

Avar Goldsmiths' Work from the Perspective of Cultural History

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In memory of Hayo Vierck (1939–89) who left unfinished his research on Avar goldsmiths' work.

The archaeological legacy of the Avars¹ in the Early Middle Ages is the most splendid in the whole of Central Europe.² Exhibitions entitled 'The Gold of the Avars' and the like have attracted visitors in huge numbers throughout Europe.³ Exhibitions with a more general scope also regularly present Avar finds loaned from the museums of Hungary and Slovakia. However, if one takes a closer look at these objects, one observes that the same ones are selected again and again. It is almost the same 10–100 pieces which are requested and the greater part of them come only from the middle period (c. 600–700) of the Avar epoch (568–803). Even more typical is the preference for exhibiting objects with typological or ornamental features borrowed from Byzantine culture, although Avar culture itself has long been considered to be without any doubt one of purely eastern origin. While underlining the idiosyncrasies of Avar culture, scholars have rarely entered into a careful analysis of the analogies between Byzantine and European finds. For example, until 1963, specialists followed the classifications established by Joseph Hampel and Nándor Fettich⁴ (according to whom the early period is characterised by *repoussé* belt ornaments, the later one by cast mounts). In doing so they simply omitted the

important group of cast mounts of the early period,⁵ which are indubitably not of Eastern origin. It is therefore right to pose the following questions: how is one to consider Avar goldsmiths' work in general, how did it develop and what are its genuine characteristics?⁶

Goldsmiths' work constitutes the most characteristic part of the Avar heritage, but surprisingly, until recently its technical details have received little attention. Indeed, jewellery was always dealt with briefly in works concerned with more general topics.⁷ In any description of a typical piece of jewellery technical information was usually missing and even subsequent conservation (sometimes furnishing important information) was rarely mentioned. In their discussion of goldsmiths' work scholars used to consider only the ornamental decoration; the only exception to this prior to the last 10 years was the excellent study by Gyula László in 1940⁸ about the manufacturing process of the pseudo-buckle from Tépe (Pl. 1).⁹ (Authors of popular books on the Avars often use this to illustrate the topic of 'Avar goldsmith work'.) A generation later (1970s) Hayo Vierck intended to summarise all Early Medieval goldsmith work in Europe, in which a chapter would be dedicated to that of the Avars, but it was not finished because of his premature death.¹⁰ A generation passed and several new finds were published¹¹ before any real attention was paid to technical details. Thanks are due to Zsófia Rác,

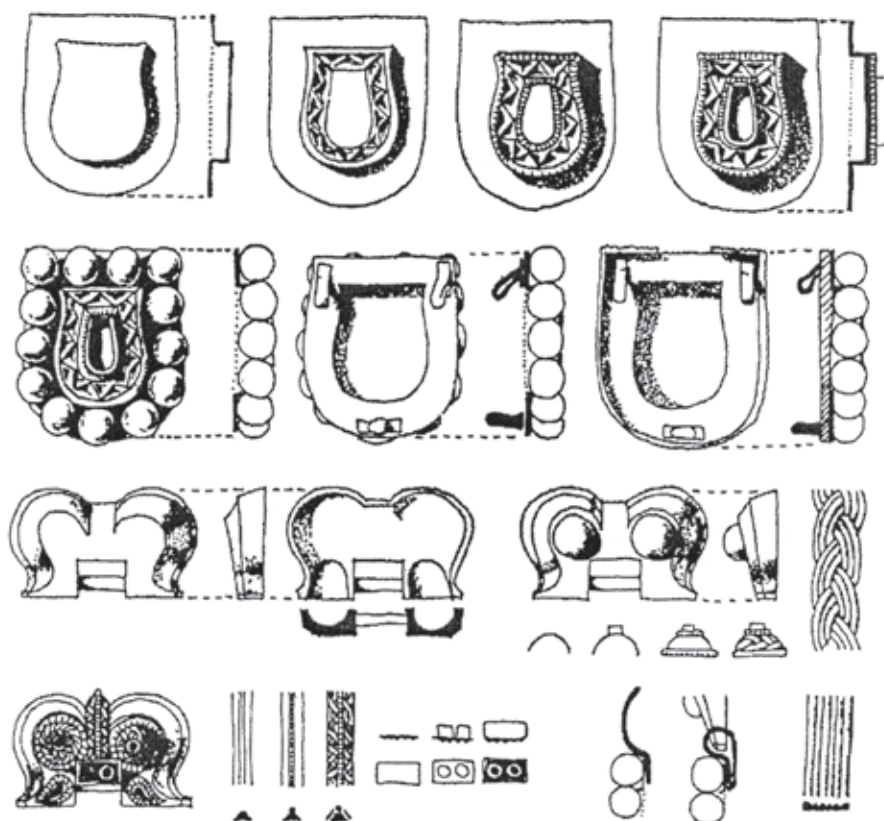


Plate 1 Construction phases of the pseudo-buckle from Tépe. See also Plate 25.



Plate 2 One gold and almandine garnet pendant from Kiskőrös-Vágóhíd

who wrote her dissertation on Avar goldsmiths' graves,¹² to Birgit Bühler, Orsolya Heinrich-Tamácska and, more recently, Gergely Szenthe, who began real technical analyses of Avar jewellery, thus initiating new research in this area.¹³ A new picture of Avar craftsmanship is now slowly emerging.¹⁴

As with Central and Eastern European scholarship in general, archaeological research on the Avars focused to a large extent on historical problems. It became so one-sided that specialists did not realise that, by neglecting the details of goldsmiths' techniques, they were depriving themselves of important historical information. For example, the widely held opinion that the value of jewellery was primarily based on the material value of the objects themselves, is not necessarily true. In addition, few scholars take into consideration the fact that goldsmiths were held in relatively low esteem and belonged to the poorest groups of society, both in Europe and in the Orient; their wages amounted to a very low percentage of the value of their products.¹⁵ The different technologies they applied, varying in their sophistication, do not reflect 'price'¹⁶ differences between products, but merely the cultural affiliations of the goldsmiths – hence the historical relevance of the study of goldsmiths' work. However, this relevance has limitations: from a methodological point of view it would be very dangerous to draw conclusions about the social status of the buried person solely on the basis of the technical level of the grave-goods (which could have been acquired by gift, exchange or even robbery). This is a further common mistake in Central and Eastern European archaeological scholarship.

At present about 20 graves with goldsmiths' tools have been found in Avaria (some of which could have belonged to blacksmiths as well).¹⁷ Rác's forthcoming dissertation makes it clear that, even though we speak about 'graves of goldsmiths', the types and the quantity of the tools vary considerably, and a complete set has never been found in any burial. I consider the latter a warning signal that putting a given type of tool into the grave may have been just an occasional funeral custom, which symbolised the occupation of the dead. This speculation is confirmed by the fact that this custom disappeared in Avar culture in the 8th century.¹⁸ In fact graves of goldsmiths are, at present, absent in the archaeology of other peoples/cultures of Central and Eastern Europe, and on the steppe as well, despite the fact that casting moulds and dies for pressing have been found across these regions.¹⁹ This means that the custom of burying goldsmiths with some of their tools was a characteristic feature of Avar culture in its early phase, just as it was in Western and Northern Europe at this period. It is beyond my task here to analyse the possible historical or cultural reasons lying behind this situation (*i.e.* funeral customs and/or lack of specialised craftsmen?).

Plate 3 Gold mount with *Preßblech* imitation of granulation from Szegvár



The well-known necklace from Kiskőrös-Vágóhíd is a good illustration of the general character of Avar goldsmiths' work in the Middle Avaric period (**Pl. 2**).²⁰ The necklace consists of five cabochon garnets alternating with six conical gold pendants. The quality of the stones and their inclusions suggests that they are almandine garnets, which in Early Medieval Europe came from India.²¹ These seven cabochon stones are perfectly cut to form a matching ensemble, which were then set by a local craftsman. Such a group could not have been assembled piece by piece as casual acquisitions and must have been very expensive in all societies, where the market value of a luxury article corresponded to its real price. The Avars could not, however, have obtained these stones in regular trade, as they were in any case reluctant to participate in it. (With the exception of the Khazars, this was in general true of other steppe peoples in the Early Middle Ages.) Consequently, it is reasonable to assume that they received the stones as tribute or acquired them as booty. This is well reflected by the great discrepancy between the actual value of the set and the very simple sling mounts (*i.e.* bands of gold hammered into a mould to create rows of ribbing).

Tools and technology

In brief, one can conclude that the die was the most commonly used tool among the Avars, but tools of every other production stage and every other branch of metalworking are represented among the grave goods.²² The *Preßblech* technique using dies is one of the simplest metalworking techniques which may explain why it was so widespread across Europe.²³ It was regularly applied by the Avars in order to imitate granulation and/or inlaid stones (**Pl. 3**). There are considerable differences in quality amongst objects produced in this way, which definitely depended on the preparation and condition of the die. (Some dies, for example, were used less than others.²⁴) It is hardly a coincidence that the most elaborate dies, in terms of the richness of their ornamental decoration and their execution, were found in the grave of a goldsmith at Kunszentmárton (**Pl. 4**),²⁵ buried with scales and *exagia*²⁶ which are indisputedly of Byzantine origin.

