Travelling or not? Tracing Individual Mobility Patterns of Late Bronze Age Metalworkers in the Carpathian Basin

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Abstract: The present paper tries to address the problem of mobile craftsmen in the Bronze Age of southeastern Europe by having a close look at their main tools: casting moulds. The starting points are two moulds for socketed axes discovered at Mediaş-*Cetate*, a hill settlement situated in eastern Transylvania. Due to their context, material and technical features they can be attributed to the same founder. This offers the possibility to investigate the supra-regional influences acting on an individual metalworker and to close in on an answer to the question of the degree of mobility related to Bronze Age craftsmen.

Introduction[1]

There are ideas in archaeology, which implicitly or explicitly dominate the perception of a whole époque of prehistory. One of these concepts is the itinerant craftsman, sketched by V. Gordon Childe in several of his works[2]. Starting from the thought that the processes related to the production of bronze items are highly complex, Childe proposed that metalworkers[3] had to undergo a long phase of apprenticeship to become the first full-time specialist craftsmen in history. As their work was as highly time consuming as their products were essential to the societies they lived in, the rest of the group had to provide for their subsistence. In Childe´s eyes this resulted in a privileged social position of the founders. This social position is further enhanced by a certain magical component Childe sees involved mainly in the work of the miners and smelters, who transform and alter solid matter through complicated processes into something new. He concludes that people with occupations related to metallurgy „constituted distinct crafts or even castes, membership of which implied initiation but conferred some degree of immunity from the bondage of tribal custom"[4]. This allowed these people to travel unhindered to distribute their products, or/ as the demand would not be stable at one place all the time, to go where their services

[1] The present study set out to contribute to the knowledge on the metallurgy of the Gáva Culture, to which the moulds discussed here were attributed until recently. In the course of studying the material it became more and more clear that this attribution cannot be supported any longer. Thus, regarding the Gáva Culture, the results of this article are of a somehow negative nature. Two finds important for the chronological setting of a key site have to be re-dated to the Late Bronze Age, most probably the Noua Culture. Anyway, the considerations regarding the mobility of craftsmen may be of value for the whole Bronze Age, including the Gáva Culture.

[2] Childe 1930, 4-5, 10; 1952, 94-99; 2009, 169-171.

[3] The terms „smith" and „founder" seem to be interchangeable in many works on Bronze Age metallurgy. This might be justified to some degree as archaeological finds like the Feudvar workshop (Hänsel/ Medović 2004; see also below) seem to indicate that all steps in the production of an artifact (melting, casting, working of the semi-products) and maybe also pure smithing tasks like the working of sheet metal lay in one hand. On the other hand Jockenhövel (1982) has pointed out that in graves with metallurgy related artifacts a differentiation regarding metallurgical tasks seems to be observable. He showed that graves with items connected to primary metallurgy (e.g. mining, smelting) usually do not yield also grave goods connected to founding/ smithing (a combination of moulds/crucibles and tuyéres was observable in two graves though: Jockenhövel 1982, 300; on the other hand there is the possibility that these are related to melting the metal immediately before casting). This differentiation maybe could be extended to founders and smiths, as graves often only portray one of these tasks (comp. for example graves with casting equipment from the area of the Lusatian Culture (e. g., Bönisch 1999; Gedl 2004, 111-113, Nr. 540, 544, 547-550, 552; Schmalfuß 2008) with graves that yield only smithing equipment like Lachen-Speyerdorf (Sperber 2000) or Steinkirchen (Müller-Karpe 1969). Although the selection of grave goods may follow rules specific for the respective cultural milieus and it is possible that the items were meant *pars pro toto* to characterize one aspect of the social position of the deceased, the possibility of people specialized in certain metallurgical tasks and maybe working together in workshops cannot be ruled out completely. This important question obviously cannot be decided here. In the following the term „founder" will be used to refer to Bronze Age metalworkers (as far as not the opinions of others are cited), as this aspect seems most important when discussing the metallurgy of bronze, while smithing is the main manufacturing process regarding ironworking.

[4] Childe 1930, 10.

were needed and to produce bronze objects locally, exchanging them for what they needed[5]. Childe finds evidence for these activities in the so-called „founder´s hoards" composed of scrap metal to be re-melted, raw material and bronzesmith´s tools[6]; and in workshops and graves of metallurgists missing from the archaeological record in his days[7]. As his idea offered a convenient explanation as well for the distribution of often stunningly uniform types of metalwork throughout wide areas of Europe as well as for the occasional exotic item stemming from far away, it became swiftly an integral part of the generally accepted scholarly image of the Bronze Age[8].

Critique came late, but when it came by the late 1960s and early 1970s, it hit hard. Of the criticisms aimed at the theoretical and ideological background of Childe´s historical views in the wake of the so-called „New Archaeology"[9] it was especially the 1971 article of M. J. Rowlands which led to a thorough rethinking of the organization forms of Bronze Age metallurgy[10]. Rowlands used ethnographic data to show weaknesses in the foundations of Childe´s image of the itinerant craftsman. He concluded that within the majority of the ethnographic case studies examined by him, „full-time specialist smiths are only consistently found when supported by privileged minorities"[11], while smiths are usually working only seasonally when demand is high, often between harvest and the next planting, when they are not engaged in the subsistence economy[12]. He also brought forward examples that contested Childe´s second important assumption of the „detribalized" status of the smith, stating that in „the majority of ethnographic examples the smith is embedded in a particular social and cultural context, and, even if to some extent „itinerant", does not necessarily belong to a subgroup of distinct origin and cultural identity"[13]. Rowlands expressed furthermore doubts towards Childe´s statement that smiths would always have a high status due to their skills and knowledge. He recorded a wide range of sentiments regarding smiths ranging „from fear, contempt and loathing to respect and awe"[14]. Based on ethnographic analogies, Rowlands concluded that Childe´s itinerant craftsman is not the most likely organization type of Bronze Age metalworking. A recent ample ethnoarchaeological study by M. Neipert reaches the same conclusion largely by a similar line of argumentation[15].

Nevertheless, neither Rowlands nor Neipert are disregarding a more mobile way of life for metallurgists completely[16]. Rowlands names travelling Mongol silversmiths as an example that matches Childe´s assumptions quite well[17], Indian brass casters would be another one[18]. Neipert details several cases of full or restricted mobility of craftsmen as well[19] and differentiates regular and irregular patterns of mobility in several levels from peripatetic groups to completely sedentary craftsmen[20]. Itinerant craftsmen organized as a guild based in the town of Awka provided nearly all the metalwork for the Igbo of southern Nigeria crossing the boundaries to other communities[21]. During their travels in small groups they were protected „by virtue of the visible accoutrements of their trade and their distinctive Awka

[5] Childe 1952, 97.
[6] Childe 1930, 45.
[7] Childe 2009, 169; this situation has obviously changed; comp. e.g. Jockenhövel 1982; Bátora 2002.
[8] Rowlands 1971, 212, 214, 215f.
[9] Trigger 1980, for the itinerant craftsman esp. 68-69. For a comprehensive view see Neipert 2006, 12-15, 19-21.
[10] Rowlands 1971.
[11] Rowlands 1971, 212-213.
[12] de Maret 1980, 270-271 reaches a more ambiguous conclusion in his review of central African smiths observing that „le métier du forgeron est soi occasionel, soit permanent", depending on the societies dimensions and its capacities for producing food for the craftsmen. Payment for metalwork in foodstuff seems to be widespread.
[13] Rowlands 1971, 214.
[14] Rowlands 1971, 216.
[15] Neipert 2006.
[16] Rowlands 1971, 214; Neipert 2006, 124.
[17] Rowlands 1971, 214.
[18] Horne 1994; David/ Kramer 2006, 355-356.
[19] Neipert 2006, 75-102.
[20] Neipert 2006, 79-80.
[21] Neaher 1976; Neaher 1979; 87-91.

dialect"[22]. Their travels were a major factor in the creation of new tastes and innovations in metalwork[23]. They imported not only foreign goods to their homelands, but also elements of foreign cults. They were able to attune to the tastes of their hosts but modified them at the same time, in plus inventing an array of new types of objects to maximize their sources of profit. In comparison to stationary smiths of the same population through facilitating the flow of goods and engaging in high status marital alliances the Awka smiths became wealthy and achieved high social status. Another example of regularly travelling metalworkers, in this case of low social status, which easily springs to mind, would be European tinkers[24].

Seasonal mobility as a means to secure an income in the dry season has been described by N. Tobert for the Zaghawa in Sudan[25]. Here, in the six months after harvest, groups comprised of potters, blacksmiths and aluminum casters travel to promising market places to produce and sell their goods.

