the *Horse with a rosette* type, tends to be associated in numismatic research with a silver tetradrachm type (Fig. 1) called *Head/Horse with lily* (*Apolokopf/Leierblume* etc.) (KOLNÍKOVÁ 2006, 30–31; KOLNÍKOVÁ 2012, 25, 33; MILITKÝ 2011, 145; MILITKÝ 2012a, 174–175; MILITKÝ 2015a, 73; MILITKÝ 2015b, 38; MILITKÝ – KARWOWSKI 2013, 21; VENCLOVÁ – MILITKÝ 2014, 396). Due to the different weight standards, a concentration of

6 The names of Celtic coins or more precisely of their denominations are unknown. For practical reasons Greek terminology is used.

the find spots in south-west Slovakia, different stylistic rendering as well as its association with other sub-denominations, it is practically certain that these tetradrachms were not an integral part of the monetary system of the Amber Road corridor (FRÖHLICH 2015, 45–50, 56–57; cf. KOLNÍKOVÁ 2015, 260).



**Fig. 1: AR Tetradrachm, Head / Horse with lily type. Staatliche Kunstsammlungen Dresden, no. 133. Enlarged (photo by T. Smělý).**

Coin production along the Amber Road corridor was bimetallic but gold held a highly significant status and silver played a relatively minor role. This holds true even though the mutual ratio of the metal was not uniform throughout the region. Silver was used relatively more in its southern parts, and gold in the central and northern parts. Gold coins from the *Athena Alkidemos* series and silver coins of the *Horse with a rosette* and *Němčice / Roseldorf* types series from the settlement in Němčice nad Hanou can serve as illustrative examples demonstrating the importance of gold coinage in the central parts of the Amber Road corridor (KOLNÍKOVÁ 2012).<sup>7</sup> The Němčice find assemblage contains nine staters, 14 pieces of 1/3-staters, 35 pieces of 1/8-staters, and 80 pieces of 1/24-staters, one drachma and approximately 650 obols. In a stater equivalent, the value of the gold coins is approximately 21 whole staters and the value of silver coins (compare the text on page 64–65) is about 6–7 staters. Unfortunately, we do not have a comparable sample for the southern areas of the Amber Road corridor, but from partial data it seems that gold coinage also held a larger share of the total value of coin production. Consideration should also be given to the fact that the studied set consists of individually and randomly lost coins and thus we cannot take into account large amounts of trade and deposit cash. Coin hoards (treasures) provide clear evidence that these coin deposits of *Athena Alkidemos* type series consist almost exclusively of the most valuable gold coins – staters and 1/3-staters (ZIEGAUS 1997; 2015; MILITKÝ 2008, 125). The share of large gold denominations of the total volume of the minted gold was likely significant.

The cause of this gold dominance is almost certainly to be seen in relatively cheap sources of gold and at the same time relatively expensive silver. The second factor, which was closely linked with the first, was the long-term availability of sufficient gold resources. Therefore, it is possible to assume that the elite, under whose direction the monetary system was implemented, either controlled gold mines in their territories or they had the possibility of easy access

<sup>7</sup> Only published coinage was included in the examined assembles. Specific conclusions of the statistical survey are derived from the assumption that the published collections are in terms of the nominal composition, at least generally presentable.

to gold mined in neighbouring areas. At a time when the society had reached the minimum necessary degree of economic development and social order, the switch to monetary exchange became more or less only a question of the availability of gold and silver. For the elite who had the privilege to issue coins and at the same time had the possibility of mining precious metals or controlled trade with or claimed a monopoly on the trade of precious metals, it was economically more profitable to strike coins than to export the metal or to tolerate this export.<sup>8</sup> Such a model is quite general and can be seen in various modifications from Antiquity to the early Modern ages. Although it is an entirely hypothetical consideration, we may assume that at least some of the gold resources were the same that had previously been exploited for minting some of the Nike type staters. Of course, it is not possible to exclude the use of other sources of gold, in particular purchase and prey. However, such resources are costly and unstable in the long run. In contrast, the Amber Road corridor coinage, based primarily on gold minting, was characterised by its long-term stability and long-term reliance on the extensive production of gold coinage.

The long-term availability of gold and the preference of gold coinage, particularly in the central and northern portion of the Amber Road corridor, are also evidenced by the mass production of 1/24-staters at the expense of silver drachmas approximately identical with them in terms of value. Drachma minting was limited to production centres in the southern part of the Amber Road corridor. At the same time, 1/24-staters were probably also struck in the south. The steadily high gold content in the Amber Road corridor gold coinage is indirect but very significant evidence of the relatively easy availability of gold, almost certainly in the form of mined metal. Generally, the long-term high gold content of gold coins from Bohemia and Moravia, regardless of the identity of the elites issuing them, fundamentally distinguishes this area from other regions of La Tène Europe. Just the easy accessibility of gold predetermined the business model, in which gold coins were being struck as a specific kind of goods. Their competitive advantage was their high value and hence the price resulting not only from the specific gold content but also from the long-term market confidence in the high purity of the metal.

The identification of gold deposits exploited in the La Tène period, the determination of the volume of mining and also its more accurate dating are very difficult to estimate. This is where mining archaeology is at the very beginning. Geological and terrain traces of the presence of precious metals in places mined in the La Tène period could not escape the attention of medieval prospectors. It is therefore likely that the traces of La Tène period mining activities were largely destroyed by later prospecting and mining. At least for the time being we have to concede that the geological development of Moravia and Bohemia, as well as of some adjacent areas, created prerequisites for the appearance of a number of primary and secondary gold deposits, which could and would probably have been exploited in the La Tène period (MORÁVEK – LEHRBERGER 1997, 24–33; FRÖHLICH 2013, 19–21 with further bibliography).

The fact that gold was more accessible than silver in the central part of the Amber Road corridor is also evidenced by the discovery of golden ingots and especially hack gold in the settlement of NĚmčice nad Hanou. These are considerably more frequent than finds of similar objects made of silver or of alloys with silver as the main component (FRÖHLICH 2012b). However, the hack metal likely provides valuable testimony about the nature of exchange at

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8 The right of minting coins, as we know it from the Ancient or Medieval societies, is not documented for the Central European Celtic society of the pre-oppida period. However, it is likely that this economically exceptional and usually highly profitable activity was reserved for the most economically influential and powerful elites in La Tène societies.

the beginning of the central settlement in Němčice nad Hanou. Key for the interpretation of these objects and their function is especially their date. The extensive use of the hack metal as a substitute currency in the environment based on monetary exchange (FRÖHLICH 2012b, 148–150) seems unlikely due to the highly scattered fineness and weight of the documented pieces. All the disadvantages compared to the clearly declared value of the coins are obvious. Moreover, we may hypothesise that the elites prevented such practices in order to boost monetary exchange and coin production. Cutting down large pieces to smaller ones is a clear proof of the intentional creation of smaller pieces for the needs of exchange. For this reason, the hack metal could not be the primary raw material for coin production (FRÖHLICH 2012b, 148–149, 159; cf. MILITKÝ 2013, 104). It can be assumed that the primary function of the hack metal was that of a non-monetary currency, a specific commodity that, like the coins, was easily convertible, transportable, was a store of value and at the same time its measure. However, the value of the hack metal, unlike the coins, was to a certain extent subjective and dependent on the ability to detect the gold content of the alloy visually or otherwise. It is likely that the hack metal was mainly used in the environment of still underdeveloped monetary exchange (FRÖHLICH 2012b, 148, 150), that is, at the beginnings of the Němčice settlement. The site's foundation at the turn of the La Tène B2/C1 period (ČIŽMÁŘ *et al.* 2008, 664) almost certainly predates the introduction of the Amber Road corridor coinage system. Such a presumption is supported by the fact that in the Stradonice oppidum, about a century later and functioning entirely in the period of developed monetary exchange, the hack metal was virtually absent (MILITKÝ 2015b, 672).

While in the case of gold we assume the exploitation of local resources, most of silver was probably imported. At least for the time being, we have no evidence of local extraction and of the technologically complex processing of silver ore, even in the locations later exploited in the Middle Ages. The import of silver, almost certainly along the Danube trade route from southeastern Europe, is probably best evidenced by the character of coin production in the central sites of the southern part of the Amber Road corridor. Silver drachmas (and hemidrachms of half their value) were preferred here to the value identical golden 1/24-staters. We can almost certainly exclude the possibility that these denominations were minted also in the central and northern part of the Amber Road corridor.

The creation and operation of the Amber Road corridor monetary system are connected with the power, organizational and business activities of the elite, which, at the latest in La Tène B2/C1, around the middle of the 3<sup>rd</sup> century BC, controlled the extensive area along the Danube and Morava river communication corridors. Locally and temporarily, the monetary system of the Amber Road corridor is linked to coin production in the central lowland settlements in the corridor of the Amber Road during the La Tène C1–C2 period. The presumed strong central authority is reflected in the uniformity of the coinage throughout the region, and in multiple production sites at the same time. The breakdown in the power structure and economic functioning of the whole area signals a short but very distinct fragmentation of the coinage at central sites that occurred sometime during La Tène C2. These changes were associated with the gradual decline, marginalization or abandonment of most of the prosperous central settlements and, in general, with changes in the settlement structure. This short period represents the decline phase of the Amber Road corridor monetary system.

The long-term and extensive coin production in the single and uniform monetary system in the Amber Route corridor was a powerful inspirational impetus for the economic and monetary development of the surrounding areas. This is clearly evidenced by the fact that the Amber Road corridor monetary system was the initial model for the development of local coinage systems (variously evolving over time) in a wider geographical area, commonly referred to



as the 'Boian' territory or the 'Boian' coinage area. The receptivity towards this influence was almost certainly facilitated by similar economic conditions, especially the easy accessibility of gold, or the need to adapt for business reasons to the previously established state of affairs. It is hard to accept that the development of similar coinage systems could have been due to the shared tribal identity of the elites of these areas. Associating the coinage systems that developed in Bohemia, Moravia, and the neighbouring regions, with the people of Boii supposedly settled there, is misleading from this point of view.