This was also the case with other master craftsmen and we may draw attention to a few notable examples. One may assume, for example, that the goldsmiths who manufactured the belt mount from Kunágota (**Pl. 5**), the mount from Cibakháza (**Pl. 6**)²⁷ and the discs (**Pl. 7**) and the cross from Ozora²⁸ were also trained in Byzantine techniques, because their products and the ornament on them differ in general from genuine Avar jewellery. There also can be no doubt about the Byzantine character of the die used in the production of the pendant jewels from Tiszafüred.²⁹ Other examples include the



Plate 4 Die for a strap end from the goldsmith's grave at Kunszenmárton



Plate 5 Reverse of gold belt mount from Kunágota



Plate 6 Detail of gold mount from Cibakháza



Plate 7 Gold disc from Ozora

mounts belonging to the scabbard of Bócsa (Pl. 8), whose sophistication suggests quite an experienced craftsmen,³⁰ in contrast to the simple task of hammering the mounts of the wooden cup of Zamárdi (Pl. 9).³¹ These differences in the culture and quality of work demonstrate that 'Avar goldsmiths' work' is only an umbrella term as the goldsmiths themselves did not in fact constitute a discrete group in society and represent very different cultural affiliations.

Casting was another popular method which also resulted in the production of objects of widely different quality.³² It is important to note that all the cast pieces which belong to the Early Avar period seem to be alien to that which is generally understood to comprise 'typical' Avar culture. The precise origin of this technique in the 6th to 7th centuries remains unknown.³³ Earrings, pectorals and belt mounts show 'Byzantine' or 'Italian' characteristics, while cast belt sets of this period are of Germanic type or have ornamentation which

is incontestably of Germanic origin (the so-called Animal Style II; Pl. 10).

After the belt sets produced in the early period, the casting technique was not popular again amongst the Avars until generations later. In the Late Avar period (end of the 7th–8th century) large quantities of belt sets were produced in this way (Pl. 11), sometimes imitating more elaborate techniques like incrustation,³⁴ hollow beaded wire (Pl. 12)³⁵ or *Fuchsschwanz* design ('loop-in-loop').³⁶ It is important to note that the latter decorative techniques do not occur at all in the goldsmithing of the Late Avar period. This means that these imitations were not simply 'local solutions' by Avar goldsmiths, devised in order to copy techniques used in higher quality jewellery, but rather a distant reflection of metalwork being produced by the great civilizations. (This observation may contribute to the analysis of the question: to what extent Avar material culture was in fact a Byzantine fringe culture?)



Plate 8 Gold scabbard mount from Bócsa



Plate 9 Silver mount from the wood cup from Zamárdi



Plate 10 Detail of strap end from Zamárdi decorated with Animal Style II



Plate 11 Copper-alloy strap end from Zamárdi

It is also interesting to note that there is a discrepancy in the archaeological record between the techniques and the tools used to produce them: crucibles are known from the 7th century (Csákberény grave 369, Kunszentmárton) but not from the 8th century, which proves that the placement of tools in graves was merely a funeral custom rather than a direct reflection of everyday life, as is generally supposed in Hungarian research. As for the social status of Avar goldsmiths, even if the state of research does not allow us to draw general conclusions, it is interesting to note that the two moulds (**Pl. 13**) dating to the Late Avar period were found in female burials.³⁷ Does this suggest the presence of female goldsmiths, reflect the fact that casting is a relatively basic technique, or simply indicate again that the moulds are only signs of a funeral rite? The technological level of the cast objects, which are quite characteristic of middle level technology, supports the latter argument. Primitive moulds (**Pl. 14**) and poor casts are rare exceptions; the moulds are generally carefully elaborated and there are no significant differences either in the execution of the castings or in the cold working.

More ambitious Avar goldsmiths decorated cast mounts with additional techniques in both the early and the late periods; granulation was quite rare, with punching more common. In the latter instance triangles (**Pl. 15**)³⁸ and circles³⁹ were frequently used to fill the background (the last a feature definitely derived from the Roman-Byzantine tradition), but there is a small peculiar group of belt mounts decorated with sharp pointed punches (**Pl. 16**).⁴⁰ It is indicative of the cultural background and training of Late Avar goldsmiths that the decoration of the mounts consists almost exclusively of griffins and floral ornament repeated with minimal variations.

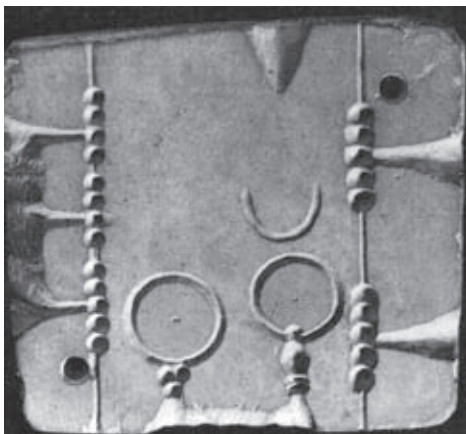


Plate 13 Stone mould from Bilisics

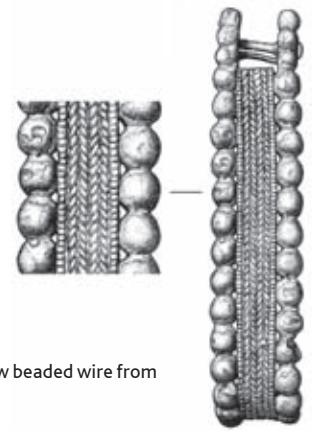


Plate 12 Strap end with imitation hollow beaded wire from Hohenberg

Representations of human beings or of animals are very rare and, if they occur at all, reflect the direct influence of Late Antique and Byzantine iconography. Figural compositions also occur rarely, and scenes with humans and animals are the most uncommon of all. It is also typical that on a cast strap end one can see superbly worked floral ornament, while the figure of a mounted rider looks like a drawing made by a small child (**Pl. 17**).⁴¹ This is, quite obviously, due to the cultural background of the goldsmith. In general the representation of human beings was a rare exception on the Eurasian steppe as well. The repetition of the shape of the same type of griffins and the lack of scenic compositions reveals a level of production which does not correspond to the generally accepted meaning of the concept of 'art'.

Further information about the cultural character and quality of Avar casting comes from some metallographic analyses of Late Avar belt mounts which have yielded some astonishing results. It seems that even those mounts which belonged to the same set may have been made of different alloys.⁴² (The same also holds true for some *repoussé* mounts which have been analysed.⁴³) If this is not due to the erroneous interpretation of the few samples, instead of postmodern conclusions, one can interpret this fact in a simple way from a technological point of view. In fact the quality of a cast depends on whether the goldsmith managed to keep all the raw materials at a constant and identical temperature. The differences in the composition of the alloys may indicate that Avar goldsmiths were able to cast only small quantities at the same time. This fact also clearly indicates the general level represented by Avar goldsmith work, especially when comparing the production of their small belt fittings for



Plate 14 Copper-alloy mould from Zamárdi

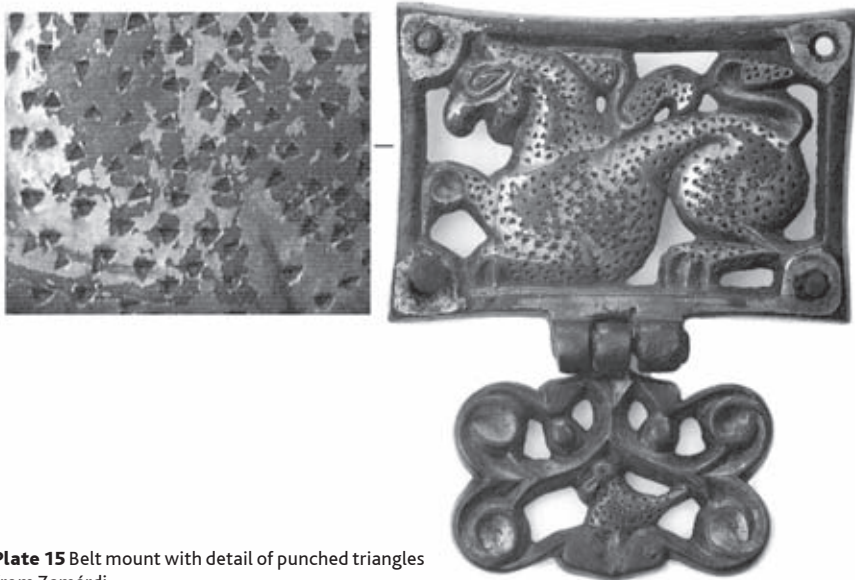


Plate 15 Belt mount with detail of punched triangles from Zamárdi



Plate 16 Gold belt mount with detail of punches from Mátészalka

example with the task of casting a statue or bell! The same picture emerges from looking at Early Avar belt mounts: in fact we are dealing with local, occasional commissions and/or local productions and most certainly not the mass products of specialised workshops.