There are also examples for a more limited mobility or just one larger journey in a smith´s lifecycle[26]. Among the Swahili on the Kenyan coast area becoming a master smith is a very long process taking at least ten years[27]. To be appointed a master smith by the group of already existing masters to a new or already existing forge is only possible when the old master dies or retires, when demand is high enough to make a further smithy necessary, or if the newly advanced master moves to another place to set up his forge[28]. „Migration and temporal relocation to more lucrative villages" were common between Swahili smiths[29], as „itinerancy prevents saturation of the market and minimizes competition and sorcery among young smiths"[30]. Movement out of mercantile considerations is also known in other cases[31].

Further, there would be the possibility of mobility being restricted to a certain stage in life, e.g. apprenticeship, as known with temporarily itinerant craftsmen of the European Middle Ages[32].

There is also evidence for regular long-distance travels in order to procure raw materials, for example with the Zanaki in northwestern Tanzania, who got their iron in form of hoes from the Rongo of the southwestern Lake Victoria region[33]. The example of the Zanaki also shows that such contacts can have implications that are visible archaeologically, as they led the Zanaki smithing clan (the Turi) to imitate these hoes locally in a slightly different form.

Remarkably, in societies with high social / cultic boundaries restricting interpersonal contacts, like the Kpelle in the West African town of Gbarngasuakwelle, smiths are among the few persons who do interact with strangers as their craft forces them to do so, while others limit their contacts to resident and kinship groups out of fear of sorcery[34]. In such societies smiths become focal points for information from the outside world as they are the only ones crossing social boundaries.

Specialization in certain products can also be the reason for the movement of things or people. With the Tamberna in Togo we meet the situation of local smiths being specialized in the production of certain categories of objects[35]. The western Tamberna produce only jewelry, while their eastern counterparts produce tools like hoes. To get these products, people from the western region have to buy from smiths from the western lands – or from foreign smiths living in their area[36].

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[22] Neaher 1979, 362.
[23] Neaher 1979, 363.
[24] For example Bohn Gmelch/ Gmelch 1976; Kearns 1977; Bohn Gmelch 1986; Neipert 2006, 96-100.
[25] Tobert 1985; Tobert 1988; Neipert 2006, 91-96.
[26] Neipert 2006, 100-107 with further examples not repeated here.
[27] Kusimba 1996, 390-393.
[28] Kusimba 1996, 390. Interestingly Kusimba also reports from this area a case, in which a local apprentice was trained by an itinerant one.
[29] Kusimba 1996, 402.
[30] Kusimba 1996, 402.
[31] Bischofberger 1969, 55; Gray 1963, 77; Bohn Gmelch/ Gmelch 1976.
[32] Boroffka 2005, 168; Epstein 1998.
[33] Bischofberger 1969, 55.
[34] Lancy 1980, 268.
[35] Preston Blier 1984, 58.
[36] For example a study by Simon 1982, 350-352 proves that such a model could be detectable archaeologically by identifying a regionally specialized production of rings for Late Bronze and Early Iron Age workshops in eastern Thuringia.

To sum up, several forms and motivations for mobility of metalworkers can be pinned down:

1. Full mobility of specialists distributing their services in areas without local settled craftsmen or local craftsmen being specialized in distinct types of objects.

2. Seasonal mobility.

3. Mobility restricted to one or few occasions in life, e.g. when setting up a new workshop in another area to avoid over-saturation of the local market or during apprenticeship[37].

4. Long-distance travels in order to procure raw materials.

While nos. 1 and 2 seem to be highly specific to distinct cultural situations, 3 and 4 seem to be widespread with metalworkers in different cultural contexts (which does not account as a proof of or against their probability in Bronze Age contexts). At least some of the forms of mobility named above are not related to the degree of specialization or the social role of the individual, which varies widely in ethnographically recorded cases[38]. To reduce the question of mobile craftsmen for the Bronze Age to a simple division in stationary founders firmly integrated in their societies and doing subsistence work or itinerant metalworkers free from any bounds anyway seems too simple.

Ethnography cannot provide us with undisputed and authoritative evidence for a model of Bronze Age metalworking. One could question the relevance of ethnographic analogies categorically, as most of them refer to the very special situation of African blacksmithing[39]. The distribution and utilization of a locally abundant material like iron could well result in absolutely different organizational forms than those of Bronze Age Europe. The scarcity of tin there would lead by force to large and consistent communication networks (and not just some cases in which iron has to be procured from further away), and there are regions with a flourishing bronze metallurgy, where even local copper ores are missing. At least parts of Bronze Age society had to be mobile to a certain degree to ensure the provision with raw materials; and, if one needs also the ethnographic backup, the cases named above show that metalworkers are predestined to cross cultural boundaries in social and physical ways. Having in view the ambiguity of ethnographic evidence and the question of the general relevance of comparisons (apart from them opening up the view on a wide range of possibilities) it seems reasonable to approach the problem starting from the two main sources of archaeological knowledge: material culture and contexts.

How to detect mobility of craftsmen in the archaeological record?

The most obvious way to get a grasp on mobility in the archaeological record would be to have a look at distribution maps of selected implement types, based on the belief that similarly crafted objects found at longer distances from one another would be related to one founder or at least one local school of craftsmen. Also the outliers of distributions otherwise being restricted to distinct regions often form a starting point for the identification of travelling founders. Both approaches share a basic difficulty: finished metal artifacts can travel for a variety of reasons[40]. Items of personal adornment or use will often rather indicate the movement of their possessors than that of the man who made them[41]. This is especially true for social markers highly individualized through ornamentation and associated beliefs like swords[42], which can be imagined to be made in many cases specifically for one person and accumulating proper biographies as they go as heirlooms from hand to hand[43]. In these cases there is virtually no way to decide, whether people came from distances to a skilled settled founder and took their goods home with

[37] Another motivation would be the relocation of skilled workers as a „gift" between rulers or the „theft" of craftsmen during acts of war. Both are documented e.g. by Ancient Near Eastern or Egyptian texts, comp. Zaccagnini 1983; Neipert 2006, 104-105. Although not completely unlikely for the European Bronze Age, these modes of involuntary mobility seem to be related strongly to highly hierarchical state societies.

[38] e.g. Bischofberger 1960; Maret 1980.

[39] Harding 2000, 239; Neipert´s study is based largely on the African ethnographic record as well, the only example from another region being medieval and early modern era European tinkers: Neipert 2006, 58-107.

[40] Harding 2000, 190-195; Neipert 2006, 55-58.

[41] Jockenhövel 1991.

[42] e.g. Hansen 1994, 48; Harding 2000, 192f.; Dietrich 2010.

[43] Kristiansen 2002.

them, or if there was a to some degree mobile craftsman visiting his high status customers over longer distances. For commodities bound less explicitly to a single person but nonetheless of high status value, trade, however it may have been organized[44], has to be taken into account[45]. As a result, the movement of craftsmen cannot be *in sine* a valid explanation for object distributions, even if there is the possibility to establish a secure connection between an object and the individual who crafted it, for example through the analysis of characteristic marks left on the objects throughout the crafting process or of stylistic peculiarities innate to an individual metalworker or his „school". Some more evidence is needed to get a grasp at the possible mobility patterns of Bronze Age metalworkers.

Hints at the organization of metalworking could further be expected from a close inspection of metalworking sites. Unfortunately most complexes related to Bronze Age metallurgical processes do not constitute in the workshop areas themselves, but in remains of the chaîne opératoire deposited in pits[46], although exceptions are known[47]. One of the most remarkable exceptions is the so-called founder´s house in the early Bronze Age settlement of Feudvar on a loess plateau in the Serbian Voivodina[48]. The settlement of Feudvar is organized according to a strongly regulated rectangular layout plan with houses of 9-12 m length and 5-6 m width divided by lanes of about 1 m width, which was respected when houses were reconstructed after voluntary or involuntary destruction[49]. Inconspicuously integrated in this plan is a 9 m long house, which was divided in two rooms in its interior[50]. The smaller room in the south seems to have been open on its eastern flank; and although there was some damage done to it by an Iron Age pit, traces of an oven survive. Concentrated in the vicinity of the southern wall of the room a large amount of metallurgy related items was found[51]. A big number of two-piece clay moulds, cores and pottery clearly represent the tools of a founder stored in shelves at the wall, which came down in a roaring fire that affected a large part of the settlement. A fragment of a crucible, grinders, small rests of bronze and a fragment of a male mould for a sword[52] found nearby mark the place of his work[53]. Work was obviously not confined to the house, as at a small distance to the south more than one hundred pieces of clay forms for castings à cire perdue where found in situ[54].