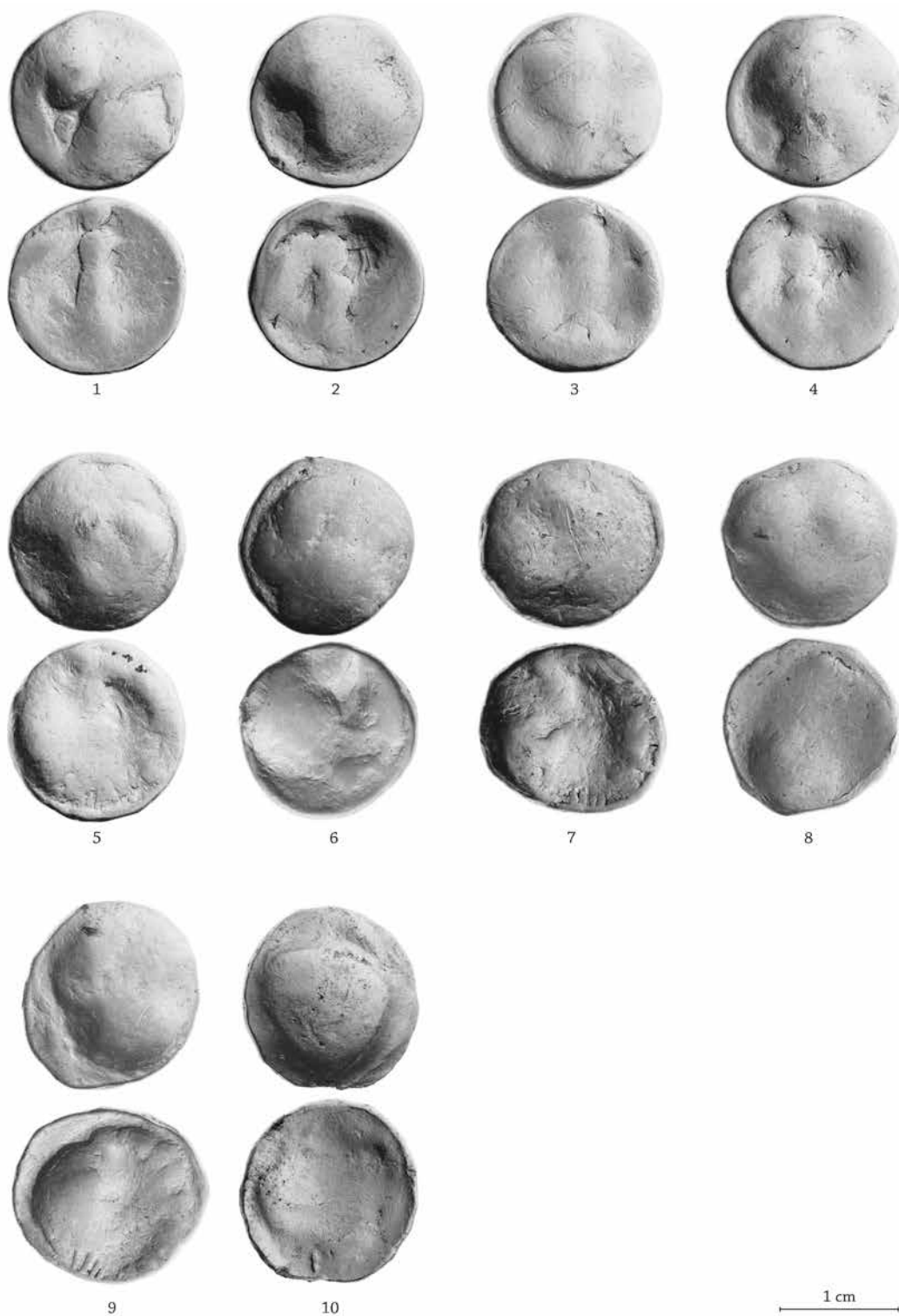
## TPOLOGY AND METROLOGY

For the purposes of this text, data of approximately 1,500 coins were processed and statistically evaluated. The metrological data or provenance information is not available for some of them, so their utility for statistical purposes is limited. In order to work systematically with the material, it was necessary to sort the material and outline a working typology (**Figs. 2-8**). The individual coin variants have been defined so that each coin in at least an average state of preservation could be assigned to a type (or variant) without any doubt as to the correctness of the designation. The individual variants represent coins struck with one of the dies from a visually related group, which can be assumed to have been made of one or a small number of hubs and used for minting over a relatively limited time span. However, given the overall duration of coin production, it may be expected that for some variants such a period could take many years. The goal of creating the working typology of the Amber Road corridor coinage was not to provide an exhaustive overview of coin types and variants but to obtain a practical tool for analysing and presenting the processes involved in the coin production.<sup>9</sup> The coin types or variants documented only by a few pieces or those documented by multiple pieces lacking provenance and weight data were not included in the overview for the sake of clarity of the presented data. Also excluded is the small group of contemporaneously minted coins whose iconography is modified or different from the norm, referred to as 'minor issues' (cf. page 60).

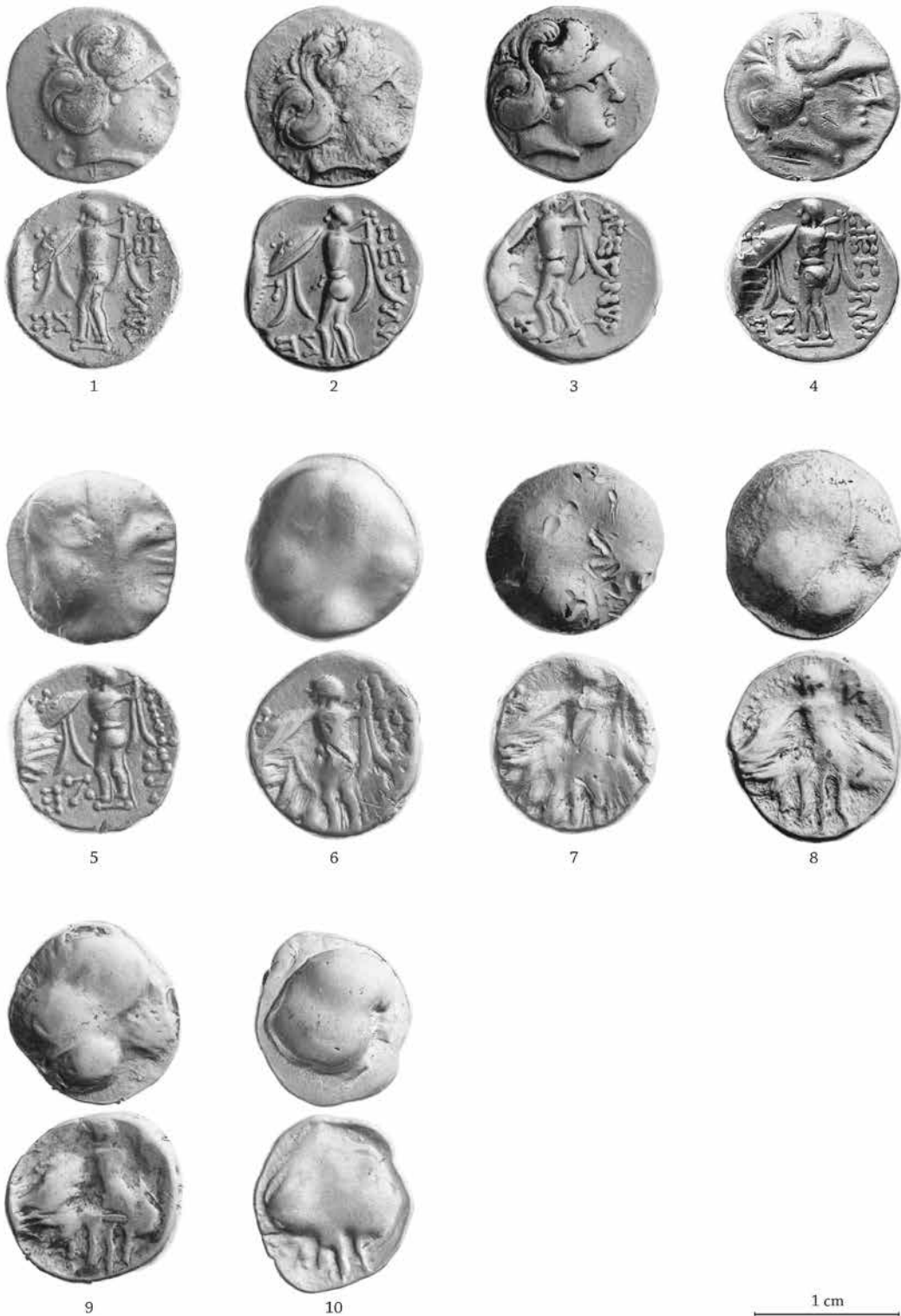
The average weights in the stater or drachma equivalent and the frequency of each of the examined coin variant are shown in the graphs (**Fig. 9**). The figures are shown separately for each denomination. Only entire specimens with no significant metal loss due to mechanical damage were included in the sample. This does not apply to specimens with the usual traces of circulation wear. A small difference between the currently detected weights and the primary coin weights at the moment of their striking caused by their handling during circulation or by their deliberate damage does not appear to be significant in terms of the research results. At least for the time being, there is no evidence of systematic deliberate damage to coins by grinding or clipping for unlawful enrichment. The quantities of the individual variants are influenced by the composition of the investigated assemblage with a very uneven representation of coins from the single production sites. They can therefore only be a guideline for estimating the total volume of their production.

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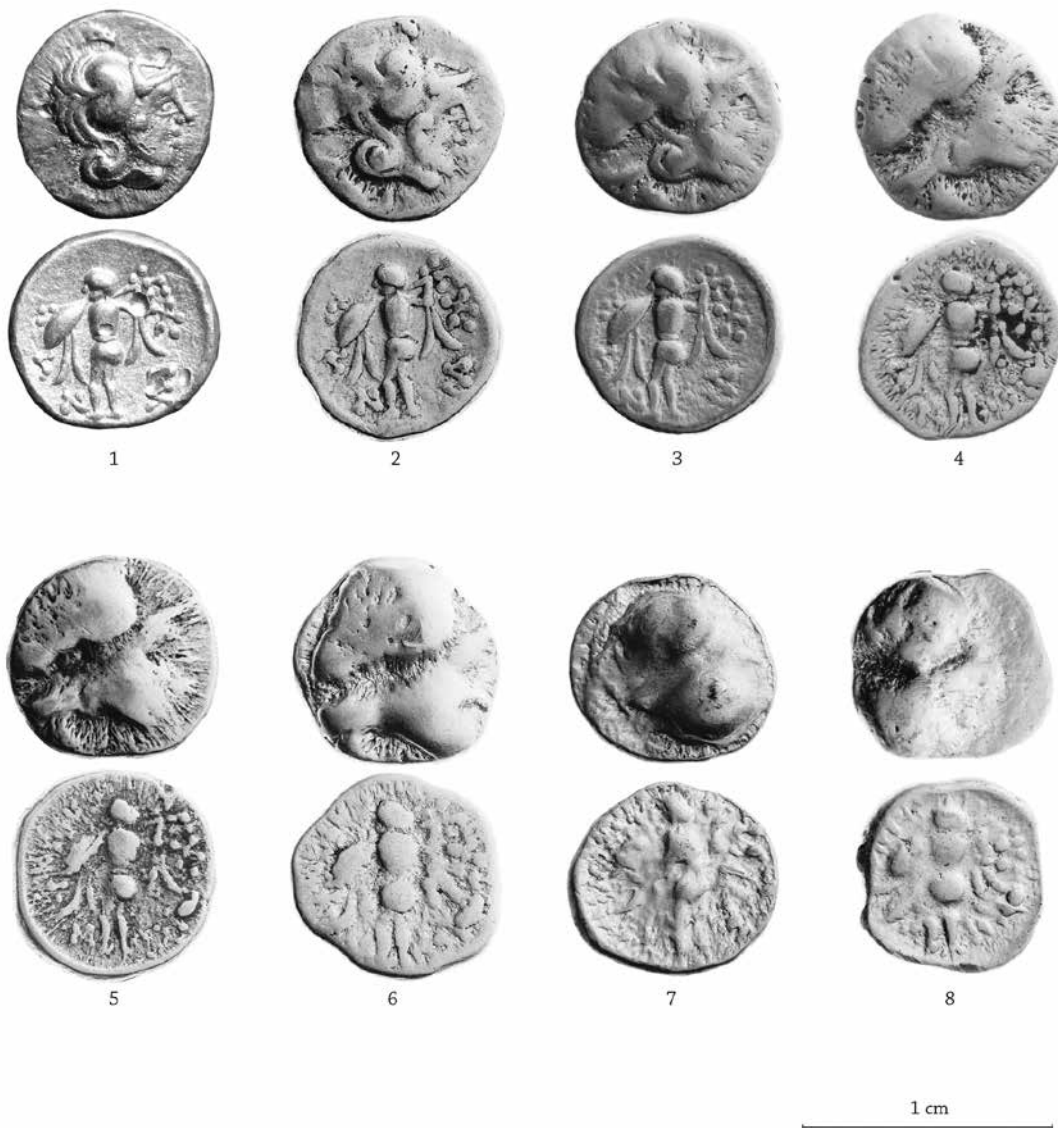
9 Also establishing detailed parameters of the coin types or variant classification was left to future research.



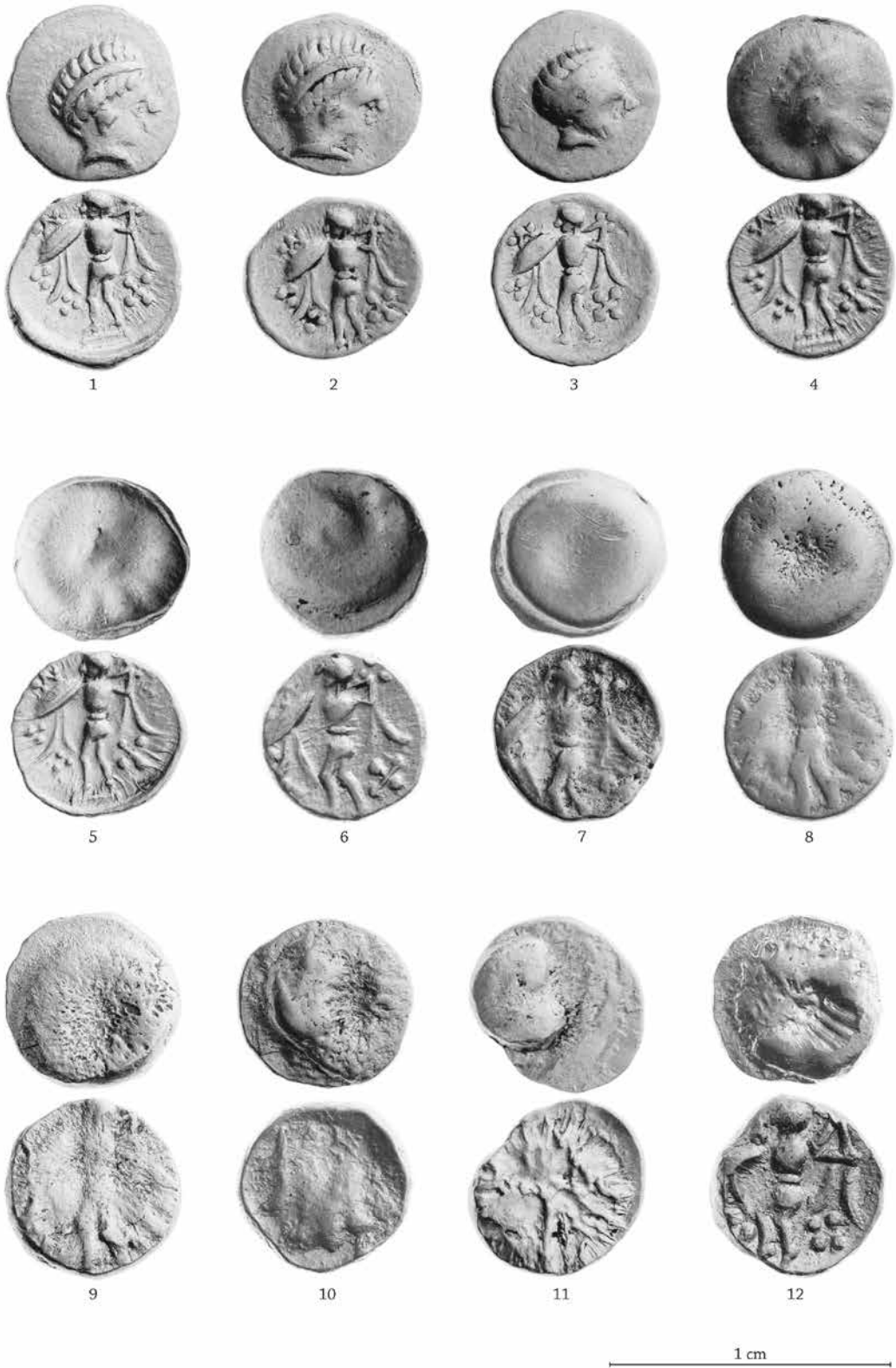
**Fig. 2: Basic variants of staters of the *Athena Alkidemos* type series, struck in the monetary system of the Amber Road corridor. 1 - Moravské zemské muzeum, Brno, no. A179212; 2 - Národní muzeum, Praha, no. H5-201092; 3 - Moravské zemské muzeum, Brno, no. A168782; 4 - Moravské zemské muzeum, Brno, no. A168781; 5-10 - private collections (photo by T. Smělý).**