Nothing is known about the sources of the raw material employed for the great number of bronzes in the Late Avar period. It is only an *idée gratuite*, an idea without any foundation, that ancient Roman bronze statues from the province of Pannonia were melted down for this purpose. Metallographic analyses which have been done do not at present support this idea.⁴⁴ Along similar lines, another study has considered the possibility of the early exploitation of mines in the northern Carpathians, the main source of minting and the bronze industry in medieval Hungary.⁴⁵ Specialised research is needed in order to clarify this issue as is the case with the problem of the source of the huge quantity of cast bronze jewellery produced in the Kama region in the 8th–9th centuries (a question which has not been formulated, much less addressed).

Hammering is one of the simplest and almost universal techniques employed by the goldsmith and it too was widely

used by Avar craftsmen.⁴⁶ A stone object most probably used as an anvil was found in the infill of a Late Avar house (Pl. 18),⁴⁷ and from the same period a number of hammers which could have been used by goldsmiths have also survived (Pl. 19).

According to demand and their skills, Avar goldsmiths used sheets of gold to produce the cores of *Bommelohrrings* (Pl. 20) or the whole surface of the hair clasp (Pl. 21) by *Formtreiben*.⁴⁸ Practically all of the earrings have a uniform diameter and regular shape in addition to attached pendants. These pendants have different forms: they are globular or pyramidal (Pl. 22) in the 7th century but only globular in the 8th century.⁴⁹ A considerable achievement was, of course, the manufacture of a chalice decorated with fluting (Pl. 23).⁵⁰ The cultural awareness (or rather the lack of it) of both goldsmith and patron is well illustrated by the case of a Byzantine gold plaque with a figural composition which was cut through without any respect for the original decoration in order to fit it as an ornament on an Early Avar sword (Pl. 24).⁵¹

Wire-drawing occurs too, mostly in the early period,⁵² and interestingly is not found in Eastern and south-eastern Europe in the Early Middle Ages. The spinning and twisting of ribbons or wires on Avar goldwork is likewise superior in technical



Plate 17 Detail of strap end with rider from Komárno



Plate 18 Stone anvil (?) from Eperjes



Plate 19 Head of a hammer from Želovce



Plate 20 Gold earrings (Bommelohrrings) from Debrecen



Plate 21 Detail of a gold hair clasp from Kiskőrös



Plate 22 Gold pyramidal earring from Deszk



Plate 23 Detail of gold chalice with fluted body from Bócsa



Plate 24 Detail of a Byzantine gold scabbard mount from Kunágota

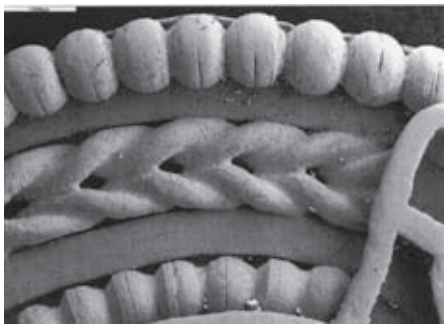


Plate 26 Detail of a clasp with Äquatorscheit



Plate 25 Gold pseudo-buckle from Tépe



Plate 27 Gold buckle from near Sirmium



Plate 28 Detail of gold strap end from Kunbábony



Plate 29 Gold medallion from Szegvár (left); gold medallion from Ufa (right)

Plate 30 Gold and amethyst earrings from Ozora



quality to that of the goldsmiths of Eastern and Central Europe. Even more sophisticated is their use of hollow beaded wire (*Perldraht*) and loop-in-loop wire (Pl. 25). These occur on the finest pieces of Avar jewellery, but in order to judge them in their absolute context it is important to note that the techniques mentioned above, together with beaded wire with an embossed meridian (*Äquatorschnitt*) (Pl. 26), do not occur on average Avar products (or on Sasanian and other Middle Asian objects), but are only to be found on genuine Byzantine products.⁵³

Inlaying with glass or stone is one of the more elaborate techniques⁵⁴ and both cabochon and plate *cloisonné* are found on Avar metalwork. Heinrich-Tamáška has defined three varieties: a German, an Eastern/Byzantine and a local one.⁵⁵ Glass inlay was, of course, less expensive than that of semi-precious stones and so was generally used, but the choice does not seem to have been determined by the price alone. If the goldsmith did not have any precious stones at hand, he simply used glass instead. This practice explains why, even in the case of the belt set (c. 550–650) found in the vicinity of Sirmium, which is one of the finest found anywhere in the Byzantine Empire, one finds only inlays of medium quality (Pl. 27).⁵⁶ The

same is true for the the gold strap-end from Kunbábony, the richest grave of the early period (the second third of the 7th century); it has only small translucent glass inlays and no stones at all (Pl. 28). On the other hand, there are cases where different kinds of semi-precious stones (tourmaline, amethyst, almandine) were used, for example in the middle of a medallion, which is, however, technically only a modest piece (Pl. 29 left).⁵⁷ In contrast there are excellent pieces of Byzantine jewellery where the inlays are made exclusively of glass (Pl. 29 right),⁵⁸ or some *pendilia* of the Middle Avar period which can match, with regard to the drilling technique and the execution of its suspension, even the finest pieces of Byzantine goldsmith's work (Pl. 30);⁵⁹ these are sure proof of a renewed Byzantine influence in the Middle Avar period. One can conclude that there was no direct correlation between the quality of the goldsmith's work and the value of the inlaid stone or glass.⁶⁰ Finally, a gold pyxis from the Nagyszentmiklós treasure showing Byzantine-Carolingian (?) influence from the Late Avar period is a very special case, as is the whole treasure: it is decorated with glass inlays in cells of different forms (Pl. 31).



Plate 31 Gold pyxis from Nagyszentmiklós (reconstruction by Franz Siegmeth)



Plate 32 Detail of earring with granulation from Zamárdi

The use of granulation⁶¹ among the Avars is also characteristic for goldsmiths of above average skill in Central and Eastern Europe.⁶² It occurs on unquestionably Avar products of the 6th and 7th centuries (Pls 32, 33) and not in the later period. It is found most conspicuously on earrings with pyramidal attachments and on a group of belt mounts. There is also pseudo-granulation, which makes use of small gilt-bronze granules, and there are even lower quality imitations, namely *repoussé* or *Perldraht*.⁶³

Tauschierung (inlaying gold, silver or copper into iron) was used as ornamentation for an important group of belt fittings in the 7th century (Pl. 34),⁶⁴ but it occurs only rarely on other objects (Pl. 35). Despite its wide diffusion it cannot be considered as a genuine Avar technique and it never occurs in the Balkans or in Eastern Europe. Its use in Byzantium, Italy, among the Franks, Alemans and Bavarians,⁶⁵ demonstrates the European connection of Avar goldsmith work.

Niello⁶⁶ is attested in a very few cases on imported objects (Pl. 36),⁶⁷ and *millefiori* glass is found only on the Byzantine gold buckle from Kunbábony (Pl. 37).⁶⁸ All these objects date to the 7th century and cannot be regarded as genuine Avar products.

Brief mention should be made here of enamel, because the well-known Carolingian period ewer from St Maurice d'Againe has discs decorated in this technique, and according to Alföldi, they might have had some kind of Avar connection.⁶⁹ It is important to stress that there is no reason to connect these enamels with Avar goldsmith work, either typologically, technically or iconographically.⁷⁰ There are simply no Avar pieces decorated with enamel. However mention should be made of a belt-fitting which merits more attention than it has received to date. Today it is not possible to study it, but the published photograph seems to suggest that the decoration was



Plate 33 Gold belt fitting with granulation from Kunbábony

made with *Perldraht* and the background was filled with small glass pieces (Pl. 38).⁷¹

Gilding and silvering occurs throughout the Avar period,⁷² while, interestingly, tinning was employed only in the Middle and Late Avar periods.⁷³ It also merits special attention that gilded silver jewellery is found only in Pannonia and not on the Great Hungarian Plain.⁷⁴

Finally a strange, absolutely unique decorative technique cannot be omitted here. In the pierced decorative background of an 8th-century strap end the wings of an insect (*Netocia cuprea*) have been observed, which are of green colour and filled the space between the vegetal ornament.⁷⁵

Cultural lessons of the treasure of Nagyszentmiklós for Avar goldsmith's work in general

The landscape of the Avar goldsmith's work represents a kind of 'great plain' with some 'hills', where the only veritable 'peak' is the treasure of Nagyszentmiklós (Sînnicolau Mare, Rumania).⁷⁶ This is the most important treasure in the whole of Central and Eastern Europe from the Early Middle Ages and consists of 23 decorated gold vessels with a total weight of 10kg (20lb) (Pl. 39). Its connection with Avar culture of the 7th and 8th centuries is today beyond any doubt. In the present context it is interesting to note that the use of a special kind of punch forms one key argument for the Avar origin of the treasure, as it can only be paralleled on Avar belt mounts. (There are of course other arguments as well.)