The Feudvar workshop is an extraordinary find in many respects, for example it provides the so far earliest evidence for socketed axes in southeastern Europe[55]. But what can be learned about the founder who used it? Primarily it becomes clear that he managed the whole chaîne opératoire from the manufacture of the moulds, the melting and casting to the finished object[56]. The room available in the workshop allowed for only a few persons or maybe just one craftsman to work effectively at the same time. He had to master a wide range of processes, including so complicated ones as the casting of hollow objects with two-piece moulds, so there is reason to view him as a specialist in his craft[57]. He seems to have served the whole settlement, as the other houses show no evidence of metallurgy[58]. His house was

[44] Comp. for the Bronze and early Iron Age of southeastern Europe Hänsel (ed.) 1995; Neipert 2006, 55-58.
[45] Good examples for these kind of objects are metal vessels (Harding 2000, 193, fig. 5/14), which often have a Europe-wide distribution. Compare for instance the cups of the Fuchstadt or Kirkendrup types, which show only small typological variations compared to their vast distribution areas (Soroceanu 2008, 35-41, 53-66 for a comprehensive view).
[46] For an overview: Harding 2000, 232-234.
[47] E.g. Dun Aengus, Co. Galway, Ireland: Ó Faoláin 2004, 57-59, 180-182, Nr. 6.6, Abb. 43A, C; Hallunda, Stockholm, Sweden: Vahlne 1989.
[48] Hänsel/ Medović 2004.
[49] Hänsel/ Medović 2004, 86-87.
[50] Hänsel/ Medović 2004, 88-91, fig. 2.
[51] Hänsel/ Medović 2004, 90-91, fig. 3-4.
[52] Hänsel/ Medović 2004, 101, no. 29.
[53] Hänsel/ Medović 2004, 91, 94.
[54] Hänsel/ Medović 2004, 92-93.
[55] Hänsel/ Medović 2004, 97.
[56] Hänsel/ Medović 2004, 94.
[57] One maybe has to add also the hammering of sheet metal to his skills, if a mould for a bronze disc of about 5 cm diameter, that was found in the same area but in a higher level originally belonged to the complex: Hänsel/ Medović 2004, 92-93.
[58] Hänsel/ Medović 2004, 87-88.

not extraordinarily big; there are no signs of a high social status of its inhabitant[59]. Stocks of metal were not found, but whether this means that his customers brought the raw material needed[60], or that the precious materials were saved from the ruin, remains open. The house was lacking a hearth and a loom, otherwise standard devices in the houses of Feudvar[61]. Whether this means that the founder was supplied by the rest of society with everything he needed[62], or that the complex was an exclusive workshop area with the founder staying somewhere nearby, remains open, too. Of interest is the fact, that the workshop was not reconstructed like the other buildings that had burned down. Neither is there evidence for an earlier workshop. The excavators, B. Hänsel and P. Medović, take this as a clue for an itinerant specialist craftsman staying at the central place of Feudvar just for a short period of time (i.e. one construction phase) supported entirely by what he received from the local community in return for his services[63]. This might seem a persuasive argument in favor of mobility, but lately T. Kienlin has shown, that even such an extensively preserved and carefully documented complex set in the generally accepted picture of the Early Bronze Age as a time of high status individuals[64] controlling larger areas from big, often fortified places[65] like Feudvar leaves room for completely other views[66].

Indifferent on how one regards these attempts to reinterpret the Early Bronze Age archaeological evidence and with it the founder´s role and social setting, it is clear that there is room for very different models of explanation even with extraordinary discoveries like the site and the bronze workshop of Feudvar.

A third way to get through to the Bronze Age founder is to have a look at his tools. Casting moulds of stone are highly complex implements with a variety of technologically relevant or just stylistic characteristics, which can be used for identifying individuals involved in Bronze Age metallurgy. In addition the forms of the objects cast can give an impression of the radius the metalworker received influences from, technological peculiarities can hint at the geographic regions where he learned his craft. If we would be able to identify moulds made and used with a decent degree of security by the same metalworker in different places, this would be solid evidence for him being mobile to a certain extent.

This will be exemplified starting from two at the first glance rather inconspicuous halves of two-piece casting moulds for socketed axes, which were found accidentally during construction activities at Mediaş in Transylvania. The southeast European casting moulds for socketed axes have been the subject of a thorough study by B. Wanzek[67], who was able to show the chorological relevance of several of their technical attributes. They therewith represent a good basis for having a detailed look at the Bronze

[59] Hänsel/ Medović 2004, 94-95.
[60] Hänsel/ Medović 2004, 94.
[61] Hänsel/ Medović 2004, 88.
[62] Hänsel/ Medović 2004, 95.
[63] Hänsel/ Medović 2004, 95.
[64] E.g. Hänsel 1998; Hansen 2002a.
[65] See for example Hänsel 2002; Dietrich 2010.
[66] T. Kienlin 2007, esp. 15-16 raises, starting from the Feudvar workshop, the basic question whether the introduction of metalworking was really enough to alter the Neolithic social system based on lineages into one of elites situated in often fortified central sites like Feudvar with a presumed proto-urban character as the economic prerequisite for fully specialized craftsmen. He sees the bronze founder as an at the most semi-specialized person working rather seasonally while integrated firmly in his lineage system and subsistence work, arguing along the theoretical framework established by Rowlands 1971. Communication and mobility are in Kienlin´s eyes important mechanisms for the transmission of novelties like stable alloy ratios of tin bronzes, but actual personal mobility would be confined to the borders of the area settled by the lineage group; innovations and goods being passed down the line. Kienlin sees, based on ethnographic analogies for seasonal work discussed above, the large amount of metallurgic debris sealed in a single event not necessarily as an indication of a full-time metalworker. His production range would not necessarily have aimed at a social elite, neither was his workshop spatially associated with an elite quarter, which anyway was not found at Feudvar. As already mentioned it cannot be stated securely whether the lack of a hearth means that the founder was provided with daily goods in exchange for his products, or if he was just living in one of the houses near the workshop. Although some of his argumentation may be contestable, one remains with the opinion also expressed earlier by Boroffka and Ridiche 2005, 167 that the Feudvar complex adds a lot to our knowledge about technological and chronological questions as well as the degree of specialization involved, but less to the social and economic status and the duration of the stay of the metalworker in Feudvar.
[67] Wanzek 1989.

Age founder, starting from the point of view that not only objects do have biographies[68], but that they sometimes can tell us a lot about the biography of the individual that made and used them. In order to prove this point, a close look at the Mediaş moulds, the circumstances of their discovery and similarities to other pieces is necessary.

Two Casting Moulds from Mediaş-*Cetate*

Both casting moulds have been known in the literature for some time. They were discovered in a settlement situated on the *Cetate* („Fortress")-hill in the northern part of the modern town of Mediaş (Fig. 1). The *Cetate*-hill is one of the most cited places in discussions regarding the early Hallstatt period[69] of Transylvania[70]. This stands in a strange contrast to the amount of work done there and data obtained from primary contexts. Scientific excavations by E. Zaharia and I. Nestor took place in only one year, comprising only a small part of the settlement[71]. A large area of the settlement was destroyed by building activities and terracing for viniculture. Therefore, in spite of its dominant position overlooking the surrounding valleys on an almost rectangular, 50-70 m high and maybe partly fortified hill[72], it is hard to characterize the settlement as a central place, as nearly nothing of the inner structure is known. What is known on the contrary are very rich finds mainly consisting in pottery. The dating of the site is a problem due to a lack of clear stratigraphic contexts. Based on analogies for the ceramic finds, quite different datings arose.

Zaharia dated the whole settlement to Ha B, while K. Horedt proposed a beginning of settlement activities already in Ha A[73] and pointed at earlier materials, namely of the late Bronze Age Noua Culture[74]. This is supported also in remarks by Z. Székely[75] and M. Blăjan, D. Botezatu and E. Comşa[76], who describe typical Noua pottery amongst the finds from the *Cetate*-hill. In her comprehensive study on the early Hallstatt materials from Mediaş, C. Pankau stressed the problematic character of the finds and argued with precaution for a beginning of major settlement activities in Ha A1, which possibly went on after Hallstatt B[77].