**Fig. 3: Basic variants of 1/3-staters of the Athena Alkidemos type series, struck in the monetary system of the Amber Road corridor. 1, 3-8, 10 - private collections; 2 - Moravské zemské muzeum, Brno, no. A168800; 9 - Vlastivědné muzeum v Olomouci, no. N27792 (photo 1-3, 5-10 by T. Smělý; 4 Aurea Numismatika).**



**Fig. 4: Basic variants of 1/8-staters of the *Athena Alkidemos* type series, struck in the monetary system of the Amber Road corridor. 1, 3-4, 6, 8 - private collections; 2 - Moravské zemské muzeum, Brno, no. N13; 5 - Moravské zemské muzeum, Brno, no. N12; 7 - Moravské zemské muzeum, Brno, no. N182539 (photo by T. Smělý).**



**Fig. 5: Basic variants of 1/24-staters of the *Athena Alkidemos* (and *Staré Hradisko*) type series, struck in the monetary system of the Amber Road corridor. 1-12 - private collections (photo by T. Smělý).**



**Fig. 6: Basic variants of drachmas of *Horse with rosette* type series, struck in the monetary system of the Amber Road corridor. 1, 3, 5-7 - private collections; 2 - Staatliche Kunstsammlungen Dresden, no. 145; 4 - Staatliche Kunstsammlungen Dresden, no. 144 (photo by T. Smělý).**



**Fig. 7: Basic variants of hemidrachms of *Horse with rosette* type series, struck in the monetary system of the Amber Road corridor. 1-3 - private collections (photo by T. Smělý).**



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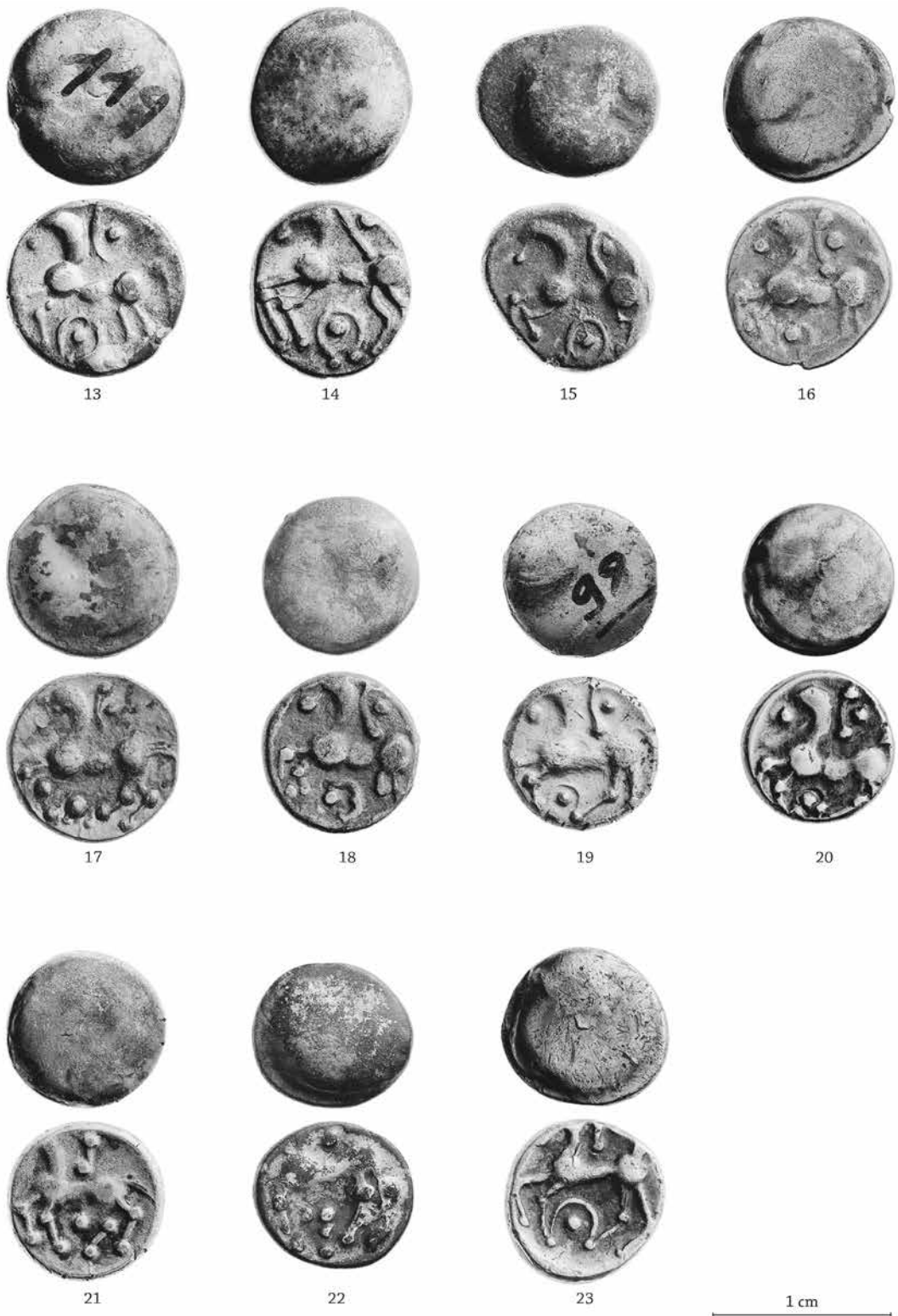
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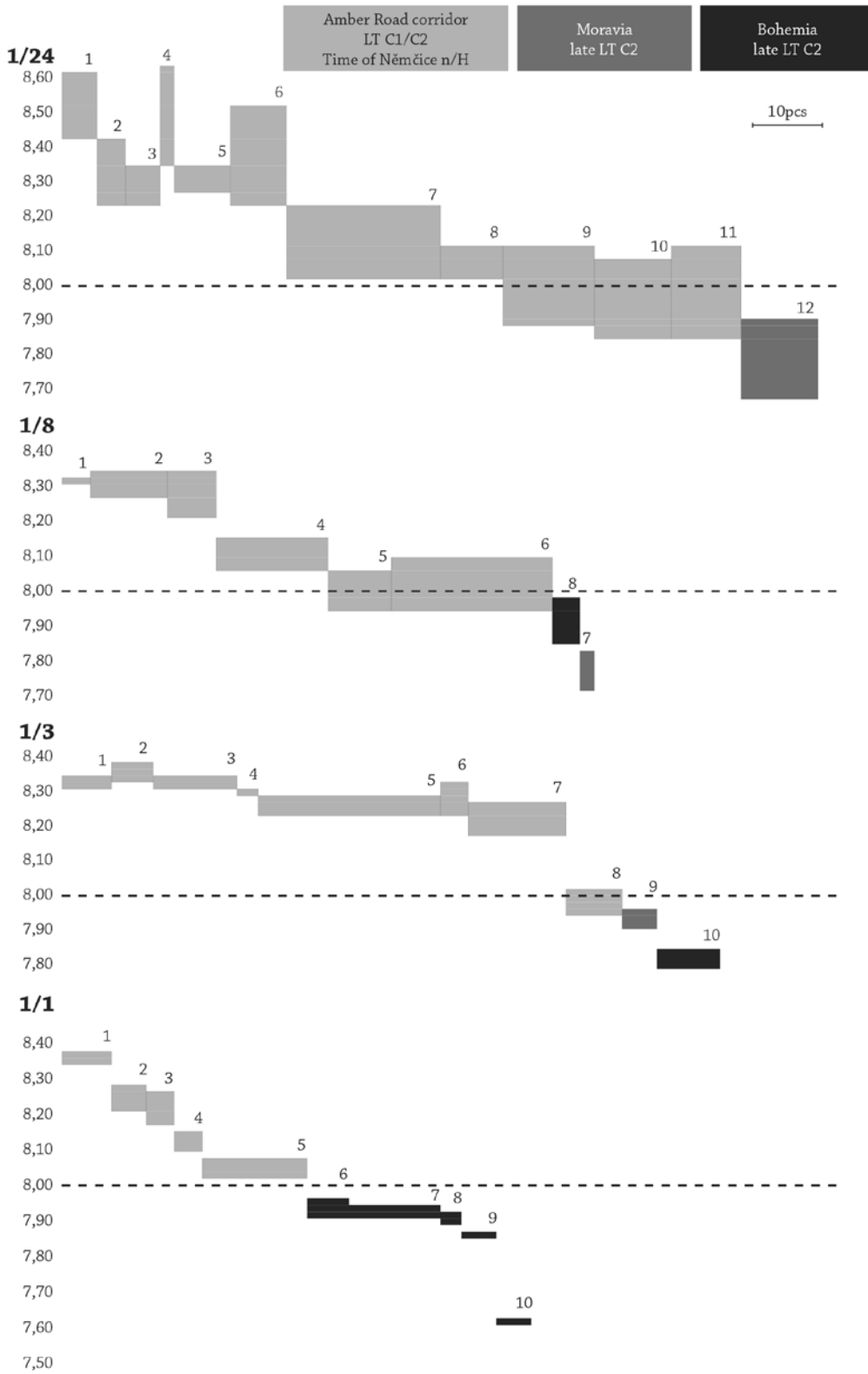
1 cm





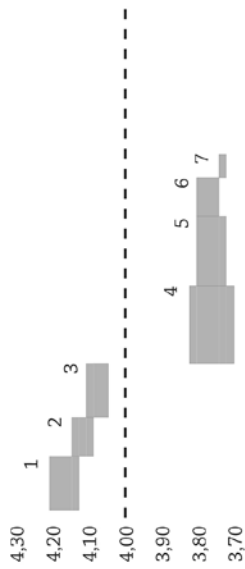
**Fig. 8: Basic variants of obols of *Horse with rosette* and *Němčice / Roseldorf* type series, struck in the monetary system of the Amber Road corridor. 1 - Moravské zemské muzeum, Brno, no. A168469; 2-23 - private collections (photo by T. Smělý).**



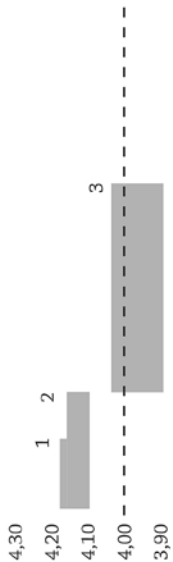


**Fig. 9: Graph of average weight in stater/drachm equivalent and number of available pieces of the coin variants in each denomination.**