Scholarly literature on the treasure is abundant, but a specialised goldsmith has dealt with it for the very first time only recently, some 200 years after its discovery.⁷⁷ It is clear, even without having a great knowledge of the goldsmith's craft, that all the vessels were produced by *repoussé* work, that nearly all of them were decorated by punching, and that some

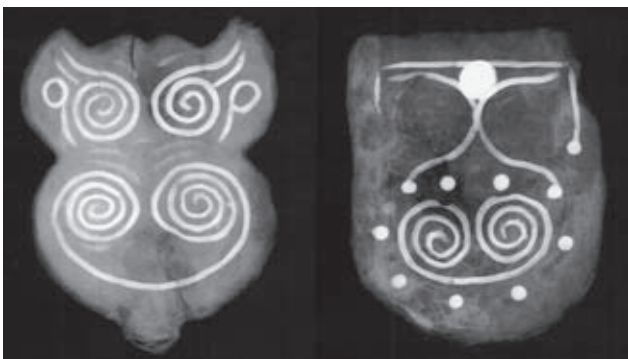


Plate 34 X-radiograph of two belt fittings with *Tauschierung* from Budakalász

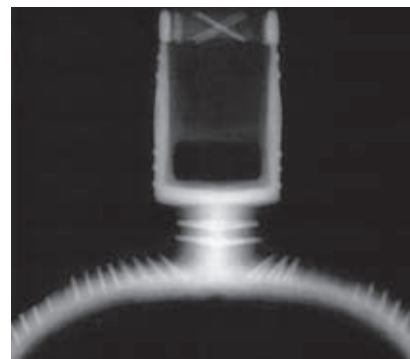


Plate 35 X-radiograph of the upper part of a stirrup with *Tauschierung* from Mikebuda



Plate 36 Detail of belt buckle with nielloed decoration from Kölked-Feketekapu B, Grave 119



Plate 37 Detail of buckle with *millefiori* glass from Kunbábony



Plate 38 Belt fitting with *Perldraht* from Želovce

of them had pierced work and glass inlays. It is very important to note the absence of filigree, granulation and niello. Both the quality of their ornamental decoration and the techniques applied confirm the impression that they are exceptional, indeed unique pieces, not only in the Carpathian Basin but in the whole of contemporary Central and Eastern Europe. This aspect alone deserves special attention and needs explanation from the point of view of cultural history.

To understand this uniqueness it is especially informative to compare this treasure with the find from Mala Perešćepino, in the region of Poltava, which is regarded as the grave of Kuvrat, the khagan of Magna Bolgaria from around 630–50.⁷⁸ The richness and importance of this find for the research of Early Medieval Central and Eastern Europe is comparable to that of Sutton Hoo in western Europe. Here I would like to mention only those objects which, from a technical viewpoint, were most probably produced locally. First of all, it is striking that they are undecorated, particularly a gold bowl of Sasanian type weighing about 1.81kg (2lb 9oz). Genuine Sasanian bowls are always decorated and made from silver. It is equally telling if we compare the armband with stone inlays (Pl. 40 top) with another one from the same find which is a masterpiece of Byzantine goldsmith's work (Pl. 40 bottom). The settings of the glass inlays are definitely inferior when compared with the workmanship of the latter piece. It is absolutely clear that raw materials such as gold and silver were readily accessible for the goldsmiths working in or for the court of this person of the highest rank. However, this ruler on the East European steppe, maybe even Kuvrat whose godfather was the Emperor Heraclius, was not able to find a local craftsman who could manufacture elaborate luxury articles decorated with the techniques regularly used in the Byzantine Empire. This is a good lesson regarding goldsmiths' work of the steppe in general. One can see the same phenomenon at the eastern end of the Eurasian steppe: the small gold vessels of the treasure of



Plate 39 Gold vessels from the Nagyszentmiklós treasure



Plate 40 Gold bracelet from Mala Perešćepino (above); detail of gold bracelet from the same find (below)

Kül teġin, the most senior counsellor in the eastern Turkish Empire in the mid-8th century, are also undecorated and, from a technical point, simply made.⁷⁹ For this reason, it is of great importance, both from the viewpoint of Avar history and European cultural history in general to understand that the craftsmen producing the vessels of the Nagyszentmiklós treasure enjoyed a higher level of training both in artistic and technical respects, when compared with their colleagues who were employed by the rulers of the European and Inner Asian steppe in the 7th–8th centuries.

What kind of conclusion can be drawn from this? Is there any find which would allow us to suppose that Avar culture attained a higher technical standard than its neighbours in the Eastern European steppe while they were living there c. 558–68, *i.e.* before the conquest of the Carpathian Basin? Their culture was not exceptional: all goldsmithing products of the Eurasian steppe have a uniformly modest character from the point of view of technique, ornament and typology. We can only conclude that it was the inherent local cultural possibilities of the Carpathian Basin which enabled the development of the material culture of both the Avars and, 200 years later, the Hungarians to reach a significantly higher level in their goldsmiths' work when compared with all their eastern counterparts on the Eurasian steppe.

There is, however, an important contradiction between the Avar origin of the Nagyszentmiklós treasure and its uniqueness among the archaeological material of the Avars. This treasure was, in my opinion, collected over one and a half centuries by an Avar ruling family, every generation of which commissioned new pieces in the authentic Avar tradition. But why are similar pieces missing from the archaeological record of the 7th–8th centuries? It is hard to believe that the craftsmen who

manufactured these vessels did not produce other similar objects.⁸⁰ Dealing with this phenomenon can help us to understand the craft of the Avar goldsmith in general. Purely theoretically, of course, one can interpret freely the episode in the *Annales Fuldenses* which describes how Eric, the duke of Friuli, took away the entire treasury of the Avar khagan in 796⁸¹ so that no vessels remained in the land. In reality we have no idea what was contained in the booty, whether there were any genuinely Avar pieces or vessels which, purely theoretically, could be compared with those ones from Nagyszentmiklós.

I propose, however, that we might resolve the contradiction between the Avar origin of this treasure on the one hand and the overall Avar archaeological material on the other from the point of view of cultural history. As the Avar economy was quite obviously not governed by the rules of a free market, we cannot suppose that there would have been established workshops continuously producing luxury items as in Early Medieval Western Europe.⁸² I suppose that each generation of the (local) dynasty who intended to add new items to the treasure of Nagyszentmiklós was always able to find highly specialised craftsmen who fulfilled only these commands. (It will most probably remain a mystery to us how they organised this selection. Maybe they used itinerant craftsmen.⁸³) The treasure of Nagyszentmiklós was made in an oriental society whose aristocracy was influenced by Byzantine culture. It represents a kind of lonely peak surrounded by the 'hills' and 'plains' of Avar goldsmith work and that of the whole of Central and Eastern Europe and the Eurasian steppe region.

Concerning the ethnic origin vs the cultural affiliation of Avar goldsmiths

A comparison with Byzantine imperial workshops can only lead one to the most simple conclusion that the techniques and the ornamental decoration of Avar products are quite distant, but basically related to Byzantine pieces. It is more relevant of course to set them in their proper geographical and cultural context, *i.e.* to compare them with the goldsmiths' products of Central and Eastern Europe. Avar goldsmith work is remarkably superior, with regards to both its quality and quantity. How does one explain this phenomenon?

One could, of course, see the reason for the relative richness of Avar goldsmithing products as the consequence of the immense quantity of gold tribute (about 6 million *solidi*) extorted from the Byzantine Empire between 574–626. The relative abundance of the raw material is not, however, sufficient explanation in itself: see the above mentioned example of the find from Mala Perešćepino. Ethnographic evidence shows, for example, that granulation is not a mysterious craft: its prerequisites are 'only' gold and know-how. Neither of them is sufficient alone, but it is also evident that the more important one is technical knowledge. Gold can be obtained quite quickly and easily by military or diplomatic means, but it is far more difficult to obtain skilled craftsmen, for the necessary know-how always supposes a certain workshop tradition. Some Eastern Slavic tribes, for example, also managed to obtain some gold during their raids on Byzantium, even if on a much more modest scale than the Avars, and the Bulgars as well could obtain gold thanks to their wars and treaties with the neighbouring Byzantine Empire. But to the east of the Carpathians and in the Balkans no pieces of

high-quality jewellery have been found which could be supposed to have been made by local craftsmen. Where did the superior know-how of the Avar goldsmith in the Carpathian Basin come from? A definite answer to this very complex and far-reaching question is actually not possible.

However there are two decisive starting points from which to advance further questions concerning the archaeology and history of the Avars. The first is the simple fact that with a single exception all goldsmiths' burials (including the dies) in the Avar khaganate can be dated only after the beginning of the 7th century,⁸⁴ *i.e.* the burials and tools appear at the same time as the acme of Avar culture. This coincidence is most certainly not a chance one. Could this mean that the goldsmiths of the Avars were of foreign origin and arrived a generation after the conquest of the Carpathian Basin? Or would they have needed about 50 years in order to acquire better technology and techniques? If so, who were their teachers? Secondly, one can see a considerable gap in technological terms between the archaeological record of Early Avar culture (6th–7th centuries) and the Late one (8th century): as previously mentioned, in the later period sophisticated techniques such as granulation and incrustation with stones or glass had disappeared. In the latter case it needs to be explained why this knowledge disappeared at the end of the 7th century.