One important argument for the early start of settlement activities are the two moulds discussed here, for which Wanzek[78] brought forward some early Hallstatt analogies. It will be necessary to recur on the dating of the moulds in more detail later on. Although they play such an important role in dating the settlement, only few has been written about the finding circumstances of the two artifacts. Wanzek[79] catalogued them as single finds, while Pankau[80] correctly cites the information Székely provided about the finds already in 1953[81]. The moulds were discovered together in 1936 during construction activities in what today is called the *Pe Cetate*-street on the slopes of the *Cetate*-hill (Fig. 1) by Ioan Tunzor, in an area with traces of fireplaces, burnt loam, pottery and loom weights. This account is backed up by the notes in the inventory of the Mediaş Museum and clarifies two points. The moulds are settlement finds, or maybe (part of) a hoard and they belong definitely together. Whether the find concentration described represents the rests of a house or just settlement strata remains unclear. Apart from the circumstances of discovery, the two moulds share some technological and stylistic traits. The objects, now preserved in the museum of Mediaş[82], can be described in short as follows:

[68] Appadurai 1988.
[69] This would mean Ha A and B in Middle European terminology.
[70] Pankau 2004.
[71] Zaharia 1965.
[72] Pankau 2004, 13, fig. 5.
[73] Horedt 1960, 180.
[74] Horedt 1953, 806-807, fig. 13.
[75] Székely 1953, 6.
[76] Blăjan/ Botezatu/ Comşa 1987, 52, note 19.
[77] Pankau 2004, 97-98.
[78] Wanzek 1989, 90, 104-105.
[79] Wanzek 1989, 201f.
[80] Pankau 2004, 16-17.
[81] Székely 1953, 7, fig. 2-3.
[82] I have to thank Mr. Vlad Şargu, director of the Mediaş Museum for the permission, to study the objects during a study trip

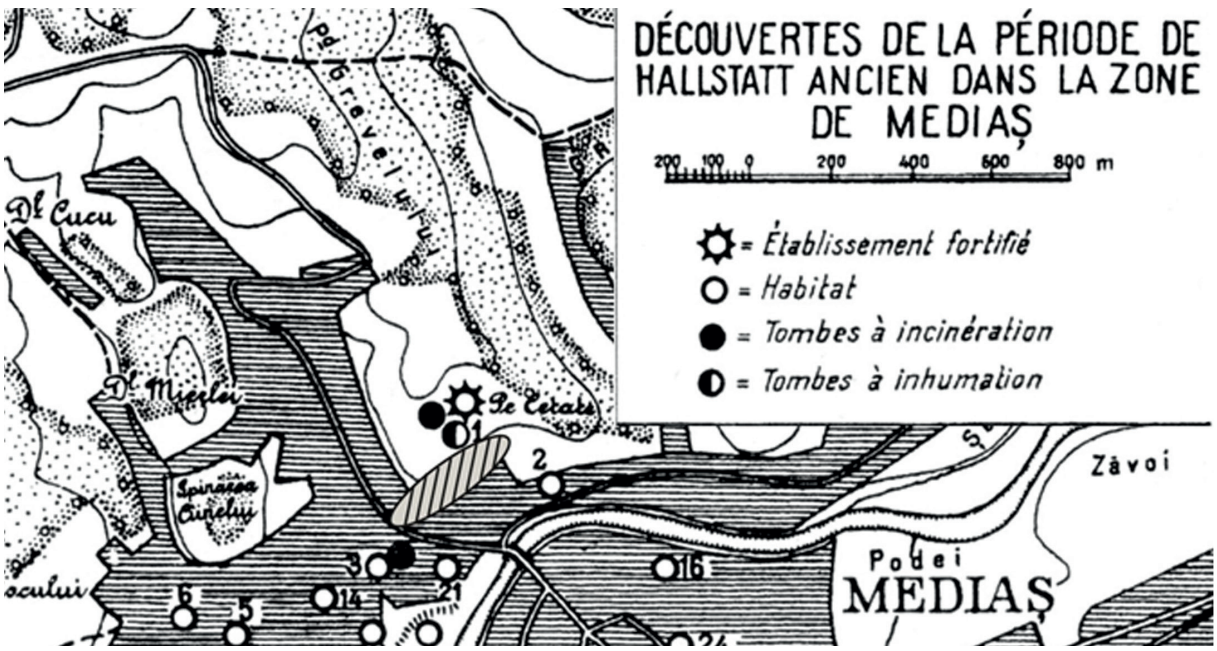

Figure 1: Topographical setting of the hill-settlement at Mediaş - *Cetate*. The zone in which the moulds were discovered is hatched (after Pankau 2004, Abb. 2 with changes).

Mould 1. Museum Mediaş (Inv.-No. 1891; Pl. 1/1).

One half of a two-piece casting mould for a socketed axe with loop. Under the slightly concave rim vertical ribs are visible, the broadside shows a parabola like elevation. Regarding technological features, two dowel holes for joining the two-piece mould together and a funnel for pouring in the bronze (or ascension pipe?) aiming at the loop area can be observed. The form is made of quite hard crystalline greyish limestone; its backside is slightly facetted.

Measurements of the mould: 16,09 x 9,22 x 3,98 cm, weight 1323,2 g. Measurements of the axe to be produced: Length 11,82 cm, width on the rim of the socket (including loop) 5,34 cm, width of the cutting edge 5,04 cm.

Mould 2. Museum Mediaş (Inv.-Nr. 1890, Pl. 1/2)

One half of a two-piece casting mould for a slim socketed axe with loop. Under the slightly concave rim the upper part of the axe is ribbed horizontally and decorated with zick-zack-lines. The socket is accentuated by an U-shaped elevation. As with mould 1 there are two dowel holes for joining the two pieces of the mould together and a funnel for pouring in the metal (or ascension pipe?) is aimed at the loop. In addition from the loop a negative for a rod-like device with an ear protrudes downwards. On the narrow sides of the mould marks can be seen which presumably helped to fit the two pieces of the mould together exactly or held a rope in place in order to tie them firmly together during casting. The mould is made of the same hard crystalline limestone as mould 1, its backside is more heavily facetted.

Measurements of the mould: 17,93 x 6,89 x 2,91 cm, weight 753,1 g. Measurements of the axe to be produced: Length 13,4 cm, width on the rim of the socket (including loop) 4,09 cm, width of the cutting edge 4,7 cm.

To sum up, both moulds are made of the same greyish hard limestone. Further, the dowel joints are made and arranged likewise, and the rough outs for the moulds were produced in the same, very special way, leaving facets on their backsides, clearly visible with mould 2, which has a nearly pentagonal cross section, but observable also with mould 1. The funnels for pouring in the bronze (or ascension pipes?) are laid out in the same fashion in both moulds. In Wanzek´s classification system for the technological features of casting moulds for socketed axes, they belong to „Eingussvariante 4" which is typi-

financed by the DAAD. For his help with the museums´ collections I further have to thank Mr. Viorel Ştefu.

cal for the Carpathian basin[83]. Judging from these peculiarities, it is very probable that the moulds were made and used by the same craftsman. This is further confirmed by the finding circumstances detailed above. This provides us with the chance to trace the influences, which acted on an individual person working bronze at a maybe regionally important Bronze Age site.

Analogies and the date of the moulds

To fix the founder from Mediaş in time and place, a close look at the socketed axes to be produced in his moulds will be necessary. Both are not part of the canon commonly used (or preserved) in the Carpathian basin. Wanzek collected analogies for the axe with parabola-like raised broadsides and vertical ribs under its rim to be cast in mould 1 from the lower Danube region, especially at Iron Gates and northwestern Bulgaria[84]. He differentiated several variants using the placement of the ribs in relation to the parabola as an argument. Based on his observations and a larger basis of analogies, I would suggest distinguishing four variants as follows (Pl. 2, numbers correspond with list)[85].

Variant 1: The ribs are placed above the parabola-like facet and are not going beyond it. Pieces with a loop and without it are known:

a. with a loop:

1. Boljetin, okr. Bor, Serbia, isolated find[86]. **2**. Črmošnjice, obč. Jugovzhodna Slovenija, Slovenia, hoard: one axe, Bz D[87]. **3**. Izvoarele, com. Hotarele, Giurgiu county, Romania, one axe, possibly found in the area of a settlement of the Tei Culture (phase Tei IV)[88]. **4-5**. Majačka, obl. Cherson, Ukraine, hoard: two axes, Ha A1[89]. **6**. Negreşti-*Brigada*, Vaslui county, Romania, hoard: one axe, Bz D[90].

b. without a loop:

7. Buzovgrad, obl. Stara Zagora, Bulgaria, hoard: one axe, phase Gura-Rîşeşti (Bz D)[91]. **8**. Constanța-*Palas*, Constanța county, Romania, hoard: one axe, phase Gura Dobrogei (Bz D)[92]. **9**. Gorsko Kosovo, obl. Sevlievo, Bulgaria, hoard: one axe, phase Lesura-Vărbica (Ha A1)[93]. **10**. „Okr. Šumen", Bulgaria, isolated find[94]. **11**. Pčela, obl. Jambol, Bulgaria, isolated find[95].