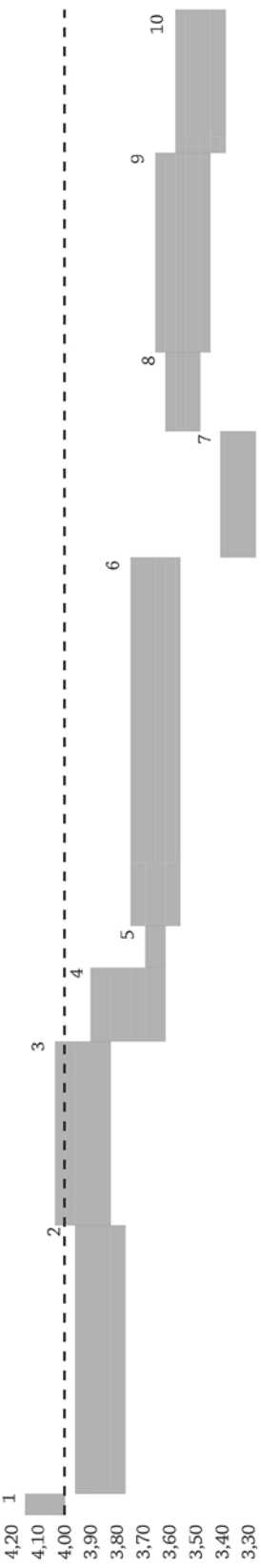
**Drachm**



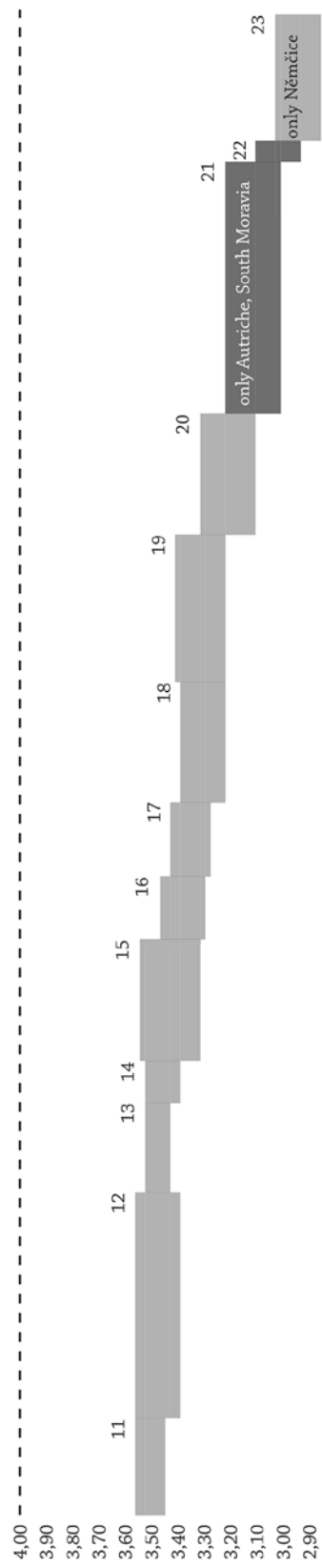
**Hemidrachm**



**Obol**



**Obol**



only Autriche, South Moravia

only Néměnce

Variants are ranked in the supposed chronological order, based on the deterioration (or development) of the coin image and taking into account the results of the coin-weight analysis. The latter is based on a generally acknowledged model which states that the weight of Celtic coins was decreasing steadily over time. In order to take into account not only the resulting average value but also the variance of the weight of the individual specimens, each variant is represented not only by the average weight of all the specimens but also by the average weight of the heavier half of the documented specimens.<sup>10</sup> The value scatter is proportional to the weight homogeneity of each set. As the coin weight is a significant chronological indicator, a significant average weight variance among the examined specimens of a single coin variety may in some cases indicate its chronological heterogeneity. However, due to the small size of some of the sets, it may also be a mistake due to their unrepresentative composition. An important factor affecting primarily the final weight scatter is the variance of flan weights already at the moment of striking. The results of the analysis clearly confirm that the relatively highest weight scattering is characteristic of the lightest and the least valuable denominations – 1/24-staters and obols (**Figs. 5, 8 and 9**). In the case of 1/24-staters, this is undoubtedly the result of insufficient technological skills and possibilities necessary for the production of flans with such a high precision. Certain inaccuracies also result from insufficient precision of the input data. Some coin weights are published with accuracy only in the order of a hundredth of a gram. Even if the published data were correctly rounded, the weight of a 1/24-stater can be in that case deviated by up to 0.12 g when converted to a stater-equivalent. In the case of the obols, a larger tolerance of the issuer to the mass deviations can be assumed, due to their relatively small value. In the case of silver coinage, the measurement results can also be affected by the corrosion of the relatively highly reactive silver alloy deposited in the soil.

## CHARACTERISTICS OF COIN PRODUCTION, CHRONOLOGY

The golden denominations are referred to as series *Athena Alkidemos* after the barbarised image of a standing Greek goddess on their reverse.<sup>11</sup> The standing figure with distinct drapery hanging from their arms, holds a shield in their left hand and in their right hand an unidentifiable object stylized into a simple straight line. We encounter the same or a similarly stylized motif of the goddess Athena on numerous coins issued by various Greek authorities during the 3<sup>rd</sup> century BC (compare text on page 74). Its model is likely to have been the standing figure of the goddess Athena Alkidemos holding a thunderbolt in her right hand, depicted in the Macedonian silver tetradrachms and drachmas of Antigonos II Gonatas. Some interesting details on the Celtic stater sub-units of the *Athena Alkidemos* series are three dots in a place where the figure holds the unidentified linear object. Hypothetically, these dots may symbolize three lightnings held by Athena in the Macedonian model.

On the obverse of the golden denominations are depicted different iterations of the barbarised head of the goddess Athena in a Corinthian helmet (on staters, 1/3-staters and 1/8-staters; **Figs. 2-4, Pl. 2/1:1-3**) or a male head with a diadem (1/24-staters; **Fig. 5, Pl. 2/1:4**). The

10 Or the 'greater' half if the sample collection consists of an odd number of specimens.

11 The interpretation of the representation of Athena Alkidemos copied on the Celtic coins has recently received more attention (FRÖHLICH 2013, 11, 26; RUDNICKI 2013, 46; MILITKÝ 2016, 140). For the present author the notion of a 'barbarized figure' of Athena Alkidemos encompasses barbarisation both in terms of form and content. Similarly, other Mediterranean models represented on La Tène culture coins can be viewed as such. The author of this text, therefore, does not question the possible interpretation of the barbarised image of Athena Alkidemos as a Celtic warrior.

reverse sides carry invariably the barbarised figure of Athena Alkidemos, supplemented with pseudoinscriptions and simple symbols that differ from one denomination to another (**Figs. 3-5, Pl. 2/1: 2-4**). Stylistically different is the design of the reverse side of staters on which the Athena Alkidemos figure is differently modelled and which lack the pseudoinscriptions and symbols (**Fig. 2, Pl. 2/1:1**).

Also in the silver coinage, the image is based on Mediterranean models. The obverse bears a male head with a simple diadem or completely bareheaded, on the reverse there is a horse figure above which is placed a rosette (star, solar symbol). Between the horse's legs is a lily-shaped symbol (**Figs. 6-8, Pl. 2/1:5-8**). The image of the smallest denominations – the obols – evolved and simplified over time. In the later issues, the obverse carries only a flat bulge, and on the reverse the rosette is replaced by other varying symbols. On the latest obols, the lily-shaped symbol under the horse is sometimes reduced to a simple dot. The models of the obverse and reverse images of the silver coins probably cannot be looked for in a single coin; perhaps they are a synthesis of multiple models (cf. text on page 74).

A striking feature of the golden denomination series is the decreasing weight accompanied by the more or less continuous deterioration of the coin image. Stylistically fine and perfectly crafted specimens are typical of the heaviest and the oldest issues, the exception being staters, among which high quality pieces are completely absent. Even on the oldest issues of best execution are missing the image details, both obverse and reverse motifs are rendered only in a hint, on the reverse there are no pseudoinscriptions or individually placed symbols next to the figure. For this reason, the question was whether these staters, sometimes referred to as the *Plumlov* type, actually belong to the same series as the *Athena Alkidemos* stater sub-units (KOLNÍKOVÁ 2006, 6, 13; KOLNÍKOVÁ 2010, 11-12). At the present state of knowledge, we cannot say why the stater dies were executed differently from those of their sub-units. The average weight of these oldest stater variants practically coincides to the stater equivalent average weights of the earliest 1/3-stater and 1/8-stater variants and therefore, they appear to have been minted in roughly the same period with dies produced at the same time. A consistent weight standard, identical iconography and occurrence at the same sites are hopefully sufficient proof that they are a single group of coins minted in a single monetary system and under the authority of a single issuer (cf. RUDNICKI 2013, 36-41). The idea that the staters started being issued only with a certain delay compared to their sub-denominations and that the dies could be produced at another time and in other circumstances, remains a mere hypothesis. It could admittedly happen if the earliest stater sub-units were minted in the initial high weight standard for a longer period of time and the stater production then started only with a certain delay. The motives for priority production of lower denominations could have been the effort to supply the market primarily with a greater quantity of coins of lower value and to bolster in this way the development of a monetary economy in the fastest possible way.

The silver denomination series also experienced gradual deterioration of the coin image over time. Unlike the gold coins, however, new dies with a clear image were repeatedly produced over time. In the case of obols, the deterioration of the reverse image has never occurred. The image only grew simplified, but the contours remained sharp.

It is likely that the continuous deterioration of the coin image is at least partly related to the technology of die production through hubs, i.e. die models with a positive image (DRAGANOV 2007; ZIEGAUS 2013, 526-527). This technology enabled the simultaneous production of numerous visually almost identical dies. The wear of the hub relief then translated into a deterioration of the coin image. It is not clear, however, why no new hubs with a clear relief were made for the production of dies of the *Athena Alkidemos* gold coinage throughout their

entire long production. The cause is probably to be sought elsewhere than in ignorance of the necessary technology – the dies for the silver obols were continually renewed and deterioration of their coin image did not occur over time. Similarly, the reverse image of the *Athena Alkidemos* type series resisted deterioration for a long time, while that on the obverse wore off relatively much more quickly. It was assumed that staters with an unclear image were struck with worn dies (KOLNÍKOVÁ 2012, 13). With regard to the total absence of staters from ‘unused’ dies, such a possibility seems unlikely. In addition, in the studied collection it was not possible to identify any coin series showing a progressively deteriorating relief, whose production could be attributed to a single die progressively wearing off.

The gradually decreasing weight of gold coins did not affect the quality of the metal. The fineness analyses carried out (HARTMANN 1985; KOLNÍKOVÁ 2012, 185–190; FRÖHLICH 2013) show that throughout the entire La Tène C period gold coins were struck in the production centres of the Amber Road from high-quality alloys, typically with a fineness of 97% or higher. Also, most silver coinage has been proven to have a high alloy purity exceeding, as a rule, 94% (KOLNÍKOVÁ 2012, 185–190). These results are, however, less conclusive due to a smaller number of measurements and, in particular, to technological limitations. Due to the high reactivity of silver to its surrounding environment, the coin surface may be affected by changes in its chemical composition without recognizing the magnitude of these changes. The possibility of a very accurate measurement of the elemental composition of silver coins by the standard XRF analysis needs to be approached, therefore, with a certain scepticism.

On the basis of the currently available evidence, it seems that in all production sites, a largely identical coinage was produced with image-identical dies. Hypothetically, this is a consequence of the centralized production of dies distributed subsequently into individual mints. The hypothesis of itinerant moneyers (KOLNÍKOVÁ 2006, 30, 32; KOLNÍKOVÁ 2010, 15) seems unlikely. It is difficult to imagine the regular and long-term circulation of the technologically demanding production between the centres distant up to hundreds of kilometres from each other. Such a model would also be problematic from a commercial point of view. Having to postpone the minting of the available metal over a prolonged period of time, would cause the issuers (whoever they were) great capital strain. Such a practice would not support the development of the money market, and at the same time, it would bring to the issuer only limited revenue from the coin production. This would be in direct contradiction with the primary economic interest of the central authority.

In addition to the standardized gold coins we encounter in more or less all the central sites of the Amber Road corridor and which can be described as the ‘main’ group (**Figs. 2–5**), there are also some rare varieties, differing from them in the details of the coin image, or even with completely specific motifs. They are often conspicuously concentrated on one site or its surroundings. For the purposes of this text, these coins are classed as a ‘minor’ group (**Fig. 10**). Some of these coins were recently published (MILITKÝ 2016). Partial metrological data show that they are usually in a metrologically identical or similar standard with the bulk of the main group. These coins were minted mostly during the heyday of the Amber Route corridor coinage system, before its decline phase. We exclude from the overview some unusual coin types which due to their lower weight might be considered late, i.e. from the decline phase of the coin system. Future research will show whether these coins were issued from the authority of the same issuer as the main series and in the same mints. In some cases, the gradual deterioration of the coin image suggests a relatively long production period. Due to the insufficient sample provided by the limited collection, no more attention will be given to these coins in the following text.