The present state of research allows us to conclude only where the Avar goldsmiths could *not* have come from. They were not of eastern origin: there is absolutely no sign of typically Avar objects on the Eastern European steppe before the Avar conquest (568) and also no sign of them in Asia before the Avar appearance in Europe (558). Most of the techniques used by Avar goldsmiths are completely unknown on the Eurasian steppe. One can say the same about a Balkan origin: most Avar goldsmithing techniques do not occur there either. Nor were they of Lombardic or Gepid origin. Firstly, because as I have already mentioned, the niello techniques of the pre-Avar and Avar periods are different from each other; second, the material culture of the Avars did not begin to flourish immediately after they settled in the Carpathian Basin, but only one or two generations later. Any surviving Germanic goldsmiths could have begun to work immediately after 568.

What possibilities remain? Here I would like to propose one possibility which has never been taken into consideration before. It is well known that about 630 Samo, a merchant from Franconia, regularly travelled on business to the western regions of the Carpathian Basin.⁸⁵ He certainly bought slaves: but how did he pay for them and what did he give in exchange? Could some of the Merovingian-like artefacts found in the Avar khaganate be connected with Samo's activity?

There is no reason here to enter into the old-fashioned arguments as to whether Avar goldsmiths were of Byzantine origin or not.⁸⁶ It would, of course, be a mistake to see the Greek monograms on a group of 7th-century strap-ends (for example, *Arethon* on one of Kunágota-Mersin type),⁸⁷ as proof of a Byzantine origin for the goldsmiths,⁸⁸ in fact they are only proof of the Byzantine 'culture' of the given goldsmiths. As for the names and inscriptions on Avar objects, it is most instructive that when inscriptions do occur the goldsmiths used Greek and Latin letters and never runes of Turkic type. Even in the case of the treasure of Nagyszentmiklós, with

respect to the old but well-formulated dilemma as to whether its goldsmiths were Byzantines with Avar cultural knowledge or Avars experienced in Byzantine goldsmiths work,⁸⁹ it is possible to decide in favour of Byzantine cultural influence. However, the answer to this basic question may lie elsewhere by just posing another one: what are 'Avar' and 'Byzantine' as such, *i.e.* how far is it possible to differentiate the fringe cultural elements from the Late Antique and Italian contributions to the general notion of 'Byzantine culture'?⁹⁰

I have already repeatedly called attention to the fact that there is a significant difference to be observed within the archaeological record of the Carpathian Basin during the 6th–7th centuries. Finds from the territory of the former province of Pannonia are clearly more numerous, show a greater typological variety, and their ornamental decoration is more elaborate when compared with contemporary finds from the Great Hungarian Plain. Does this mean that Early Avar culture was born in the western part of the khaganate,⁹¹ or is this phenomenon a reflection of other factors, *i.e.* the presence of a tradition of skilled handicrafts and/or that of populations with higher cultural claims?

One can observe signs which favour all these possibilities. Firstly, a most interesting fact is the distribution of the bronze cauldrons of Hunnic type. They have come to light in greater numbers on the territory of former Pannonia than on the Great Hungarian Plain⁹² which was undoubtedly the typical settlement area of the Huns. Let us remember again that it requires great technical skill to cast bronze pieces of such size and weight; this might lead one to conclude that very specialised craftsmen worked in Pannonia even in the first half of the 5th century,⁹³ which is generally considered as a period of devastation after the collapse of Roman rule in the province. On the other hand we must take into consideration the ethnically rich picture of Pannonia in the 6th–7th centuries which included different groups of Germanic and Romanised origin who may have represented a large potential market.

The crucial factor evoking the richness of Avar material in Pannonia is, in my opinion, the contact of the Avars with Italy. To suppose such a connection is by no means surprising: it is an established pattern from the Neolithic age that the western part of the Carpathian Basin was always linked to Europe in north-western or south-western directions, while the eastern half was open to Eastern or south-eastern Europe. The Avars obviously established connections with Italy, as is revealed by both written sources and the archaeological record.⁹⁴ The latest research by Falko Daim has proved that the Mediterranean contacts of the Carpathian Basin were still working in the 8th century when there were motifs and techniques arriving from the Adriatic region,⁹⁵ showing that contacts with the Mediterranean/Byzantine world were not interrupted at the end of the 7th century.

However, when studying the cultural, *i.e.* vertical differentiation of the Avar archaeological material, one must not forget the aspect of its social, *i.e.* horizontally divided groups too. Scholars in Central and Eastern Europe used not to take into consideration the fact that the 'richness' of grave goods does not reflect directly and exactly the social position of the dead⁹⁶ and that many social, emotional and ritual factors could have influenced funerary rites, and consequently what was finally deposited in the grave.⁹⁷ But if we group and

categorise Avar goldsmith works, one should consider at the outset not the users of the products (the 'rich' and the 'poor'), but the masters of the latter. This is, however, a more than risky approach given two uncertainties. The first is our lack of knowledge of the circumstances under which people in the Avar khaganate obtained their jewellery (purchase [?], exchange, inheritance, robbery) – but this is only a question of the procurement not the production of goldsmiths' work which is the main focus of this paper. The second is the dearth of any information concerning how goldsmiths were organised in the political and economic structure of the Avar khaganate, a point no one has attempted to elucidate. It is absolutely evident, as has been mentioned briefly above, that Avar goldsmiths must have been divided into different ethno-cultural groups. It is much more difficult to set the question in its socio-cultural context. It is easy to differentiate between 'excellent', 'good', 'medium' and 'poor' quality products, but in trying to think scientifically we are in fact not able to connect these categories either to the cultural or social groups of Avar goldsmiths. We can only suppose that the cultural and the social aspects of the goldsmith's work may have coincided: certain ethnic-cultural groups could have had more cultivated and skilled master craftsmen than others. When one can differentiate at all it is possible to isolate three main groups: 'Byzantine' *i.e.* master craftsmen who had direct experience of working in Byzantine workshops (e.g. **Pls 25, 28, 37**); an intermediate group of goldsmiths who had partial knowledge and experience of Byzantine jewellery and culture (e.g. **Pls 8, 16, 20, 22, 38**); and finally, those goldsmiths who worked at a purely 'local' level (e.g. **Pls 3, 11, 29 left**). It is the task of future research to determine whether these 'Byzantine' goldsmiths, products and/or influences came from Italy or from the direction of the Balkans.

Conclusion

I hope to have illustrated that the majority of the techniques used by Avar goldsmiths do not differ considerably from those of their contemporary European and Byzantine cousins, even if there were both distinctive differences as well as important similarities. One idiosyncrasy, compared with Central and Eastern Europe and especially with the finds of the Eurasian steppe, is the great variety and quality of Avar jewellery. With regard to its techniques and quality, one can say that it is far superior to the locally made jewellery of the aforementioned regions. This is quite remarkable and very instructive when it comes to characterising Avar culture as such, especially when one speaks about its eastern/oriental roots. As regards Byzantium, there was never any doubt that the Avars had contacts with the Empire, which can be demonstrated in the typology and ornamentation of their material culture, as well as the goldsmiths' techniques used in Avaria. One can, therefore, safely conclude that the Avar goldsmith's craft is, in a certain sense, a Byzantine fringe culture. However its products – and its customers as well – belonged, as elsewhere in the world, to many different categories. Looking at Avar goldsmith work as a landscape one can observe certain 'hills' as regards the quality of the work and according, of course, to the social status of the given customers. These 'hills' emerge from the great 'plain' and there is actually only one true 'peak'. Taken together, this definitely represents a higher level than the

goldsmiths' work of Central and Eastern Europe in general, but even the best Avar pieces do not bear comparison with the jewellery, with its more expensive and elaborate techniques, produced in the workshops of Byzantium, Italy and the Merovingian kingdom.

When comparing the technological level of Avar goldwork in the 6th–7th centuries with that of Eastern Europe and the Balkans, some further analogies should be taken into consideration. The difference between Avar culture of the 6th–7th century and that of the 8th century is well reflected in jewellery and goldsmith techniques and has been mentioned more than once in this short paper. Earlier Hungarian research sought to explain this in the light of historical events without taking into consideration broader developments in Byzantium and Eastern Europe. It is well known that, at the turn of the 7th and 8th centuries, there was a great change in Byzantine goldsmithing as well. After the long series of masterpieces dating to the 6th and 7th centuries, jewellery and representative metal vessels disappeared across the entire Empire. I have already dealt with this change in another work, where my task was to consider only the Avars.⁹⁸ Just as it could be a mistake to interpret the change in Avar material culture after the 7th century as an isolated, particularly Avar phenomenon, it would be equally wrong to look for an explanation exclusively inside the Byzantine Empire.