Variant 2: The ribs stretch over the whole width of the axe above the parabola. Pieces with a loop and without it are known:

a. with a loop:

12. Aiud, Alba county, hoard: one axe, phase Cincu-Suseni (Ha A1)[96]. **13**. Lesura, obl. Vratsa, Bulgaria, hoard: one axe, phase Lesura-Vărbica (Ha A1)[97]. **14**. Magura-cave, near Rabiša, obl. Vidin, Bulgaria, one axe[98]. **15**. Ostrovul Mare-*Bivolării*, com. Gogoşu, Mehedinți county, Romania, on axe, maybe from the perimeter of a cemetery of the Gârla Mare Culture[99]. **16-19**. Urovica, okr. Bor, Serbia, hoard: four axes, Ha A2-B1[100].

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[83] Wanzek 1989, 63-64, Pl. 12.
[84] Wanzek 1989, 104-105; 159-160.
[85] Some of the axes listed by Wanzek have ribs all over their bodies, this being a clear difference to those cast in mould 1. Therefore the following axes are omitted here: Altimir, Černych 1978, Pl. 39/4 Wanzek 1989, 104, no. 7; Obl. Orjachovo, Černych 1978, Pl. 39/5 Wanzek 1989, 104, no. 11; Bulgaria, Černych 1978, Pl. 39/6-7, Wanzek 1989, 104, no. 12.
[86] Srejovič 1960, 63, fig. 31d; Wanzek 1989, 104, no. 2.
[87] Müller-Karpe 1959, 108, Pl. 132A/3; Wanzek 1989, 104, no. 9; Čerče/ Šinkovec 1995, 149-159, especially 150, Pl. 51/3, 148/5.
[88] Şerbănescu/ Trohani 1975, fig. 3/6.
[89] Dergačev 2010, 155, no. 22-23, pl. 9/22, 23.
[90] Petrescu-Dîmbovița 1978, Pl. 63A/4; Wanzek 1989, 104, no. 14.
[91] Hänsel 1976, 31, no. 13; Wanzek 1989, 129, no. 7.
[92] Irimia 1968, 91, no. 1, fig. 4; Wanzek 1989, 129, no. 3.
[93] Photo Hänsel; Hänsel 1976, 38, no. 7. The axe is similar to the Sokol type defined by Hänsel, it could thus also date to Bz D: cf. Hänsel 1976, 38, fig. 1/3
[94] Černych 1978, Pl. 34/11; Wanzek 1989, 129, no. 1.
[95] Černych 1978, Pl. 32/10; Wanzek 1989, 129, no. 6.
[96] Rusu 1981, fig. 4/8; Wanzek 1989, 104, no. 10, Pl. 11, 47.
[97] Černych 1978, Pl. 39/2; Wanzek 1989, 104, no. 5.
[98] Černych 1978, Pl. 39/3; Wanzek 1989, 104, Nr. 6.
[99] Berciu 1953, 623, Taf. XXXV/6 (grave find); Wanzek 1989, 104, Nr. 8 (listed under „jud. Mehedinți").
[100] Srejović 1975, Pl. LXXXI/1, 2, 12, 14; Wanzek 1989, 104, no. 1.

b. without loop:

20. Pobit Kamăk, obl. Razgrad, Bulgaria, hoard of casting moulds: one part of a two-piece mould, phase Lesura-Vărbica[101]. **21**. Skalica, obl. Jambol, Bulgaria, isolated find, one part of a two-piece mould[102]. **22**. Sokol, obl. Silistra, Bulgaria, hoard of casting moulds: one casting mould, Ha A-B[103]. **23**. Sterne Dergisi, valilik Tekirdağ, Turkey, hoard: one axe, Ha A-B (in middle European terms)[104]. **24**. Stražica, obl. Veliko Tărnovo, Bulgaria, hoard: one axe, phase Sâmbăta I-Mlada Gvardia, the axes are earlier: phase Lesura-Vărbica[105]. **25**. Troas, Turkey, isolated find[106].

Variant 3: Two oblique groups of ribs are to be found above the parabola. Only pieces without a loop are known.

26. Buzorovo, obl. Tolbuchin, Bulgaria, hoard: one axe, phase Gura-Rîşeşti[107]. **27**. Lesura, obl. Vraca, Bulgaria, hoard: one axe[108]. **28**. Vărbica I, obl. Pleven, Bulgaria, hoard: one axe, phase Lesura-Vărbica[109].

Variant 4: In addition to the parabola-like facet the broadsides are designed similarly to those of axes of the so-called Transylvanian type. Only pieces with a loop are known.

29. Austria, find spot unknown, one axe[110]. **30**. Şendreni, Galaţi county, find spot insecure, one axe (bought by the Galaţi Museum from a collector living in Şendreni)[111].

The axe to be cast in the mould found at Mediaş belongs to variant 1. Socketed axes of this form spread widely in Southeastern Europe (Pl. 3/1), but there is a concentration in the lower Danube area with some finds reaching the Rhodope Mountains. To the south of the Danube, where the distribution pattern shows a concentration, only variant 1b, axes without a loop, are known. The majority of pieces listed above come from hoards, which can broadly be dated to horizons contemporary with Bz D in middle European terminology. A couple of finds come from early or late Ha A hoards. But, as the big Ha A hoards often contain earlier pieces, it does not seem improbable that the actual time of use of the variant has to be confined to Bz D in fact, with some older pieces deposited in Ha A. The single (insecure) settlement find from Izvoarele would back up this dating, if it was possible to link it definitely to the site from the 4th phase of the Tei culture. The mapping of variant 2 (Pl. 3/2), which is very close in its features to variant 1, underlines the general findings. Again pieces without a loop are those reaching the farthest south of the Danube. Near to Mediaş in Transylvania there is only one find spot, an axe from the big Ha A1-hoard from Aiud. Unlike Variant 1, most of these finds date to Ha A or even B. The general impression taking together variants 1 and 2 is that of an axe form from the lower Danube and Rhodope area spreading in low density to the north, where it seems to be adapted to local taste by adding a loop and loosing characteristic southern features like the almond-shaped depression or hole.

The axe to be cast in the second mould is much harder to asses. As already Wanzek noted, there is not a single axe known that shares all characteristics of the piece[112]. He was able to list some analogies for the general form of the axe, which were distributed widely in Romania and Transdanubia. A considerably enhanced state of research and publication makes it possible to complement and substantiate his discussion.

There are only few socketed axes which share several features with the negative in mould 2.

[101] Hänsel 1976, 39, Pl. 1/8.
[102] Černych 1978, Pl. 34/14, Wanzek 1989, 195, no. 11.
[103] Černych 1978, Pl. 30/17 (imprecise drawing); Wanzek 1989, 195-196, no. 12, Pl. 46/5.
[104] Wanzek 1989, 130, Taf. 3/6.
[105] Hänsel 1976, 42, no. 7; Wanzek 1989, 129, no. 8.
[106] Bittel/ Schneider 1940, fig. 10; Wanzek 1989, 129, no. 4.
[107] Hänsel 1976, 31, no. 16; Černych 1978, pl. 34/12; Wanzek 1989, 129, no. 2.
[108] Hänsel 1976, 38, no. 2; Černych 1978, Pl. 31/12; Wanzek 1989, 129, no. 9.
[109] Hänsel 1976, 38, no. 5; Černych 1978, Pl. 30/19; Wanzek 1989, 129, no. 10.
[110] Mayer 1977, 186, no. 986, Pl. 71/986, Wanzek 1989, 104, no. 13.
[111] Dragomir 1979, 597, fig. 3/2; Wanzek 1989, 104, no. 3.
[112] Wanzek 1989, 90.

The most appropriate analogy seems to be an axe found at Trösing, Austria (Pl. 4/1)[113]. It has a concave rim with just one rib and one zick-zack line beneath it. It has not the pronounced triangular blade of the Mediaş axe, but this could very well be due to wear induced by prolonged use. The axe belongs to a group of objects bought by the Graz museum in 1836. They are presumed to belong to one Ha A1 hoard, which is not entirely certain due to the provenance of the pieces and the different colors of their patina. An axe with u-shaped ribs on the socket, but a nearly horizontal ribbed rim comes from the Bz D hoard find of Bükkaranyos (II) in Hungary (Pl. 4/2)[114]. Although its general shape has similarities to the axe to be cast in mould 2, the differences predominate. The same is true for an axe from a Ha B1 hoard from Berkesz, Hungary (Pl. 4/3)[115]. It is much squatter, its rim is approximately horizontal and – like the axe from Trösing – it has only one horizontal rib and one zick-zack line.