**Fig. 10: 'Minor group' of gold coins of the *Athena Alkidemos* type series (selection).**

**1: 1/3-stater, 2-4: 1/8-staters, 5-7: 1/24-staters. 1-5, 7 - private collections; 6 - Moravské zemské muzeum, Brno, no. N200012. Enlarged (photo 1-2, 4-7 by T. Smělý, 3 E-bay).**

## ORIGINS AND COURSE OF COINAGE, WEIGHT STANDARD

In the discussion about the dating of gold coins of the *Athena Alkidemos* type series, the silver drachma of the *Minerva / Athena Alkidemos* type (PAULSEN 1933, Nr. 188-194) (**Fig. 11**) has played an important role since the beginning of the 20<sup>th</sup> century. Both these types of coins combine the same type of reverse image of *Athena Alkidemos*, demonstrating the mutual influence. The *Minerva / Athena Alkidemos* drachma is linked through its obverse with the *Minerva / Horse protome* drachma (PAULSEN 1933, Nr. 183-187) (**Fig. 12**). In view of their visual style that shows a clear inspiration by Romano-Campanian coins from the first half or mid-3<sup>rd</sup> century BC, these drachmas were considered to be coins minted by Italian Boii (PINK 1936, 17; CASTELIN 1985, 154; ZIEGAUS 1997, 216; cf. KOLNÍKOVÁ 2006, 13-18). The motif of a standing *Athena Alkidemos* on the *Minerva / Athena Alkidemos* drachma was believed to have been adopted from the Macedonian tetradrachm of Antigonos II Gonatas (**Fig. 13**) or Philip V of Macedon (**Fig. 14**). In accordance with the (later questioned DOBESCH 1993, 9; cf. KYSELA 2010) theory on the transfer of Italian Boii expelled by the Romans to central Europe, numismatic research generally accepted the notion that the motif of *Athena Alkidemos* on gold coins of the *Athena Alkidemos* type series was adopted from *Minerva / Athena Alkidemos* drachmas. The gold coinage of the *Athena Alkidemos* type series was then attributed to the Boii who allegedly moved from Italy to central Europe. This concept firmly rooted in both the numismatic and archaeological research was completely disproven by Rudnicki (2013, 46-50). He pointed out that the imitation of the inscription on the drachma in the form of CIEC does not correspond with the imitation of the inscription on the oldest variants of the 1/3-staters (**Fig. 3, var. 1-3**),



Fig. 11: AR drachma, *Minerva / Athena Alkidemos* type. Enlarged (auction Macho & Chlapovič, AC 14/2017, no. 7).



Fig. 12: AR drachma, *Minerva / Horse protome* type. Enlarged (after PAULSEN 1933).



Fig. 13: AR Tetradrachm of Antigonos Gonatas. Enlarged (auction Dr. Busso Peus Nachf., AC 410/2013, Nr. 169).



Fig. 14: AR Tetradrachm of Philip V of Macedon. Enlarged (auction Gorny & Mosch, AC 228/2015, Nr. 79).

but on the more recent ones (Fig. 3, var. 4–6). The *Minerva / Athena Alkidemos* drachmas could therefore not be the model for the *Athena Alkidemos* series gold coins. Also, the image of the drachma's reverse was inspired by the later versions of the *Athena Alkidemos* 1/3-staters, with the pseudoinscription in the form of CIEC. *Minerva / Athena Alkidemos* drachmas were not struck in Italy, but – considering their find concentration in central Europe – probably in the southeast neighbourhood of the Amber Road corridor (cf. FRÖHLICH 2016, 170–172).<sup>12</sup> The average weight of the *Minerva / Horse protome* type (FRÖHLICH 2016, 171, tab. 1) corresponds approximately to the average weight of the oldest variants of the drachmas of *Horse with rosette* type (Fig. 6, var. 1). It is likely that both were based on the same weight standard. It cannot be ruled out that the weight of the drachma type *Minerva / Horse protome* reflects the previously established weight standard of the silver coinage of the Amber Road corridor monetary system. The weight standard of the Romano-Campanian didrachm, 6.6–7.3 g (RUTTER 2001, 45), is significantly lower. It could not, therefore, be the original weight standard of the *Minerva / Horse protome* type. This is another argument against the Italian origin of both drachma types. The origin of the drachmas with the head of 'Minerva' is likely to be sought in the same production centres (cf. FRÖHLICH 2016, 171–172).

12 I am thankful to Jiří Militký for information on the unpublished finds.

On the basis of the visual similarity of the letters EF (EP) alongside the Athena figure on the drachmas of the *Minerva / Athena Alkidemos* type and on the tetradrachm of Philip V of Macedon, Pink considered the beginning of the coinage by Philip's tetradrachm in 221 BC to be the *post quem* date for the issue of the drachma (PINK 1936, 17). While the theory of the Italian origin of the type *Minerva / Athena Alkidemos* must be rejected, this observation by Pink, attesting the chronological relationship between the coins, seems to be correct. The correspondence is so pronounced that it can hardly be accidental. For us, it is important that it is likely to give indirect evidence of the dating of the beginnings of gold coinage of the *Athena Alkidemos* series. The model of the *Minerva / Athena Alkidemos* drachma was not only a 1/3-stater of the *Athena Alkidemos* type series, probably variants 4–5 (**Fig. 3**) with the still uncorrupted pseudoinscription CIEC, but probably also of the tetradrachms of Philip V struck in 220–216 BC (HOOVER 2016, 401). In terms of chronology, it follows that the creator of the dies or the issuer of the drachma with the figure of Athena Alkidemos probably knew both types and that, therefore, the Philip V tetradrams and the 1/3-staters var. 4–5 probably circulated at roughly the same time, that is in the last two decades of the 3<sup>rd</sup> century BC or somewhat later. The find context in which a *Minerva / Athena Alkidemos* drachma was found in Veľký Slavkov in northern Slovakia was archaeologically dated to the second half of the 3<sup>rd</sup> century BC (KOLNÍKOVÁ 2006, 14–15).

The possible early dating of the early gold coins of the *Athena Alkidemos* type series already before the mid-3<sup>rd</sup> century BC or at the latest in its third quarter was pointed out by Rudnicki with regard to the assumed genesis of the pseudoinscription ΛCEΓNVA on the allegedly oldest 1/3-staters of the series *Athena Alkidemos* var. 3 (**Fig. 3**) (RUDNICKI 2013, 50). The imitation of the inscription reads as a composite of the first characters of Alexander's name and the last characters from the name of Antigonos. However, considering the deterioration of the image, the oldest variety of the 1/3-staters is not the var. 3 but probably the vars. 1–2 (**Fig. 3**) with a pseudoinscription CEΓNVA. The possibility that the inscription was inspired by Alexander's name seems rather hypothetical in view of its character variations. The hypothetical possibility that the part of the imitative inscription in the form of ΓNV characters could be inspired by the inscription ANTIGONOIY has been pointed out earlier by Militký (2011, 144). The supposed image models have long been one of the main supports for the dating of the *Athena Alkidemos* type and the *Horse with rosette* type. Unfortunately, in the case of the Antigonos II Gonatas tetradrachms, minted more or less throughout the period of his reign, and perhaps also posthumously from the mid-270s to 221 BC (HOOVER 2016, 390) the time span is too wide for any considerations. The Romano-Campanian or Central Italian coins are not of great help for an accurate chronology either. These models for drachmas of the type *Minerva / Horse protome* and hypothetically also for silver drachmas, as well as hemidrachms and obols, of the type *Horse with rosette* (ZIEGAUS 1997, 216; RUTTER 2001, no. 275, 278, 295; cf. FRÖHLICH 2016, 175) were struck approximately in the second third of the 3<sup>rd</sup> century BC. Considering their similar weights, the production of both drachma types was probably at least approximately contemporary, but it is not clear with what delay after the Romano-Campanian and Central-Italian coinage both coin types were produced. The assumption that this happened before the middle of the 3<sup>rd</sup> century BC (FRÖHLICH 2016, 175, 183–184) or shortly after the middle of the 3<sup>rd</sup> century BC (ZIEGAUS 1997, 216) is a mere hypothesis. Importantly, we do not know the intensity of their production in the initial period of the Amber Road corridor coinage system. From the volume of their oldest variations, therefore, we cannot deduce the delay between the beginning of their production and the circulation of the later 1/3-staters var. 4–5 (**Fig. 3**), which we are able to date in the last two decades of the 3<sup>rd</sup> century BC or perhaps the beginning of the 2<sup>nd</sup> century BC. Similarly, undisputable chronological indications are not



provided either by the hoard from Hrhov, Slovakia, which included the Audoleon-Philipean tetradrachms, the hemidrachms of the *Minerva / Sitting figure* type and several gold coins of the *Athena Alkidemos* series – two staters one of the var. 1 (**Fig. 2**), and two 1/3-staters of var. 5 (**Fig. 3**) (FRÖHLICH 2016, 184; FRÖHLICH 2017).<sup>13</sup> From the above follows certain scepticism concerning the possibility of dating more precisely the beginnings of the Amber Road corridor coinage system. In the case that the foundation of the agglomeration in Němčice nad Hanou can be dated around the middle of the 3<sup>rd</sup> century BC, then the Amber Road corridor coinage system most likely started in the third quarter of the 3<sup>rd</sup> century BC.

The average weights of the earliest varieties of the 1/8-staters, 1/3-staters and of the 1/1-staters exceeded more or less universally the stater equivalent of 8.3 g, approaching in heavier specimens 8.4 g (**Fig. 9**). Taking into account the possible weight loss at least for some specimens and the existence of a larger number of specimens weighing more than 8.4 g in stater equivalent, it can be assumed that the initial stater standard of the oldest variants of the 1/8-staters, 1/3-staters and entire staters was around 8.4 g. This value, however, does not correspond to the average weight of the earliest variants of 1/24-stater which yields 8.44 g, and in massive specimens as much as 8.64 g. The initial stater standard of the earliest 1/24-stater variants can, therefore, be hypothetically expected to be around 8.5 g. Such a finding is very surprising, also because the production cost of the metal weight unit was higher in 1/24-staters than in 1/1-staters. It would, therefore, be more understandable for the issuer to compensate for the increased costs by reducing the weight of the flans.<sup>14</sup> If we exclude a statistical error caused by the random selection of heavier specimens, we may hypothesise that the production of 1/24-staters started in advance of the other golden denominations.<sup>15</sup>

In connection with the assumed initial weight standard of the earliest gold coinage of the Amber Road system of about 8.4 g, it is necessary to draw attention to a specific sub-group of the Nike type stater series with strongly barbarized obverse and reverse images (PAULSEN 1933, Nr. 26–34). Of the ten known specimens, four have a known provenance: there are two in the Nechanice hoard in East Bohemia (ZIEGAUS 1997, 214–215; SMEJTEK – LUTOVSKÝ – MILITKÝ 2013, 223–224), and two from unknown sites, one with doubts in Moravia and another in Bohemia (**Fig. 15**). Find places are concentrated in Bohemia (and Moravia). The average weight is 8.47 g and the average weight of half of the heavier specimens is 8.52 g. The whole group is strikingly homogeneous in terms of iconography and weight, and it is likely that all the coins were coined by one issuer in Bohemia or Moravia. Considering the baseline weight parameters of the Amber Road corridor monetary system, it seems very important that the weight corresponds to a stater standard of about 8.5 g. It is slightly higher than the presumed standard of the earliest 1/8-staters, 1/3-staters and the stater of the *Athena Alkidemos* series and roughly identical to the hypothetical standard of the earliest 1/24-staters. This suggests that the setting of the initial weight parameters of the Amber Road corridor monetary system followed a mass standard previously established in this area. Stater standards of 8.4–8.5 g can also be hypothetically confirmed by three mutually independent non-monetary finds from Bohemia. These are golden artefacts dated to La Tène B1–B2 and interpreted as beads, weighing 2.8–2.9 g, that is, about 1/3 of the weight of the stater (HOLODŇÁK – MILITKÝ 2014, 572).

13 The mid-3<sup>rd</sup> century BC date of the hoard can only be very hypothetical. The author of the present paper assume a later dating.

14 Such a practice, common in the Middle Ages, is only hypothetical in the case of La Tène coinage.

15 In this context, it is worth highlighting that the earliest golden Vindelician coins produced in southern Bavaria from the end of the 3<sup>rd</sup> century BC are considered to be 1/24 stater (STEFFGEN – ZIEGAUS 1994; ZIEGAUS 2010, 140).