In order to obtain a broader perspective it is of the utmost importance to observe that cast belt mounts similar to those of the 8th-century Avars are also found in the same period on the Eastern European steppe, in the Balkans, the Crimea, on the outskirts of the Caucasus and in the region of the Kama. (Similarities between jewellery and ceramic types can also be observed.) What can be the explanation for this phenomenon? All these regions, due to their historical and economic traditions, stood under more or less strong Byzantine influence. The scale of this influence should not be overestimated, of course, but its synchronic appearance and diffusion shows that certain material cultures in Eastern Europe of certain peoples – very different from each other from the point of view of ethnic origin and economic levels – followed these changes at the same time and in the same way. From a more general viewpoint it is important to note a common feature of the aforementioned regions: they adopted feudalism only centuries after its development in Western Europe in the 7th and 8th centuries as they did not belong to that zone of influence, but to the Byzantine one. It is, however, beyond the scope of this paper to investigate the reasons for the stagnation and the inability or lack of interest of Byzantium in promoting the wider dissemination of handicrafts and in general its passivity in the promotion of technical discoveries, which is one of the basic differences from western European feudalism in the Early Middle Ages. The Avars established a special relationship with the Byzantine Empire but they did it without neglecting the Italian and western European world. The combination of this policy with their centralised political power and their material (*i.e.* 'financial') possibilities enabled the Avars to develop a rich and very characteristic culture which can be regarded from several points of view as a Byzantine fringe culture. In order to really evaluate it on its own terms, in its geopolitical environment and in the whole of Europe in the 6th–8th centuries, one should never forget that

the great achievements of European goldsmithing in the Early Middle Ages are universally those pieces which followed, directly or indirectly, classical antique traditions or developed from them.

Notes

- 1 In this paper 'Avar' will be used as a chronological term and not in an ethnic sense.
- 2 The crafts in 9th-century Great Moravia are better known and more abundant than those of the Avars. The reason for this is direct Carolingian contact and influence (for chronological reasons this was not possible in the case of the Avars) and that centres of local political importance have been excavated there which is not the case for the Avar khaganate at present. See B. Chropovský, 'Zur Problematik der Entstehung und Entfaltung spezialisierter Handwerkszweige in Großmähren', in W. Jankuhn, W. Janssen, R. Schmiedt-Wiegand and H. Tiefenbach (eds), *Das Handwerk in vor- und frühgeschichtlicher Zeit*, II, Göttingen, 1983, 120–59; D. Bialeková, 'Stav remeslej výroby na Slovensku v 9.–11. storočí', in P. Ratkoš (ed.), *O počiatkoch slovenských dejín*, Bratislava, 1965, 81–95.
- 3 For example: G. Bott and W. Meier-Arendt (eds), *Awaren in Europa. Schätze eines asiatischen Reitervolkes 6.–8. Jh.*, Frankfurt am Main, 1985; G.C. Menis (ed.), *Gli Avari. Un popolo d'Europa* (Pubblicazioni della Deputazione di Storia Patria per il Friuli 22), Udine, 1995; E.A. Arslan and M. Buora (eds), *L'oro degli Avari. Popolo delle steppe in Europa*, Milan, 2000.
- 4 J. Hampel, *Altertümer des frühen Mittelalters in Ungarn*, II, Brunswick, 1905, 401–23.
- 5 O. Heinrich-Tamáška, 'Tier- und Zahnschnittornamentik im awarenzeitlichen Karpatenbecken', *Bericht der Römisch-Germanischen Kommission* 87 (2006), 542.
- 6 For a comparison with Early Medieval goldsmith techniques in Europe, see the general overview by J. Wolters, 'Goldschmied, Goldschmiedekunst', *Reallexikon der Germanischen Altertumskunde* 12 (1998), 362–86.
- 7 This neglect has a very long tradition in Hungary: the first author of a monograph on the treasure of Nagyszentmiklós, Joseph Hampel, wrote a book on the 23 gold vessels without any discussion of the goldsmiths' techniques employed (see n. 76).
- 8 Gy. László, 'La trouvaille de Tépe', *Archaeologiai Értesítő* 33 (1940), 77–90; *idem*, *The Art of the Migration Period*, Budapest, 1974, 77.
- 9 In the same period he studied in the Kunsthistorisches Museum, Vienna, the vessels from the treasure of Nagyszentmiklós and made several observations concerning goldsmiths' techniques. Some of his remarks have been published: see Gy. László and I. Rácz, *The treasure of Nagyszentmiklós*, Budapest, 1972.
- 10 In 1984 we had a long discussion about his manuscript 'Schmiedegräber der Awarenzeit'.
- 11 G. Kiss, 'Reitergrab 8 des awarenzeitlichen Gräberfeldes Lukácsháza-Hegyalja dűlő', *Savaria* 22/3 (1996), 107–43; L. Bende, 'Tauschierte Gürtelgarnitur im awarischen Gräberfeld von Pitvaros', *Móra Ferenc Múzeum Évkönyve* 6 (2000), 199–217; R. Müller, 'Ein streifenplattierte Gürtelgarnitur aus dem awarischen Gräberfeld von Gyenesdiás', in R. Müller, P. Straub and O. Heinrich-Tamáška, *Germanen am Plattensee* (Ausstellung im Museum für Frühgeschichte Schloss Traismauer), Traismauer, 2002, 43–5; E. Nagy, 'Iron phalerae decorated with inlay from Bóly', *Janus Pannonius Múzeum Évkönyve* 43 (1998), 103–12.
- 12 Zs. Rácz, *Goldsmiths' graves of the Avar period*, [in Hungarian] forthcoming, Diss., Budapest, 2004.
- 13 Á. Szóke, 'Verzinnungsarten in der Awarenzeit. Das Problem der Reinigung von verzinnnten Bronzegegenständen', *Móra Ferenc Múzeum Évkönyve* 1 (1995), 211–18; B. Bühler, 'Untersuchungen zu Guß, Oberflächenbearbeitung und Vergoldung an frühmittelalterlichen Bund- und Edellmetallgegenständen', *Archaeologica Austriaca* 82/3 (1998–9), 429–78; *eadem*, 'Der Scharnierbeschlag von Weiden am See und die Drahtherstellung im Frühmittelalter', in F. Daim (ed.), *Die Awaren am Rand der byzantinischen Welt* (Monographien zur Frühgeschichte und Mittelalterarchäologie 7), Innsbruck, 2000, 205–52; *eadem*, 'Technologische Untersuchungen an awarenzeitlichen Scheibenfibeln aus Keszthely (Ungarn)', *Zalai Múzeum* 11 (2002), 133–44; O. Heinrich-Tamáška, 'Bemerkungen zur Feinschmiedetechnik der Frühawarenzeit am Beispiel der zahnschnittverzierten Fundstücke', *Móra Ferenc Múzeum Évkönyve* 8 (2002), 245–82; *eadem*, 'Weitere Angaben zur Herstellungstechnik der zahnschnittverzierten Fundstücke: Die Konstruktion', *Móra Ferenc Múzeum Évkönyve* 10 (2004), 147–88; *eadem*, *Studien zu den awarenzeitlichen Tauschierarbeiten* (Monographien zur Frühgeschichte und Mittelalterarchäologie 11), Innsbruck, 2005; *eadem*, *Die Stein- und Glasinkrustationskunst des 6. und 7. Jahrhunderts im Karpatenbecken* (Monumenta Avarorum Archaeologica 8), Budapest, 2006; *eadem*, 'Avar-age technologies in the Carpathian Basin (sixth to eighth century)', in F. Curta (ed.), *The Other Europe in the Middle Ages*, Leiden and Boston, 2008, 237–61.
- 14 In any overview of the character of Avar archaeological research it is important to note that the study of the production processes of buckles and belt-fittings was initiated by Austrian and German scholars. For iron metallurgy we already have good surveys: J. Gömöri, 'Nemeskér-Type Iron Smelting Workshops from the Time of Onogur Colonization of Pannonia. Excavations in Zamárdi', in J. Gömöri (ed.), *Traditions and Innovations in the Early Medieval Iron Production*, Sopron and Somogyfajs, 1999, 149–52; *idem*, *Az avar kori és Árpád-kori vaskohászat régészeti emlékei Pannoniában*, Sopron, 2000.
- 15 D. Claude, 'Die Handwerker der Merowingerzeit nach den erzählenden und urkundlichen Quellen', in Jahnkuhn *et al.* (n. 2), 257–8; H. Nehlsen, 'Die rechtliche und soziale Stellung der Handwerker in den germanischen Leges', in Jahnkuhn *et al.* (n. 2), 276; C. von Carnap-Bornheim, 'The Social Position of the Germanic Goldsmith AD. 0–500', in B. Magnus (ed.), *Roman Gold and the Development of the Early Germanic Kingdoms* (Konferenser, no. 51), Stockholm, 2001, 263–78. H. Roth was sceptical as he considered that it was not possible to determine the social position of goldsmiths on the basis of their grave goods, see: *Kunst und Handwerk im frühen Mittelalter. Archäologische Zeugnisse von Childerich I. bis zu Karl dem Großen*, Stuttgart, 1986, 130.
- 16 In the absence of a real regular market system it is more correct to use the term 'value', although one has to emphasise its quite subjective nature.
- 17 A. Nadj, 'Die Necropole bei Aradac aus dem frühen Mittelalter', *Rad Vojvodjanskih Muzeja* 8 (1959), 62–3; L. Madaras, 'Der awarische Friedhofsteil aus den 7.–8. Jahrhunderten in Berekfürdő', *Tisicum* 12 (2001), 174, pl. 14: 8; L. Papp, 'Der awarenzeitliche Friedhof von Bóly', *Janus Pannonius Múzeum Évkönyve* 7 (1962), 170–1, pl. V: 1–8; N. Fettich, *Das awarenzeitliche Kunstgewerbe in Ungarn* (Archaeologia Hungarica 1), Budapest, 1927, Taf. IV, V; Gátér: *ibidem*, Taf. VI: 19–24; Gy. Rhé and N. Fettich, *Jutas und Öskü. Zwei Gräberfelder aus der Völkerwanderungszeit in Ungarn* (Skythica 4), Prague, 1931, 32–3; J. Ormándy, 'Awarenzeitliche Gegenstände mit Granulationsverzierung. Goldene Ohrgehänge mit Pyramiden- und Kugelanhänger', *Móra Ferenc Múzeum Évkönyve* 1 (1995), 151–81; K. Vályi, 'Das Detail eines spätawarenzeitlichen Gräberfeldes in Szeged-Kiskundorozsma-Hármashatár', *Móra Ferenc Múzeum Évkönyve* 9 (2003), 212; Zl. Čilinská, *Kov v ranoslovanskem umení*, Bratislava, 1981, 354–5; A. Kiss, *Das awarenzeitliche Gräberfeld von Kölked-Feketekapu B* (Monumenta Avarorum Archaeologica 6), Budapest, 2001, 25–6 and 332–3; D. Csallány, *Goldschmiedegrab aus der Awarenzeit von Kunszentmárton (Ungarn)*, Szentes, 1933; L. Selmeczi and L. Madaras, 'Avar and X–XIIIth century Hungarian commoner graves at Rákóczifalva', *Szolnok Megyei Múzeumok Évkönyve* (1979–1980), 146; N. Fettich, 'Symbolischer Gürtel aus der Awarenzeit - Fund von Bilisics', *Móra Ferenc Múzeum Évkönyve* (1963), 66–70; É. Garam, 'Preßmodell eines Anhängers byzantinischen Typs aus Tiszafüred', *Folia Archaeologica* 41 (1990), 73–86; S. Tettamanti, 'Awarenzeitliche Gußform aus Vác', *Archaeologiai Értesítő* 104 (1977), 79–85. Unpublished finds: Csákberény graves nos 323, 369 (information kindly supplied by the late Gy. László), Klárafalva B, grave 60 (Móra Ferenc Múzeum, Szeged), while I know the finds from Sajópetri, Zalakomár and Zamárdi graves 1623 and 1699 through the dissertation of Zs. Rácz.
- 18 See Rácz (n. 12).
- 19 J. Werner, *Slawische Bronzefiguren aus Nordgriechenland* (Abhandlungen der Deutschen Akademie der Wissenschaften zu Berlin, Klasse für Gesellschaftswissenschaften 2), Berlin, 1953; J. Korošec, 'The Depository of Bronze Matrices at Biskupija near Knin', *Starohrvatska Prosvjeta* III/6 (1958), 29–44; A. Bejan, 'Eine Werkstatt zur Metallverarbeitung in Drobeta – Turnu Severin aus dem 6. Jahrhundert u.Z.', *Acta Musei Napocensis* 13 (1976), 257–78; A. I. Ajbabin, 'O proizvodstve pojasnych naborov v rannesrednevekovom Chersoně', *Sovetskaja Arheologija* (1982/3), 190–8; S. Vitljanov, 'Bronzmodellen-Matrizen zur Gürtel-