Nevertheless, there are numerous close matches for the general form of the axe negative from mould 2, i.e. slender socketed axes with a concave rim and horizontal ribs (comp. Pl. 4/4-10)[116]:

a. Blučina 18, okr. Brno-Venkov, Czech Republic, hoard: one axe, Blučina or early Drslavice-Ořechov phase (Bz D-Ha A1)[117]. **b.** Brodski Varoš, Slavonski Brod žup., Croatia, hoard: one axe, Bz D-Ha A1[118]. **c.** Cadea, com. Săcueni, Bihor county, Romania, isolated find[119]. **d.** Cetatea de Baltă-*Sub Coastă*, Alba county, Romania, hoard: one axe, phase Cincu-Suseni, Ha A1[120]. **e.** Mužievo I, obl. Beregovo, Ukraine, hoard: one axe, phase Kriva? (Bz C2/D)[121]. **f.** Oinacu, Giurgiu county, Romania, one axe, maybe part of the BZ D hoard find[122]. **g.** Olcsvaapáti, Kom. Szabolcs-Szatmár, Hungary, hoard II: one axe, phase Ópályi, Bz D[123]. **h.** Podmonastyr´ II, obl. Mukačevo, Ukraine, hoard: two axes, phase Kriva (Bz C2-D)[124]. **i.** Rozavlea-*Dealul Butan*, Maramureş county, Romania, hoard III: eight axes, phase Uriu-Domăneşti, Bz D[125]. **j.** Sâmbăta Nouă, com. Topolog, Tulcea county, Romania, hoard II: axe, Ha A1[126]. **k.** Seleuşu, com. Daneş, Mureş county, Romania, hoard: small fragment of an axe, phase Cincu-Suseni, Ha A1[127]. **l.** Skalica, surroundings of the city, Trnavský kraj, Slovakia, isolated find[128]. **m.** Şuncuiuş-*Peştera Lesiana*, Bihor county, Romania, hoard: one axe, BzD-HaA1[129]. **n.** Uioara de Sus-*Tăul Mare*, today part of Ocna Mureş, Alba county, Romania, hoard: three axes, Ha A1[130]. **o.** Užgorod V, obl. Užgorod, Ukraine, hoard: one axe, phase Kriva, Bz C2-Ha A1[131].

A map of these analogies (Pl. 4/2) shows a clear concentration in the upper Tisza region, where

[113] Müller-Karpe 1959, 277, Pl. 127B/8; Mayer 1977, 204, no. 1162, Pl. 83/1162.
[114] Mozsolics 1985, 105-106, Pl. 3/5.
[115] Mozsolics 1985, 96-97, Pl. 176/1; Kemenczei 1984, 170, no. 5, Pl. CLXVIII/2.
[116] There are also socketed axes with a horizontal rim and ribs, which Wanzek partly listed as analogies. They not only differ in the design of the rim but are usually much more jolted. Furthermore they often belong to later contexts than the slender form with concave rim: Bonyhád, surroundings, Kom. Tolna, Hungary, hoard: one axe, phase Kurd, Ha B1, Mozsolics 1985, 103-104, Pl. 36/10; Dolaţ, Timiş county, Romania, isolated find, „Ha A1-2", Szentmiklosi 1997, 21, fig. 2; Jamul Mare, Timiş county, Romania, hoard: one axe, Ha A1, Holste 1951, Pl. 48/17; Kék, Kom., Szabolcs-Szatmár, Hungary, hoard: one axe, Gáva Culture, Kemenczei 1984, 174-175, no. 27, Pl. 181/1; Obreja, com. Mihalţ, Alba county, Romania, isolated find, „Ha B", Soroceanu/ Lakó 1995, 188-189, fig. 2/3; Rădeni-*Corlăţi*, com. Păstrăveni, Neamţ county, Romania, settlement find, „late Noua Culture", Dumitroaia 1985, 467-468, no. 6, fig. 1/b; Tăşad, com. Drăgeşti, Bihor county, Romania, hoard: one axe, phase Cincu-Suseni, Petrescu-Dîmboviţa 1977, 112-113, Pl. 213/2; Techirghiol-*Urluchioi*, Constanţa county, Romania, hoard: one axe, phase Techirghiol, Ha A1, Petrescu-Dîmboviţa 1978, 136, no. 192, Pl. 214C/1.
[117] Salaš 2005, 306, no. 18, Pl. 89B1.
[118] Vinski-Gasparini 1973, Pl. 61/15.
[119] Nánási 1974, 177, fig. 3/7; Bader 1978, 121, no. 16.
[120] Pepelea 1973, fig. 1/12.
[121] Hampel 1886, Pl. XII/8; Kobal´ 2000, 89, no. 90, Pl. 64D/1.
[122] Unpublished, information A. Popescu, Bucharest.
[123] Mozsolics 1973, 164, Pl. 34/5.
[124] Kobal´ 2000, 93-94, no. 115, Pl. 36/41-42.
[125] Kacsó/ Mitrea 1976, fig. 1/1-8.
[126] Aricescu 1965, 26-27, fig. 6/3.
[127] Petrescu-Dîmboviţa 1978, 106, no. 67, Pl. 45B/10.
[128] Novotná 1970, 81, no. 573, Pl. 32/573.
[129] Dumitraşcu/ Crişan 1989, 26, no. 7, fig. XVII/1.
[130] Petrescu-Dîmboviţa 1978, Pl. 164/97-98, one unpublished; Mus. Cluj-Napoca III 4947; III 5191; III 5166.
[131] Kobal´ 2000, 97, no. 140, Pl. 38C/1.

also hoard finds with more than one piece are located. Of special importance is the hoard from Rozavlea (III). It comprises eight axes from the same mould, which were obviously never used. This find clearly hints at a production of this type of axes in the region. Another concentration of finds lies along the middle course of the Mureş, the axes stemming from the big Ha A hoards of Uioara de Sus and Cetatea de Baltă. A few specimens reach further out to the south and the west.

Basically the distribution can be called a classical case for a production center with pieces getting fewer and more widely spread the further they depart from it. Again most of the finds date to Bz D, especially those in the center in the upper Tisza region, while axes found farther away are often part of later hoards. As stated above, older pieces (sometimes even dating back to the Middle Bronze Age) are a phenomenon well known for the big Ha A1 hoards of Transylvania. The same could be true for the axe from Trösing, which presents the closest match for mould 2. As with the axe form to be produced in mould 1, Ha A has to be regarded as the date of the deposition of the objects, not necessarily that of their use.

Of course, this is in obvious contrast to the so far accepted Ha A1 date of the Mediaş moulds. But, as no associated finds are known, these analogies are the single line of proof available. And, as stated above, there is evidence for finds of the late Bronze Age Noua Culture from Mediaş-*Cetate*. It seems that the moulds cannot be any longer an argument for a Ha A settlement at the site, but for an even earlier horizon.

Apart from the chronological implications, the analogies for the moulds produced and used by one craftsman stem from very different regions. The axe to be cast in mould 1 is clearly a form of the lower Danube area, while the second axe has clear affinities to the upper Tisza region, while the closest analogy comes presumably from Austria, on the border of the „Tüllenbeilkreis".

Patterns of mobility?

Thus the point is reached to answer the question of how these influences on the founder from Mediaş came about. Usually that would mean to either point at the ´itinerant craftsman´ or to argue for cultural modes of the transmission of knowledge, both lines of argumentation based largely on ethnographic data and a few archaeological considerations. Of course the finished products could have travelled and inspired a local founder. This possibility would be even more plausible as axes of slightly different form, but with the main attributes of the pieces to be produced in his moulds were present in the region around Mediaş. But there is also an attribute of the mould itself pointing at the extra-Carpathian main distribution area of the axes to be cast in mould 1. Wanzek has shown that casting moulds with holes for dowels concentrate there, while scattered examples are known throughout southeastern Europe (Fig. 2)[132].

And there is one other strong argument for an at least regional mobility of the Mediaş craftsman. Another mould for socketed axes found at Cernat[133] (Pl. 5/1), around 200 km to the east of Mediaş in the Târgu Secuiesc depression at the foot of the Carpathian mountains (Fig. 2) shares key features with the moulds from Mediaş.

At Cernat, a big fortified settlement dating in its main phase to Ha B[134] is known since excavations done by Z. Székely in the early 1960s as well as another one from the Late Bronze Age[135].