Location	Literature	Weight [g]
Bohemia, Nechanice (okr. Hradec Králové)	PAULSEN 1933, Nr. 31; SMEJTEK - LUTOVSKÝ - MILITKÝ 2013, 223-224	8.44
Bohemia, Nechanice (okr. Hradec Králové)	PAULSEN 1933, Nr. 34; SMEJTEK - LUTOVSKÝ - MILITKÝ 2013, 223-224	8.496
?	PAULSEN 1933, Nr. 28; DEMBSKI 1998, Nr. 477	8.50
?	PAULSEN 1933, Nr. 27; DEMBSKI 1998, Nr. 478	8.51 (Paulsen); 8.55 (Dembski)
?	PAULSEN 1933, Nr. 33	8.58
?	PAULSEN 1933, Nr. 26	8.33
?	PAULSEN 1933, Nr. 29	8.44
Moravia (?)	PAULSEN 1933, Nr. 30	8.50
?	PAULSEN 1933, Nr. 32	8.39
Bohemia (?)	ZIEGAUS 2010, Nr. 415	8.517

**Fig. 15: Overview of staters of the Nike type, PAULSEN 1933, Nr. 26-34.**

The average documented weight of the earliest drachma variants (**Fig. 9**) exceeds 4.10 g and heavier pieces 4.20 g. The average weight of the earliest hemidrachms and obols is slightly lower. Taking into account the possible weight losses at least for some specimens and the existence of a larger number of specimens weighing more than or around 4.2 g in drachma equivalent, it can be assumed that the initial weight standard of the earliest variants of drachma, hemidrachms and obols was represented by didrachm weighing around 8.4 g. The weight standard for the oldest gold and silver coins was probably the same. This system was virtually identical to the weight standards of the Macedonian coinage in the 3<sup>rd</sup> c. BC, which corresponded to the stater and didrachm, weighing approximately 8.6 g. The reduction of the Celtic stater and didrachms weight to 8.4 g very likely reflected the previous development of the weight standard already occurring during the production of the Nike type staters.

The identical weight of the gold stater and the silver didrachm makes us understand the value relationship between the gold and the silver coins. At the hypothetical value ratio between gold and silver 1:12, one drachma was equal to just 1/24-stater.<sup>16</sup> Such a value ratio cannot be unambiguously proved, but it seems very likely with regard to the necessary practical convertibility between silver and gold coins. The more rapid weight decrease of silver coins over time compared to gold (**Fig. 9**) may reflect a gradual increase of silver prices. Such a hypothetical price development would also be suggested by the end of drachma and hemidrachm production possibly motivated by the effort to preferably use silver for the smallest denominations, which could not be, for practical reasons, minted in gold. The gradual decrease in the weight of gold coins to approximately 8 g in the stater equivalent and the simultaneous decrease in the mass of obols in drachma equivalent to approximately 3.3 g corresponds to a hypothetical change in the value ratio between gold and silver to 1:10. The subsequent rapid fall in the weight of the obols in the final decline phase of the Amber Road corridor monetary system is likely to signal crisis events occurring in the system and is difficult to interpret given the present state of knowledge.

<sup>16</sup> This ratio roughly corresponds to the prices considered for the ancient Mediterranean at the level of 1:10-1:12.

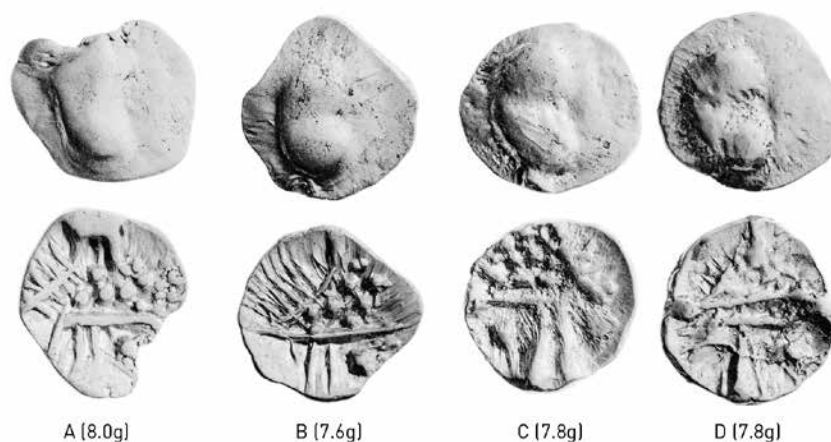
The evidence of coin production in several central settlements and occurrence of, to a large extent, identical coinage in the entire Amber Road corridor area corroborates the idea of a long-term concurrent production of coinage, identical in terms of both denominations and type variations, at multiple sites simultaneously. The identical weight standard of the earliest gold and silver coins and the concurrent production of the earliest stater sub-units in several central sites is probably proof of the contemporaneous start of both gold and silver coin production, maybe with the exception of the 1/24-stater. We lack enough specimens of the earliest staters with a known provenance. Since the production volume of individual coin variants is determined not only by the production length but also by its intensity, it is not possible to infer the absolute time of a coin variant production simply from the volume of this production. However, assuming that the weight standard of staters and drachmas remained the same for all denominations, we can compare the production course of each denomination in relative time, i.e. in relation to other denominations (**Fig. 9**). As far as gold coinage is concerned, the great production volume of the heaviest 1/3-staters is noticeable; it may suggest preferential production of this denomination in the early period. The analysis of silver coinage suggests that all denominations were minted in the initial period. Later, hemidrachms weighing around 4 g in drachma equivalent (**Fig. 7, var. 3**) and obols were minted. After a certain period of time, hemidrachm production was halted and drachmas were reintroduced but at already a significantly lower weight of about 3.8 g (**Fig. 6, var. 4-7**). This weight development is in line with the orientation of the horse image on the reverse of the silver coins. On the earliest types, the horse is depicted universally from the right, the later ones universally from the left. While on hemidrachms the horse is always displayed from the right, in the latest varieties of drachmas the horse is depicted from the left (**Fig. 6, var. 6**). Since the earliest drachmas and obols with the horse to the left have similar weights in drachma equivalent, it can be assumed that the change in the orientation of the horse occurred in both the drachma and the obol in the same period. The production of drachmas with the horse to the right weighing about 3.8 g (**Fig. 6, var. 4, 5 and 7**) can then be approximately synchronous with the latest obols with the horse to the right (**Fig. 8, var. 4-6**). The analysis results also show a large volume of obols production at a time when drachmas and hemidrachms were probably not being struck.

## DECLINE AND COLLAPSE OF THE MONETARY SYSTEM OF THE AMBER ROAD CORRIDOR

The final period of the Amber Road corridor coinage is characterised in the central settlement in NĚmčice nad Hanou by the minting of the 1/24-staters var. 11 with the changed iconography (**Fig. 5**). On the obverse, there is an irregular bulge in the form of a bean, the reverse carries an abstract linear structure. The coin is as a rule assigned to the *Athena Alkidemos* series (KOLNÍKOVÁ 2012, Abb. 83, Nr. 161; FRÖHLICH 2013, 15: fig. 3b; cf. ZIEGAUS 2010, Nr. 453; SMĚLÝ 2017, No. 5-7). The attribution of this variant to the final stages of the NĚmčice coinage is based on the large number of finds from the site,<sup>17</sup> on its modified iconography and on its average weight corresponding to 7.84 g. In stater equivalent there is, however, a significant

17 Unfortunately, most coins presented in the catalogue of the NĚmčice nad Hanou coinage (KOLNÍKOVÁ 2012) are only documented by drawings. Unequivocal identification of individual pieces (probably no. 94, 96, 99-104, 151-153, 161) is therefore problematic. The author of the study included in the inventory of variants only the specimens to which photographic documentation was available.

weight scatter – the average weight of the heavier half of the specimens corresponds to the stater equivalent of 8.11 g (**Fig. 9**). The iconography of both the obverse and reverse of the coin is very likely closely related to the 1/24-staters, attributed by the present author to the series of *Staré Hradisko* (**Fig. 16**) (SMĚLÝ 2017, Abb. 5, types A–D) and attested at least for the time being especially in the Austrian lowland central settlements in the Amber Road corridor north of Danube.<sup>18</sup> All the coins feature abstract linear structures of identical orientation. One line passes through the centre of the coin field dividing it in two halves. In the middle of the coin field, a perpendicular line runs from this line to the edge of the coin. In the coin's other half a diagonal line runs from the end of the median line to the edge of the coin (**Fig. 17**). The reverse side is identical for all types (and variants) with bean-shaped bulges. The average weights of the different types (variants) are roughly the same, in the range of 7.6–8.0 g, if we can judge from a limited number of measurements. It has been previously stated that the reverse image of types A–D is not based on the iconography of the *Athena Alkidemos* series, but it is a new motif whose symbolism we probably cannot understand (FRÖHLICH 2012a, 69). It appears that in La Tène C2, that is in the final period of coin production in the central settlement in Němčice nad Hanou, a change in the iconography of the locally produced 1/24-stater occurred simultaneously in at least several central settlements in the Amber Road corridor. This change probably manifested itself with a certain delay in the form of the new iconography of the 1/24-staters minted in the oppidum of Staré Hradisko (cf. ČIŽMÁŘ 1997, 299–302, 519–523, Taf. 55–59; FRÖHLICH 2012a, 68–69). As in the case of the 1/24-staters of the *Athena Alkidemos* series, var. *Staré Hradisko* (compare the text on page 69), the coin production at Staré Hradisko replicated in a reduced weight standard the models minted in the lowland centres of the Amber Road corridor (SMĚLÝ 2017, Abb. 5, types I–N). In view of the above findings, the 1/24-staters of var. 11 (**Fig. 5**) should probably be classed (at least in a working order) to the series *Staré Hradisko*<sup>19</sup> and not the series *Athena Alkidemos*.



**Fig. 16: The oldest variants of 1/24-staters of the *Staré Hradisko* type series. Private collections. Enlarged (after SMĚLÝ 2017).**

18 Mostly unpublished findings of the author. Of the fourteen localized pieces, three come from Roseldorf, eight from an unpublished site and three, one of which, with a conspicuously low weight of 0.222 g, from Staré Hradisko. I would like to thank Jiří Militky for contributing the relevant data.

19 The author of the text is aware of the shortcomings of such a designation resulting from an overly broad definition of the type group. At the same time, he considers that a new viable terminology can only be created on the basis of thorough knowledge of La Tène C2 / D1 coinage in the corridor of the Amber Road.



**Fig. 17: 1/24-stater var. 11 (Fig. 5) with the image structure highlighted. Private collection. Enlarged (after SMĚLÝ 2017).**



**Fig. 18: 1/8-stater, T-type. Private collection. Enlarged (photo by T. Smělý).**

The iconography based on the perpendicular and diagonal lines was probably applied also to the 1/8-staters of the T-type (SMĚLÝ 2017, 514). This is particularly obvious in the case of a variety in which the T-character is transformed into a character resembling the digit 4 (Fig. 18). The 1/8-staters of the T-type are known from a number of sites in the southern part of the Amber Road corridor as well as from adjacent areas and were undoubtedly minted over a longer period of time. Numerous occurrences in the settlement of Roseldorf are probably evidence of local production (DEMBSKI 2002, 3; DEMBSKI 2009, 92–93). However, it is not clear whether this coin production is associated with the 1/24-staters of the Staré Hradisko family of types A–D or with later types. The heaviest specimens reach a weight of about 0.95–0.98 g, corresponding to the stater equivalent of about 7.7 g. However, the average weight of the measured twelve pieces is only 7.36 g in the stater equivalent. This weight corresponds already to the beginning of the oppida period, i.e. La Tène D1. Hypothetically, it is possible that the earliest 1/24-staters of the Staré Hradisko family line, along with the earliest 1/8-staters of the T-type, were minted in some of the production centres, especially in Roseldorf, already in the decline phase of the Amber Road corridor monetary system in La Tène C2. Crucial for the dating of this coin production is the finding that 1/8-staters of the T-type were no longer present in Němčice nad Hanou.

A picture similar to the latest 1/24-staters, is also provided by obols. The settlement in Němčice nad Hanou is characterised by a very numerous occurrence of obols of var. 23 (Fig. 8) which at least for the time being are unknown from the sites in the southern zone of the Amber Road corridor. On the contrary, the obols of var. 21 (Fig. 8) which we know only rarely from Němčice were mass produced in the southern centres. In the final decline period of the Amber Road corridor monetary system, a fragmentation of the coin production appears to have occurred. It can be characterized by a mass production of coins differing in their variant in Němčice nad Hanou and in the southern centres. It was likely a consequence of a changing power situation in the whole region which can be associated with a decline of a strong central authority and a fragmentation of political and economic activities. The production of coins continued with the older tradition based on the Amber Road corridor coinage, but it also adapted to the interests of the new local elites.

The end of coinage in the monetary system of the Amber Road corridor can also be dated only to a broader period around the middle of the 2<sup>nd</sup> century BC, i.e. La Tène C2 (FRÖHLICH

2016, 175, 184–186). It is clear that the closing period of the functioning of the monetary system was influenced by significant events that changed the political map between southern Silesia and the Austrian Danube region. Their most obvious impact was the abandonment, marginalization or gradual decline of the La Tène C trade and production centres, coupled with the downscaling, transformation and, possibly, transfer of coin production outside the original production centres. We know nothing about the nature of the events that left such a deep trace on the settlement structure and economic activities in the Amber Road corridor. It seems likely, however, that we cannot associate them primarily with the invasion of the Cimbri and the Teutons dated to the penultimate decade of the 2<sup>nd</sup> century BC, as has been suggested (ČIŽMÁŘ *et al.* 2008, 666; RUDNICKI 2013, 50–51).