- verzierung aus Preslav', *Preslav* 4 (1994), 166–73.
- 20 É. Garam, *Funde byzantinischer Herkunft in der Awarenzeit vom Ende des 6. bis zum Ende des 7. Jahrhunderts* (Monumenta Avarorum Archaeologica 5), Budapest, 2001, Taf. XIV:2.
- 21 For the almandine trade in Europe, see H. Roth, 'Almandinhandel und-verbreitung im Bereich des Mittelmeeres', *Beiträge zur Allgemeine und Vergleichende Archäologie* 2 (1980), 309–36; O. Kessler, 'Der spätantik-frühchristliche Handel zwischen Europa und Asien und die Bedeutung des Almandins als Fernhandelsgut', in E. Pohl, V. Recker and C. Theune (eds), *Archäologisches Zellwerk. Beiträge zur Kulturgeschichte in Europa und Asien* (Festschrift für Helmut Roth. Internationale Archäologie, Studia Honoraria 16), Rahden, 2001, 113–28.
- 22 For a complete list see, Rácz (n. 12).
- 23 T. Capelle and H. Vierck, 'Modeln der Merowinger- und Wikingerzeit', *Frühmittelalterliche Studien* 5 (1971), 42–100; B. R. Armbruster, 'Preßblecharbeiten und Preßblechornamentik', in *Reallexikon des Germanischen Altertumskunde* 23 (2003), 409–13.
- 24 Heinrich-Tamáška 2002 (n. 13), 252.
- 25 See Csallány (n. 17). This find has been newly restored and will be republished as part of the project 'Goldschmiedegräber in Mitteleuropa' directed by Falko Daim.
- 26 C. Entwistle, 'The Early Byzantine Weights from Kunszentmárton, Hungary', in Cs. Bálint (ed.), *Kontakte zwischen dem Balkan und dem Karpatenbecken* (Varia Archaeologica Hungarica), in press; see also the paper by B. Tobias, 'Byzantinische Gewichte im awarenzeitlichen Karpatenbecken', given at the conference 'Byzantium, Italy and Central Europe in the Early Middle Ages', in Rome, October, 2008.
- 27 Arslan and Buora (n. 3), 74–5, cat. no. 94.
- 28 Garam (n. 20), Taf. XV: 1, XIX: 3.
- 29 *Ibid.*, Taf. XXXVI, for other models.
- 30 Arslan and Buora (n. 3), 68, cat. no. 70c.
- 31 *Ibid.*, 129, cat. no. 182, 193.
- 32 On Avar casting in general, see Bühler 1998–9 (n. 13), 429–42; Heinrich-Tamáška 2002 (n. 13), 247–50.
- 33 Heinrich-Tamáška 2002 (n. 13), 242, 249.
- 34 Arslan and Buora (n. 3), 61, cat. no. 36.
- 35 Garam (n. 20), Taf. XXXV: 1: middle.
- 36 Bühler 2000 (n. 13), 241, Abb. 22.
- 37 Tettamanti (n. 17); *idem*, *Das awarenzeitliche Gräberfeld in Vác-Kavicsbánya* (Monumenta Avarorum Archaeologica 4), Budapest, 2000, Taf. 39; for Bilisics, see Fettich (n. 17). For a stray find made of bronze, see P. Medgyesi, 'Ein spätawarischer Gegenstand aus Bronze gefunden in der Gemarkung von Békéscsaba', *A Wosinszky Mór Múzeum Évkönyve* 23 (2001), 247–59.
- 38 Menis (n. 3), 174.
- 39 *Ibid.*, 182.
- 40 Cs. Bálint, *The Treasure of Nagyszentmiklós* (Varia Archaeologica Hungarica 16a), Budapest, 2004, 433, pl. 187 (in Hungarian with a German edition in press).
- 41 *Ibid.*, 516–19, figs 251–4.
- 42 L. Költő, 'X-ray Emission Analysis for Bronze objects from the Avar age', *Somogyi Múzeumok Közleményei* 5 (1982), 5–67.
- 43 My thanks to L. Költő (pers. comm.) for this information.
- 44 See Költő (n. 42).
- 45 J. Werner, *Der Schatzfund von Vrap in Albanien. Beiträge zur Archäologie der Awarenzeit im mittleren Donaauraum* (Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse, Denkschriften 184, Studien 2), Vienna, 1986.
- 46 Bühler 2000 (n. 13).
- 47 Cs. Bálint, *Die spätawarenzeitliche Siedlung von Eperjes, Kom. Csongrád* (Varia Archaeologica Hungarica 4), Budapest, 1991, Taf. XXX: 12.
- 48 Arslan and Buora (n. 3), 14–15, cat. nos 12–16; 54, cat. no. 98.
- 49 For the general typology: Zl. Čilinská, 'Frauens Schmuck im 7.–8. Jahrhundert im Karpatenbecken', *Slovenská Archeológia* 23 (1975), 63–95.
- 50 Menis (n. 3), 200.
- 51 Arslan and Buora (n. 3), 60, cat. no. 37.
- 52 For a general view, see A. Oddy, 'The production of gold wire in Antiquity. Hand-making methods before the introduction of the draw-plate', *Gold Bulletin* 10 (1977), 79–87; B. Armbruster, 'Traditionelles Goldschmiedehandwerk in Westafrika und bronzezeitliche Metallverarbeitung in Europe. Technologien im ethnoarchäologischen Vergleich', *Beiträge zur Allgemeine und Vergleichende Archäologie* 15 (1995), III–201.
- 53 Bühler 2000 (n. 13), 235, Abb. 15.
- 54 T. Jülich, 'Zur Verwendung von Edelsteinen im Mittelalter', in S. Ebert-Schifferer and M. Harms (eds), *Faszination Edelstein: aus den Schatzkammern der Welt*, Darmstadt, 1993, 60–9.
- 55 Heinrich-Tamáška 2006 (n. 13).
- 56 *Ibid.*, 213, Abb. 37–8.
- 57 Arslan and Buora (n. 3), 73, cat. no. 90.
- 58 Courtesy of the Museum of Archaeology and Ethnography, Ufa (Bashkiria), through the kind mediation of V. A. Ivanov.
- 59 Arslan and Buora (n. 3), 72, cat. no. 92.
- 60 The author can not forget his astonishment when seeing the cross of the Emperor Justin II in the Treasury of St Peter's, Rome: the quality of its stone inlays does not correspond to our general idea about Byzantine imperial workshops; for example, compare with that of the pectoral from Assiût (see the latest study by Y. Stolz, 'Eine kaiserliche Insignie? Der Juwelenkragen aus dem sog. Schatzfund von Assiût', *JbRGZM* 53 (2006), 521–603). C. Belting-Ihm is probably right in considering the cross to have been the local product of an Italian workshop rather than emanating from Constantinople: *eadem.*, 'Das Justinuskreuz in der Schatzkammer der Peterskirche zu Rom', *JbRGZM* 12 (1965), 142–66; for an analytical drawing of the inlay see Stolz, *ibid.*, 535, pl. 4.
- 61 J. Wolters, *Die Granulation: Geschichte und Technik einer alten Goldschmiedekunst*, Munich, 1986.
- 62 See Ormány (n. 17).
- 63 Heinrich-Tamáška 2002 (n. 13), 259.
- 64 M. Martin, 'Zu den tauschierten Gürtelgarnituren und Gürtelteilen der Männergräber von Kölked-Feketekapu A', in A. Kiss, *Das awarenzeitlich gepidische Gräberfeld von Kölked-Feketekapu A*. (Studien zur Archäologie der Awaren 5), Innsbruck, 1996, 345–61.
- 65 J. Wolters, 'Ziertechniken. (Tauschierung)', *Reallexikon der Germanischen Altertumskunde* 34 (2007), 537–61.
- 66 J. Wolters, 'Niello', *Lexikon des Mittelalters* 6 (1993), II45; A. Bossellmann, 'Niello', *Reallexikon zur Byzantinischen Kunst* 6 (2005), 965–76.
- 67 Kiss (n. 64), 270–6; Heinrich-Tamáška 2002 (n. 13), 261, is undecided as to whether it was an import or local production.
- 68 Menis (n. 3), 12.
- 69 A. Alföldi, 'Die Goldkanne von St-Maurice d'Agaune', *Zeitschrift für Schweizerische Archäologie und Kunstgeschichte* 10 (1948/49), 1–27.
- 70 Cs. Bálint, 'A note on the research on the ewer with enamel plaques of St Maurice d'Agaune', *Acta Archaeologica Academiae Scientiarum Hungaricae* 57 (2006), 281–9.
- 71 Čilinská (n. 17), 42.
- 72 W.A. Oddy, 'Gilding and Tinning in Anglo-Saxon England', in W.A. Oddy (ed.), *Aspects of Early Metallurgy* (British Museum Occasional Paper 17), London, 1980, 129–31; Heinrich-Tamáška 2004 (n. 13), 259–60.
- 73 Költő (n. 42); Szöke (n. 13).
- 74 Heinrich-Tamáška 2002 (n. 13), 259.
- 75 L. Vámosi, 'Another thing of interest from the Avar cemetery in Zamárdi', *Műtárgyvédelem* 27 (2000), 65–8 (in Hungarian).
- 76 Monographs: J. Hampel, *Der Goldfund von Nagy-Szent-Miklós sogenannter 'Schatz des Attila'*, Budapest, 1885; N. Mavrodinov, *Le trésor protobulgare de Nagyszentmiklós* (Archaeologia Hungarica 29), Budapest, 1943; László and Rácz (n. 9). For the abundant literature on the treasure, see Bálint (n. 40).
- 77 The observations made by Victor Freiburger and Birgit Bühler (Vienna) will be published soon; my thanks to Falko Daim for this information.
- 78 J. Werner, *Der Grabfund von Malaja Pereščepina und Kuvrat, Kagan der Bulgaren*, (Bayerische Akademie der Wissenschaften, Philologisch-Historische Klasse, Abhandlungen, Neue Folge 91), Munich, 1984; Cs. Bálint, 'Zur Identifizierung des Grabes von Kuvrat', *Acta Archaeologica Academiae Scientiarum Hungaricae* 36 (1984), 262–9; V.N. Zaleskaja, Z.A. L'vova, B.I. Maršak, I.V. Sokolova and N.A. Fonjakova, *Sokrovišča čhana Kubrata*, St Petersburg, 1997. Russian research has always opposed Werner's interpretation: see recently, M.B. Shchukin, 'Avars, Bulgars and the treasure from the village of Malaya Pereshchepina', in W. Menghin (ed.), *The Merovingian Period. Europe without Borders*, Berlin, 2007, 84–93.
- 79 D. Bayer, 'Gedenkstätten und Steinskulpturen der Alttürkischen Zeit', in *Dschingis Khan und seine Erben. Das Weltreich der Mongolen. Katalogbuch zur Ausstellung (Gebundene Ausgabe)*, Bonn and Munich, 2005, 78, no. 51.