It is not entirely clear from which of these site the mould for a socketed axe of the so-called Transylvanian Type stems[136]. Anyway, Székely has reported the context of this discovery only shortly, but

[132] Wanzek 1989, Pl. 7.
[133] Székely 1970, 478, Pl. VIII/6.
[134] Székely 1966, 17-28.
[135] Székely 2002.
[136] Wanzek 1989, 200, no. 43 locates the find together with another fragment at the Ha B settlement of Cernat-Vîrf Ascuțit (without naming the toponym). Székely 1966, 21 explicitly mentions only Neolithic, Hallstatt and La Tène finds from there and illustrates only the mould fragment. In his short lines regarding the complete mould he does not mention the exact location of the Late Bronze Age dwelling the mould was found in (Székely 1970, 478). It is possible that the mould was actually found in another settlement at Cernat, possibly that at *Róberttag*, which has ample evidence for settlement activities of the Late Bronze

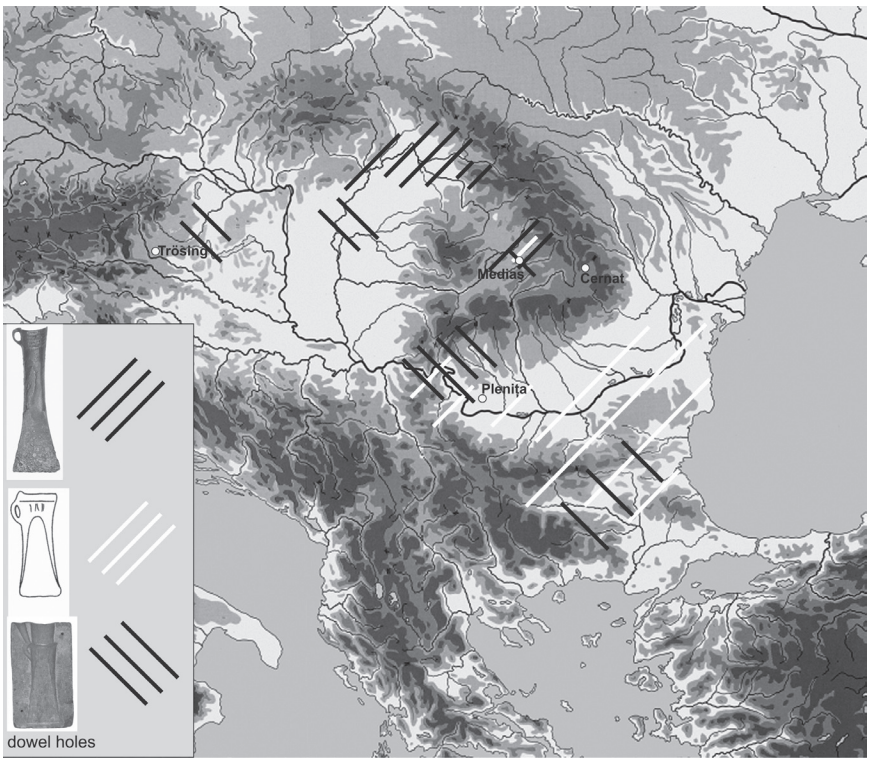

Figure 2: Map summarizing the influences on the Mediaş founder.

stating clearly that it was found in a dwelling of the late Bronze Age[137], making the dating of the object clear. Resemblances with the mould from Mediaş can not only be observed regarding the material used – the same hard crystalline greyish limestone - and the overall form, but also in the facets on the back-side, which are completely unusual for the axe casting moulds so far known from Romania[138] and southeastern Europe in general[139]. Only dowel holes are missing from this mould. The artifact from Cernat is not only another clue regarding the earlier dating of the moulds from Mediaş. As the technical properties of the forms from Mediaş and Cernat coincide it seems quite possible that there is a connection between this find and the craftsman from Mediaş, or at least his school. The distance between Mediaş and Cernat is not too big, but the finds in any case are proof of one craftsman, or someone who learned his craft from him, travelling it.

If one wants to stick to the impression gained by the ethnographic parallels listed above, i.e. that a general itinerant way of live is less probable than individual larger journeys brought about for example by the saturation of markets or to many founders working in one area, a tentative reconstruction of the Mediaş founders life could read like this. He may have learned his craft somewhere south of the Carpathians in the lower Danube area. This would be sustained by him using technological features more typical to this region (e.g. the dowel holes) and by the form of the axe to be cast in mould 1 typical for this region as well. He could then have moved, maybe at the end of his apprenticeship in the search for a region he could work in, to the northern Carpathian basin or directly to the settlement at modern day Mediaş, where he came in contact with axes of the general form of the specimens to be made in mould 2. He settled at Mediaş, where he produced *inter alia* axes that resembled or combined features of these forms. He or one of his apprentices later moved to Cernat, the latter being more probable as with the dowel joints a main feature of the Mediaş forms is missing, while another (the facets) remains. Of course this interpretation remains fictional in large parts, but it is a model that would fit the evidence as well as

Age Noua Culture (comp. Székely 2002). Anyway, it is clear that the mould is from one of the sites at Cernat.

[137] Székely 1970, 478.

[138] Dietrich 2011, 83-85, Fundliste 1.

[139] Wanzek 1989.

the input from ethnographic observations, as unreliable as the latter may be.

Another find from Romania, this time from the extra-Carpathian areas and dating considerably later, adds a further nuance to this image. At Plenița, a hoard of at least 12 halves of two-piece casting moulds for socketed axes has been found, some of them belonging together to one complete mould[140]. In their recent republication of the find, N. Boroffka and F. Ridiche bring forward for the first time a comprehensive description of the pieces, concluding that they probably belonged to one workshop due to their technical details[141]. Most remarkable regarding our question is a complete bivalve mould for socketed axes with „Winkelzier"[142]. One of the halves (Pl. 5/2) was originally facetted much in the same way the moulds from Mediaș and Cernat are, the facets maybe later being erased[143]. As these are the single three cases of facetted moulds in southeastern Europe[144], a connection between them is highly plausible. The hoard of Plenița has been dated roughly to Ha A2-B1, considerably later than Mediaș and Cernat. The removal of the facets could hint at an older Transylvanian mould (or one produced by a Transylvanian craftsman in the „Mediaș tradition") reused as raw material for a new one outside the Carpathian mountain range. Provenance studies lack for the raw material of the Plenița moulds, but as they all are made of soft, gray schist, the suspected Transylvanian import making no exception, this possibility is improbable. There are several Transylvanian technical features observable in the Plenița moulds[145]. They belong to „Eingussvariante 4" as the moulds from Mediaș and Cernat do, in one mould a „Dornfortsatz" is present resembling the one in mould 2 from Mediaș[146]. Several other features show western connections[147]. The Plenița mould seems to reflect to a certain extent the inner- and outer-Carpathian activity zones of the Mediaș founder at a later time.

To sum up, both the finds from Mediaș/Cernat and Plenița show influences from several different regions. The moulds from Mediaș and Cernat open up the possibility of an at least temporal/periodical mobility for Late Bronze Age metalworkers. Maybe the Plenița moulds hint at a metalworker travelling southern Transylvania and the western Danube-Tisza-area much as his Bronze D forerunner did travel in the Carpathian basin and maybe in the upper Tisza region. As well, there is evidence, that metalworkers were important agents in the collection and distribution of information and influences in material culture. The verdict of Neipert[148] that mobile craftsmen are impossible to seize by archaeological arguments therefore proves to be too pessimistic. A detailed analysis of single cases like the moulds from Mediaș and Cernat seems to be a reasonable line of investigation for future studies[149] aiming at several possible forms of mobility.

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[140] Boroffka/ Ridiche 2005 with earlier literature.
[141] Boroffka/ Ridiche 2005, 162.
[142] Boroffka/ Ridiche 2005, 139-140, fig. 3/2, 4.
[143] Boroffka/ Ridiche 2005, 143.
[144] Wanzek 1989; Boroffka/ Ridiche 2005.
[145] Boroffka/ Ridiche 2005, 147.
[146] This is a feature typical for the Carpathian Basin and the adjacent areas further to the west: Wanzek 1989, Pl. 13.
[147] Boroffka/ Ridiche 2005, 146-147.
[148] Neipert 2006, 124.
[149] This has not to be restricted to casting moulds. Jantzen 2008, 307 has argued for the mobility of an individual Bronze Age metalworker on the Danish Isles over a distance of about 110 km on the basis of sprouts attributable to one founder in three hoard finds on Fyn and Zealand. This would imply that the respective hoards were formed of material that accumulated through local production near the deposition sites, a model entirely probable, but not necessarily that the scrap hoards were the raw material stocks of a village nearby, as Jantzen argues.

Plate 1: The two moulds from Mediaş.