The finds from settlements other than the Amber Road corridor central lowland sites often include relatively numerous coins corresponding formally with the Amber Road corridor coinage but with a noticeably lower weight. It is likely that, in most cases, these coins were minted at a time when the coinage in the monetary system of the Amber Road was no more produced in the central lowland settlements (or it was significantly reduced or transformed). In this context, it should be stressed that in most sites the reduction or termination of coin production does not correspond to the end of settlement activities. Perhaps with the exception of the northernmost centre in Nowa Cerekwia (RUDNICKI 2014a, 433–434; RUDNICKI 2014b, 50), the abandonment of the central sites was not immediate. Coins and other archaeological finds suggest a settlement continuity in Němčice nad Hanou (ČIŽMÁŘ *et al.* 2008, 664; VENCLOVÁ 2016, 66), Roseldorf (HOLZER – KARWOWSKI 2008, 166–168; HOLZER ed. 2009), and Etzersdorf (KARWOWSKI 2004, 80) up to La Tène D1. The disappearance of coinage cannot therefore be automatically associated with the termination of all settlement activities. It is likely that a significant part of the coin production or even of all coin production was terminated before the marginalization and definitive abandonment of the trade and production centres occurred.

The large and mostly unpublished coin collection from the oppidum of Staré Hradisko, dating back to La Tène C2 (ČIŽMÁŘ 2002), is of major importance for the dating of the decline of the coin production in Němčice nad Hanou.<sup>20</sup> The comparison of the find spectra of both sites shows a partial overlap of foreign coinage, which represents the final horizon of the coin production in one of them and the initial one in the other, suggesting their partial contemporaneity. Since the coin circulation is usually characterized by a concurrent presence of coins of various ages, the presence of the coins minted in Němčice nad Hanou in Staré Hradisko is not surprising in view of the relative proximity of the sites. Much more significant is the presence of coins struck at the oppidum of Staré Hradisko in the lowland settlement of Němčice nad Hanou. Among these, we can count in particular a 1/24-stater known as *Athena Alkidemos*, var. *Staré Hradisko* (**Fig. 5, var. 12**) (FRÖHLICH 2013, 16) which due to their weight can be considered the oldest type of this denomination minted in Staré Hradisko. The coin image is formally related to the *Athena Alkidemos* series, but their average weight is significantly lower than in the 1/24-staters, the production of which can be expected at the very end of the Němčice coin production (**Fig. 9**). Given the general patterns of the coin production economy and of the money market, the possibility of parallel production of coins similar in type but differing in weight in two non-remote sites does not seem probable. On the contrary, it is likely that the 1/24-staters of the *Athena Alkidemos* type series, var. *Staré Hradisko*, were minted at a time when the coin production in the Němčice settlements was already strongly marginalized or had come to its end. The depiction on the reverse side is noteworthy – a clear

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20 Author's unpublished findings. I would like to thank Julius Fröhlich for bringing the most unpublished discoveries to my attention.

Denomination	var.	Location	Quantity	Comment
Stater	6	?	1	KOSTIAL 1997, Nr. 47
	6	?	1	PAULSEN 1933, Nr. 268
	6	Central Bohemia, Podmokly (?)	1	unpublished; private collection
	6	Central Bohemia, Křivoklát (?)	1	unpublished; private collection
	6	Eastern Bohemia, Kopidlno (area)	2	hoard; unpublished
	7	Eastern Bohemia, Kopidlno (area)	13	hoard; unpublished
	8	Eastern Bohemia, Kopidlno (area)	3	hoard; unpublished
	9	Eastern Bohemia, Kopidlno (area)	3	hoard; unpublished
	10	Central Bohemia, Třebestovice	4	hoard; MILITKÝ 2017
	10	Switzerland, St. Louis	1	hoard; FURGER-GUNTI 1982, Nr. 69
1/3-stater	9	Moravia, Malé Hradisko	1	unpublished; private collection
	9	Moravia, Kožušany	1	KOLNÍKOVÁ 2012, Nr. VIII/1
	9	Moravia, Němčice nad Hanou	1	KOLNÍKOVÁ 2012, Nr. 36
	9	Bohemia	1	PAULSEN 1933, Nr. 89
	9	Southwestern Slovakia, Horné Orešany	1	FRÖHLICH 2013, 11, no. 2
	10	?	2	unpublished; Moravské zemské muzeum, Brno, no. N9
	10	Central Bohemia, Lhota u Dolních Břežan	1	DRDA - RYBOVÁ 2001, fig. 16.2
	10	Central Bohemia, Třebestovice	1	hoard(?); MILITKÝ 2017
	10	Eastern Bohemia, Kopidlno (area)	5	hoard; unpublished
1/8-stater	7	Moravia, Buchlovice (?)	1	unpublished; private collection
	7	Moravia, Malé Hradisko	1	unpublished; Moravské zemské muzeum, Brno, no. N182539
	8	Bohemia (?)	1	unpublished; České muzeum stříbra, Kutná Hora, no. M1.2636
	8	Central Bohemia, Kouřim	1	unpublished; private collection
	8	Central Bohemia, Žehuň	1	unpublished; private collection
	8	Moravia	1	unpublished; Moravské zemské muzeum, Brno, no. N14

**Fig. 19: Overview of coins of the *Athena Alkidemos* / local coinage group.**

and distinct figure of *Athena Alkidemos*, referring to the original image and not to the latest issues already with a completely deteriorated image. It can be assumed that the new image was meant to refer – at least symbolically – to the good old times and to demonstrate a ‘new quality’ perhaps under the direction of new elites.

The group of coins formally related to the *Athena Alkidemos* series but with a modified image and a lower weight, than in those produced in the central sites of the Amber Road corridor, include also the staters variants 6–10 (**Fig. 2**), 1/3-staters variants 9–10 (**Fig. 3**) and 1/8-staters variants 7–8 (**Fig. 4**). Coins that can be associated with the decline phase of the Amber Road corridor coinage also include an unpublished hoard found in the wider area of Kopidlno in eastern Bohemia.<sup>21</sup> In total, it contained at least 25 staters var. 6–9 (**Fig. 2**) and six 1/3-staters var. 10 (**Fig. 3**). All these coins with a modified image and a lower weight can be labelled as group *Athena Alkidemos / local coinage*. Their find places are situated in Moravia and also noticeably in Bohemia (**Fig. 19**). Given our present state of knowledge based on a limited number of finds, it is difficult to decide where these coins were minted, but it was almost certainly not on the pre-oppida central sites of the Amber Road. However, the image design and the reduced weight standard show that they were created under a strong influence of the Amber Road corridor monetary system and perhaps at a time when the coin production at the central lowland sites of the Amber Road corridor had already been completely or at least substantially suppressed. The question remains, whether their production can be associated with the transfer of at least part of the elites from Moravia to Bohemia or whether only an attractive business model was transmitted and adopted by the Bohemian elites.

## THE MONETARY SYSTEM OF THE AMBER ROAD CORRIDOR AS AN INSTRUMENT OF ECONOMIC POWER

The creation and long-term functioning of a unitary coinage system with very strictly set parameters raises the question of who and for what purpose designed, organized, and backed with their political and administrative authority this essential tool necessary for the effective functioning of economic processes in the environment of monetarised exchange. It is clear that the creation of the monetary system of the Amber Road corridor was not a consequence of the gradual development of older monetary systems in the central European region or the modification of any currency system in La Tène Europe. Its parameters unambiguously prove that the elite behind this project was thoroughly acquainted with the functioning of the monetary exchange in the economically developed Mediterranean. However, the experience itself could not be a sufficient impetus. The creation of a complex structured monetary system was only a means of realizing an economic project at the end of which was a fully monetarised economic area capable of activating internal economic resources in the form of advanced production and trade.

The invention of coins – the embossed metal of guaranteed quality and weight – was an important tool for the economic development of the Ancient world. Over basically a single century from its invention, this spread from its area of origin in western Asia Minor, and in the 5<sup>th</sup> century BC, the coin production was already well-known in virtually all the major Mediterranean regions. The uniqueness of coins stemmed from their monetary function. They were not only a means of exchange and an equivalent of value but also a means of preserving value. This was derived from the long-term more or less stable price and durability of precious metal. From this point of view, the coins were also a specific kind of goods, whose production and introduction to the market could have brought a significant profit to the issu-

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21 The assemblage is being prepared for publication by the author of this paper. The hoard was found on a well-known site which will not be specifically named for the purpose of its protection. The hoard has been documented almost in its entirety. The individual pieces are kept in several private collections.



er. At the same time, they could represent an important instrument of the issuer's monetary and economic policy with positive impacts on the development of production and trade and, secondly, on the collection of taxes and duties. Of course, it could only be so if a number of assumptions were met.

The issuer had to be able to warrant the coin production over the long term from a legal, organisational, technical, material and capital point of view as well as to guarantee the value of the coin, i.e. the precious metal content. This guarantee concerned not only the stability of the production parameters, in particular the metal fineness, but also the protection of the market against fake or otherwise unvalued coin. The issuer had to be able to enforce their monopoly on coin production and to control and regulate the circulation of both their own and foreign coins in the area under their control. If necessary, they had to be able to enforce a monopoly on the purchase and extraction of precious metal. It is, therefore, no coincidence that in all historical periods, the right to strike coins was reserved to the highest authorities, usually to the state or the sovereign representing the state. Only a central authority with a sufficiently developed administrative and enforcement apparatus was able to ensure in the long term the fulfilment of all the necessary prerequisites for the efficient use of monetary instruments of economic power.

The setting of specific parameters of the Amber Road corridor monetary system and the systematic launching of coin production throughout the territory proves that this was a conceptual part of a well-thought-out strategic plan. Over the following period, it was not necessary to modify the basic parameters of the adopted monetary system for at least two generations. The denomination structure seems to have respected the (locally variable) avail-

amount in 1/24-staters	denominations				pcs. of coins
	1/24	1/8	1/3	1/1	
1	1				1
2	2				2
3		1			1
4	1	1			2
5	2	1			3
6		2			2
7	1	2			3
8			1		1
9	1		1		2
10	2		1		3
11		1	1		2
12	1	1	1		3
13	2	1	1		4
14		2	1		3
15	1	2	1		4
16			2		2
17	1		2		3
18	2		2		4
19		1	2		3
20	1	1	2		4
21	2	1	2		5
22		2	2		4
23	1	2	2		5
24				1	1
					67

Fig. 20: Adding up sums from 1/24-stater to 1/1-stater in the Amber Road corridor coinage system.

ability of precious metals and was set up to suit the needs of monetarised exchange as best as possible. It is remarkable that, when setting the denomination structure, its creators were not satisfied with just copying one of the Mediterranean models. Not only did they adapt the denomination series to their possibilities and needs, but they also did so at the very limit of mathematical perfection.<sup>22</sup> The denomination structure was undoubtedly designed so as to meet requirements on the system clarity, on easy identification of denominations and – importantly – on the easiest possible way to introduce coins in large circulation. Particularly remarkable is the setting of the golden denomination series, which shows a significant value range of 1:24. It appears that the adopted four-denomination structure respects very well all the above-mentioned requirements. The choice of 1/24-, 1/8-, 1/3-, and 1/1-staters meets very well the requirement for the covering of any sum using the smallest number of coins. Such optimization was significant exactly in the environment of low or developing monetarisation where the possibilities of monetarised exchange were limited by the lack of currency. In a four-level denomination system, and at the same time requiring that each denomination be a whole stater sub-unit, the adopted scheme is mathematically the second-best option. Using all denominations, i.e. multiplications of 1/24, only 67 coins are needed to pay any of the 24 sums from 1/24-stater to stater, 15 coins to pay all sums from 1/24-stater to 1/3-stater, and 4 coins for all sums between 1/24- and 1/8-stater (**Fig. 20**). The optimal option would be a system consisting of 1/24-, 1/4-, 1/3- and 1/1-staters; it would allow one to reach the stater value using only 65 coins, but the value of 1/3-stater, would require 19 coins and the value of 1/8-stater 6 coins. It was obviously an unsuitable solution for smaller money transactions, of which there was certainly the overwhelming majority. In addition, such a denomination series did not meet the requirement for the easy distinction between the 1/3-stater and 1/4-stater. For similar reasons, a denomination series of 1/24-, 1/6-, 1/4-, 1/1-staters would also be unacceptable.<sup>23</sup>

The value of a coin is expressed by its outward appearance. The size of the coin, the metal colour, and the coin image were comprehensible parameters that guaranteed in the ordinary trade transactions the value of the coin, i.e. its weight and fineness. The weight of the coin could easily be checked, but the fineness control was beyond the technological capabilities of most money market participants. The full function of money was to a large extent conditioned by their proper look. It is understandable, therefore, that the issuer devoted great attention to the coins' appearance and to the protection of the coin images. Because of the need to distinguish their own coin production, for which they could only guarantee, the issuer chose specific, easy-to-identify coin images that they then tried to protect against misuse. The significance of such protection is testified by the fact that the imitation of the external form of coins has been perceived as one of the most serious crimes in all historical epochs.