- 80 The belt fitting from Kiskundorozsma and its technical analysis (see Daim, this volume) offers a completely new basis for the future study of this problem.
- 81 For the most informative paper on this issue, see M. Hardt, 'Nomadische Gier nach Gold: Jahrgelder, Burgundenuntergang und Awarenschatz vor dem Hintergrund einer mobilen Lebensweise', in A. Weiß (ed.), *Der imaginierte Nomade* (Nomaden und Sesshafte 8), Wiesbaden, 2007, 105–19.
- 82 B. Arrhenius, 'Why the king needed his own goldsmith', *Laborativ Arkeologi* 10–11 (1998), 109–11.
- 83 For itinerant craftsmen, see J. Werner, 'Zur Verbreitung frühgeschichtlicher Metallarbeiten. (Werkstatt, Wanderhandwerk, Handel, Familienverbindung)', *Early Medieval Studies* 1 (1970), 65–92; Claude (n. 15), 242–7.
- 84 Rác (n. 12).
- 85 W. Pohl, *Die Awaren. Ein Steppenvolk in Mitteleuropa 567–822 n. Chr.*, Munich, 1988, 256–61.
- 86 Gy. László meant that if they had been of Byzantine origin, this goldsmith should have been buried in a Christian fashion (?): see *idem*, *The Art of the Migration Period*, Budapest, 1974, 78. H. Vierck considered them as having come from the Balkan provinces of the Empire (pers. comm., 1971). I. Bóna did not consider Avar culture to be a variant of Byzantine culture: see *idem*, 'Die Geschichte der Awaren im Lichte der archäologischen Quellen', in *Popoli delle steppe: Unni, Avari, Ungari*, (Settimane del Centro Italiano sull'Alto Medioevo 35), Spoleto, 1988, 447–8.
- 87 Cs. Bálint, 'Probleme der archäologischen Forschung zur awarischen Landnahme', *Vorträge und Forschungen* 41 (1993), 263.
- 88 W.A. von Jenny, 'Ein frühbyzantinisches Preßmodell aus Kleinasien', *Praehistorische Zeitschrift* 24 (1933), 298.
- 89 A. Riegl and E.H. Zimmermann, *Kunstgewerbe des frühen Mittelalters*, II, Vienna, 1923, 106.
- 90 Cs. Bálint, 'Some Avar and Balkan Connections of the Vrap Treasure', in K.R. Brown, D. Kidd and Ch.T. Little (eds), *From Attila to Charlemagne. Arts of the Early Medieval Period in The Metropolitan Museum of Art*, New York, 2000, 187. Today it is no longer futile to study this basic question, not merely because there are new finds, but thanks to the new approaches of F. Daim, J. Drauschke and younger scholars in Hungary.
- 91 I wrote for the first time about this possibility in Bálint (n. 40), 244–6.
- 92 M. Érdy, 'Hun and Xiung-nu Type Cauldron Finds Throughout Eurasia', *Eurasian Studies Yearbook* 67 (1995), 5–94. For the latest find which for the first time was discovered in an archaeological context, see: Sz. Honti and P.G. Gergely, 'Hun period sacrificial caldron [sic] from site Balatonlelle-Rádpusztá', *Somogyi Múzeumok Közleményei* 17 (2006), 71–8.
- 93 One should note here the methodologically problematic idea that the Sarmatians would have been transferred from the Hungarian Plain in the Valeria province of Pannonia by the Huns after 420, which could explain the local character of the box fibulae of the Keszthely Culture about the end of the 6th to the early 7th century: see E. Tóth, 'Zur Herkunft und Ikonographie der Scheibenfibel der Keszthely-Kultur', *Zalai Múzeum* 14 (2005), 183–202.
- 94 I spoke about this topic at the congress cited in n. 26.
- 95 F. Daim, 'Byzantinische' Gürtelgarnituren des 8. Jahrhunderts', in *idem*, (n. 13).
- 96 In Central and Eastern Europe it is usual to avoid any analysis of the term 'richness' in terms of the archaeology of cemeteries.
- 97 For the first modern approach to this issue, see F. Daim, 'Vom Umgang mit toten Awaren', in A. Nusser (ed.), *Erinnerungskultur im Bestattungsritual. Archäologisch-Historisches Forum* (Mittelalter Studien 3), Munich, 2003, 41–57.
- 98 Bálint (n. 40), 294–6.