The systematic approach of the elite under whose direction the Amber Road corridor coinage was launched is also documented by the coin image. Both gold and silver coin series carry specific images, more or less the same for all the denominations. The golden denominations combined a reverse image of the standing barbarised figure of Athena Alkidemos, the silver denominations picture of a horse with a rosette and a lily-like symbol. The obverses of both the series carry a depiction of a head – in the higher denominations down to the 1/8-stater, it was the barbarised head of Athena in the Corinthian helmet, and for the lower denominations

22 I am sincerely grateful to Petr Veselý for consultation on this subject and for the implementation of detailed mathematical analysis.

23 In that case 67 coins are needed to add up all sums up to the value of a stater. Such a denomination structure would, however, require more coins for covering smaller sums up to the value of 1/8-stater. At the same time, it would be difficult to distinguish between 1/6- and 1/4-staters.

down from 1/24-staters (and drachmas of the same value) it was the male head. The appearance of all denominations reflects Mediterranean inspirations, especially the motifs from the coins of Macedonia, Thrace, Mainland Greece, Sicily, Carthage, and Central and Southern Italy. Most of the motifs adopted by the Celts, were common throughout the Mediterranean appearing on coins of various issuers at different times and often in remote areas. The head of Athena in a Corinthian helmet taken from the staters of Alexander III and his successors appeared in a practically identical form, on the 1/3-stater issued in Tarent at the very end of the 4<sup>th</sup> century BC, on various Syracusan denominations at the beginning of the 4<sup>th</sup> century BC, but also on the coins from Asia Minor. A very similar representation of a female head in a Corinthian helmet – Athena or Minerva – was in the first half of the 3<sup>rd</sup> century a common theme on the Romano-Campanian and Central-Italian coins. The standing figure of Athena Promachos with a shield and spear was a popular motif on the Egyptian Ptolemaic tetradrachms at the turn of the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC. Later, it appears on the rare Macedonian staters of Demetrios Poliorketes. A similar scene with a standing Athena Alkidemos holding a shield and a thunderbolt is depicted in Syracusan bronze and silver coinage from the first half of the 3<sup>rd</sup> century, in the Macedonian tetradrachms of Antigon II Gonatas and of Philipp V of Macedon from the 3<sup>rd</sup> century BC. The motif of a standing or running horse with a rosette (star, solar symbol) was struck on the Apulian and Romano-Campanian coins from the turn of the 4<sup>th</sup> and 3<sup>rd</sup> centuries and from the second quarter of the 3<sup>rd</sup> century, from the mid-3<sup>rd</sup> century Punic coins, but also and already on Sicilian and Paeonian Audoleon tetradrachm of the 4<sup>th</sup> or 4<sup>th</sup>/3<sup>rd</sup> centuries BC. The laureate head of Apollo or male head with a simple headband was a popular motif on the gold, silver and bronze coins of Philip II of Macedon, of Alexander III and of their successors, silver Paeonian coins of Patraus from the end of the 4<sup>th</sup> century, but also the golden Syracusan pieces from the turn of the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC. It also appears on the Romano-Campanian and Central-Italian coins of the second quarter of the 3<sup>rd</sup> century BC. A similar rendering of the ruler's head is common in the 3<sup>rd</sup> century BC Greek coins. The aim of this enumeration is not to provide a complete overview of coins carrying one of the motifs that could have inspired the coin issuers in distant central Europe (cf. FRÖHLICH 2016, 179–185). The point is to demonstrate how broad and varied a coin spectrum the Celts could meet in the Mediterranean and whose motifs they could adopt for their coins. The motif on Celtic coins can obviously reflect more inspiration sources, whose identification may be problematic in some cases. The actual selection of the motifs could have been motivated by a special attraction of some particularly valuable coins, with which the issuers had been paid for their mercenary service or which were perceived in the Mediterranean as quality currency. The individual motifs could have been favoured by the issuer for completely subjective reasons beyond our reach.

The relatively complex denomination system testifies to the desire for adapting the coinage to the practical needs of business, both small local transactions and large commerce. Such a measure could not be sufficient in the environment of poorly developed local trade without sufficient monetarisation of the society. There is no doubt that the spread of a monetary economy in large areas was significantly accelerated by large-scale concurrent coin production in numerous central sites. The long-term stability of the system demonstrates that the elite controlled the Amber Road corridor territory for a long time and was able to pursue their aim in the long-term and systematically. The economically stable environment had a positive impact on the development of other economic activities.

The gradual decline of the stater standard by 5 % from the initial weight of approximately 8.4 g to the final ca. 8 g was no alarming value loss due to the length of the period over which it occurred. The weight stability within the coinage is undoubtedly indicative of the

significant extent and importance of capital-intensive business transactions directed by the elites. In their own interest they enforced the relatively high stability of the golden stater as the trade currency. On the other hand, this pressure was not so strong as to oblige the stater stability to be so strict as in the case of the usual trade coins of the Ancient Greek world. An indicator of a still only basic level of monetarised economy and coin production is also the absence of fiduciary or credit coins made of non-precious metals. Without them, the functioning of the local market in the Mediterranean would be totally unimaginable. In central Europe, the development of the monetarised exchange probably did not reach a level that would require such a volume of money that could no longer be covered by the available stocks of precious metals. In spite of these presumed reserves, we can assume that the development of commodity production and trade exchanges achieved an extraordinary extent particularly in comparison to the surrounding regions. The significant economic potential of the region is documented by glass production (BŘEZINOVÁ *et al.* 2013; VENCLOVÁ 2016, 66–68) and the long-distance trade (ČIŽMÁŘ *et al.* 2008, 664–666). Even though we can only speak in relative categories without the possibility of any quantification, the above-mentioned characteristics, especially the long-standing high degree of coin production, suggest an extent of commodity exchange and a level of monetarisation approaching some of the less developed regions of the Mediterranean.

## THE UNKNOWN ELITES

Archaeological sources provide us (or can provide us) with a relatively large amount of data on settlement activities, craft production, trade and coin exchange. Unfortunately, they are more or less silent about the identity of the elites, which at the turn of La Tène B2/C1, i.e. around the middle of the 3<sup>rd</sup> century BC, controlled the territory of the Amber Road corridor and managed it politically and economically for several generations. Moreover, the absence of available archaeological sources is greatly enhanced by the abandonment of archaeologically traceable funerary rite. We can only speculate on the identity of elites. We do not know whether these were descendants of the indigenous population or foreign elites who took control over the economically attractive area around the middle of the 3<sup>rd</sup> century BC. The economic reform they orchestrated through the introduction of an advanced coinage system and monetary economy demonstrates not only extraordinary political faculties and organizational abilities but also a strong idea. It would hardly be possible without previous active and long-term experience with the economic and administrative functioning of the Hellenic states in the Mediterranean.

The occasional contact of Celts with Greek communities is documented as early as in the 4<sup>th</sup> century BC. The rapid increase in the frequency of contacts took place from the beginning of the 3<sup>rd</sup> century BC, following the Celtic expansion in south-eastern Europe. Contacts in the form of mercenary services were greatly enhanced by the mutual rivalry of Greek rulers after the death of Alexander III of Macedon. Their exceptional extent is documented by a number of sources. The change in the political situation and power shifts after the death of the Thracian ruler Lysimachus († 281 BC) was probably one of the moments that prompted the massive movements of the Celtic tribes and Celtic troops in the Balkans. They peaked in the years 280–277 BC with a large military attack on Macedon, Thrace, and partly also of the Greek mainland. It is likely that the direct Celtic military action was motivated not only by the one-off favourable circumstances but also by the long-term interest of the Celts in the rich southern territories and relatively good knowledge of local affairs. The Celtic invasion was thwarted;

however, the presence of Celtic troops in the Greek territory did not end. During the struggle for the Macedonian throne between king Pyrrhos and his son, and Antigon II Gonatas in the years 277–272 BC, both belligerents hired numerous Celtic troops. Immediately after the defeat at Lysimacheia in 277 BC, Antigonos hired at least several thousand Celtic mercenaries and paid around 90,000 gold Macedonian staters after the campaign ended (cf. SILLS 2003, 87–90).

While we are relatively well informed about the Celtic military presence in Greece through the reports of ancient historiographers, we know very little about the settlement areas and the movements of the Celtic tribes beyond the horizons of the Mediterranean world in the 3<sup>rd</sup> c. BC. It is likely that what was going on in the vast territories beyond the northern fringes of the Greek world was not well understood even by the Greek and Roman contemporaries. In the long-term view, the information value of these reports is, moreover, relativized by the high mobility of the Celts, which is quite obvious from the contemporary reports.

The participation of Celtic troops, or even larger communities of central European origin in providing military services to Greek rulers and in the southern Celtic expansion in the first half of the 3<sup>rd</sup> century BC is likely but hardly provable. The intensity of trade contacts between central Europe and the Mediterranean before the middle of the 3<sup>rd</sup> century BC is also difficult to quantify. In central Europe, imported Greek coins minted before or around the middle of the 3<sup>rd</sup> century BC which are mostly located on the La Tène C central sites in the Amber Road corridor, are to a large extent almost certainly related to later events (KYSÉLA 2016). For older imports, some unique finds of the golden staters of Philip II (FRÖHLICH 2014), Alexander III (MILITKÝ 2012b) and Philip III (MILITKÝ 2013) may be considered, but it is not possible to connect them indisputably with the individuals and communities controlling the Amber Road before the middle of the 3<sup>rd</sup> century BC or returning back from southern Europe. The hypothetical longer-term presence of a central European elite in the Mediterranean cannot rule out the possibility that in the middle of the 3<sup>rd</sup> century BC the territory of the Amber Road corridor came under the control of new-coming elites, originating from other parts of La Tène Europe and arrived through migratory movements. A certain parallel is provided by the occupation of a part of today's Serbia in the middle of the 3<sup>rd</sup> century BC by the Scordisci (SILLS 2003, 89, 320). It was demonstrably an immediate consequence of the reorganization of the power relations associated with the massive migratory movements beyond the northern fringes of the Greek world after the failed Celtic expansion to Greece in 280–277 BC. A similar analogy is provided by the penetration of the Celtic tribes to Asia Minor in 279 BC, and the long-term occupation of a portion of its inland, the so-called Galatian Kingdom.

## CONCLUSION

The results of numismatic research, based on the large volume of finds obtained over the last two decades, show that at the turn of La Tène B2/C1, at the latest by the mid-3<sup>rd</sup> century BC, the Amber Road corridor came under the control of an elite, able to formulate and purposefully pursue over the long term a very sophisticated economic activity. The extensive production of gold and silver coins in the unitary monetary system based on Greek models has become a means of enforcing a monetary economy in both production and trade relations. This economic reform undoubtedly had a significant impact on the activation of internal economic resources and became one of the driving forces of the economic development of the whole area. The archaeologically most visible external manifestation of major changes in the behaviour, organization, and economic development of La Tène society in La Tène C is the emergence of large settlements, the so-called production and trade centres.

The ability to formulate a complex economic programme and, in particular, the implementation of such a programme for a long time over several generations and maintaining it politically and organizationally in a large area, is a testimony of a strong central authority. At the same time, it is inconceivable that such activities could be secured by a central authority without a complicated structured administrative, control and enforcement apparatus. It is clear that these are processes whose reflection must necessarily lead to a changed view of the social development of La Tène Central Europe in La Tène C1. The ability to exercise a structured political power over the long term and to implement a clearly formulated political and economic programme characterises an organizational structure, which is usually called a 'state'. Although the idea that a state could have existed in La Tène central Europe at the time of the Greek Hellenistic states and the power expansion of the Roman Republic, may seem too courageous, historic numismatic parallels unambiguously uphold this possibility. The long-term coin production of a clearly declared currency system and the rapid development of monetarised exchange is typical not only for the Ancient states but also for the early medieval European states. Central European medieval states presumably attained a comparable development of coin production and currency exchange at the earliest in the 11<sup>th</sup> century.

The collapse of the monetary system and the profound changes in the settlement structure in the Amber Road corridor in the La Tène C2 are evidence of the changed power situation at the threshold of the oppida period. Due to the assumed dating of these changes to (or before) the mid-2<sup>nd</sup> century BC, it seems unlikely that this was a consequence of the Cimbri and Teutons' campaign, attested by ancient sources only about a generation later. Whilst external factors, especially military threats, cannot be ruled out, the reasons behind the changes in the La Tène society organization are more likely to be sought after in internal factors.

The Amber Road corridor coinage left a deep footprint in the economic development of neighbouring regions. The subsequent developments of the coinage in Bohemia, south-western Slovakia and Austria and Moravia itself attest not only similar economic conditions, especially the relatively easy accessibility of gold, but also an extraordinary influence that the coinage in the monetary system of the Amber Road corridor had on the long-term economic development of central Europe.

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**Pl. 2/1: Denominations of gold and silver coins of the monetary system of the Amber Road corridor (1: AV stater, 2: AV 1/3-stater, 3: AV 1/8-stater, 4: 1/24-stater, 5: AR drachm, 6: AR hemidrachm, 7-8: AR obols).**