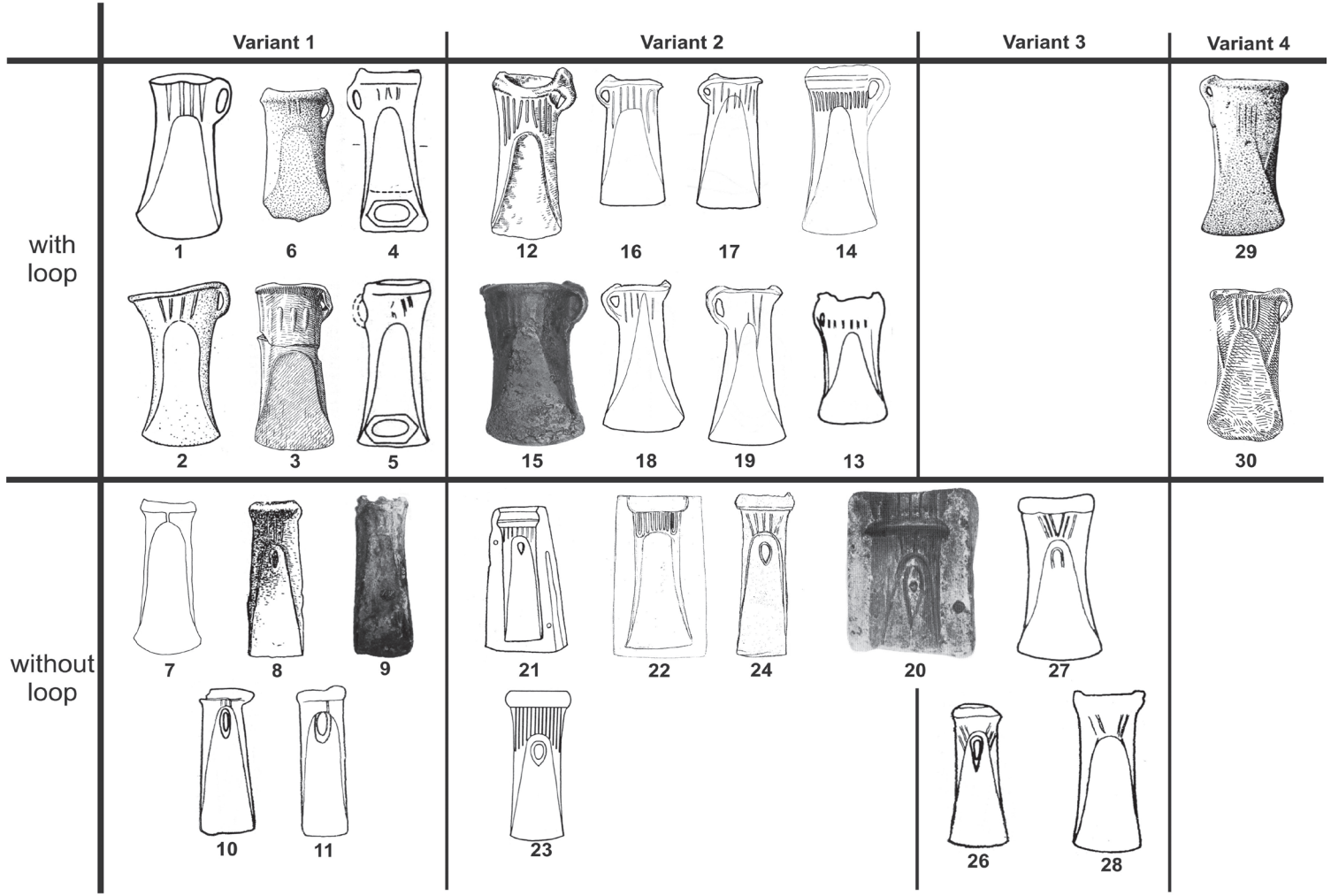

Plate 2: Typological table of socketed axes with parabola-like facets and vertical ribs under their rim: analogies for mould 1: 1. Boljetin (after Srejovic 1960, fig. 31/d); 2. Črmošnjice (after Müller-Karpe 1959, Pl. 132A3); 3 Izvoarele (after Şerbănescu-Trohani 1975, fig. 3/6); 4-5. Majačka (after Dergačev 2010, Pl. 9/22, 23); 6. Negreşti (after Petrescu-Dîmboviţa 1978, pl. 63A/4); 7. Buzovgrad (drawing by B. Hänsel); 8. Constanţa-*Palas* (after Irimia 1968, fig. 4), 9. Gorsko Kosovo (Photo B. Hänsel); 10. „Okr. Šumen" (after Černych 1978, Pl. 34/11); 11. Pčela (Černych 1978, Pl. 32/10); 12. Aiud (after Rusu 1981, fig. 4/8); 13. Lesura (after Černych 1978, Pl. 39/2); 14. Magura-*cave near Rabiša* (Černych 1978, Pl. 39/3); 15. Ostrovul Mare; 16-19. Urovica (after Srejović 1975, Pl. LXXXI/1, 2, 12, 14); 20. Pobit Kamăk (after Hänsel 1976, Pl. 1/8); 21. Skalica (after Černych 1978, Pl. 34/14); 22. Sokol (drawing B. Hänsel); 23. Sterne Dergisi (after Wanzek 1989, Taf. 3/6); 24. Stražica (drawing B. Hänsel); 26. Buzorovo (after Černych 1978, Pl. 34/12); 27. Lesura (after Černych 1978, Pl. 31/12); 28. Vărbica I (after Černych 1978, Pl. 30/19); 29. Austria (after Mayer 1977, pl. 71/986); 30. Şendreni (after Dragomir 1979, fig. 3/2).

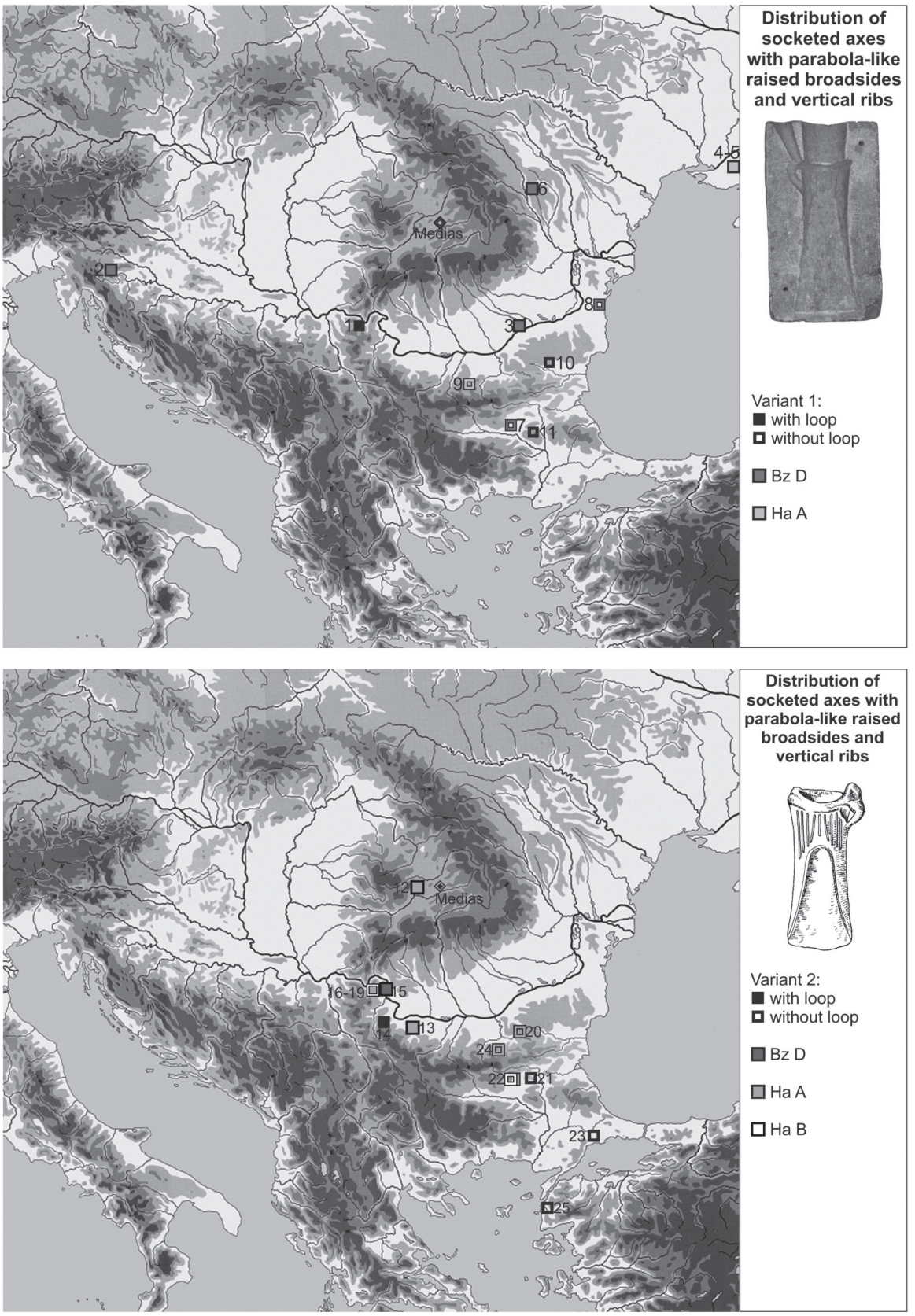

Plate 3: Distribution maps of Variant 1 (above) and 2 (below) of the axes with parabola-like facets and vertical ribs under their rim.

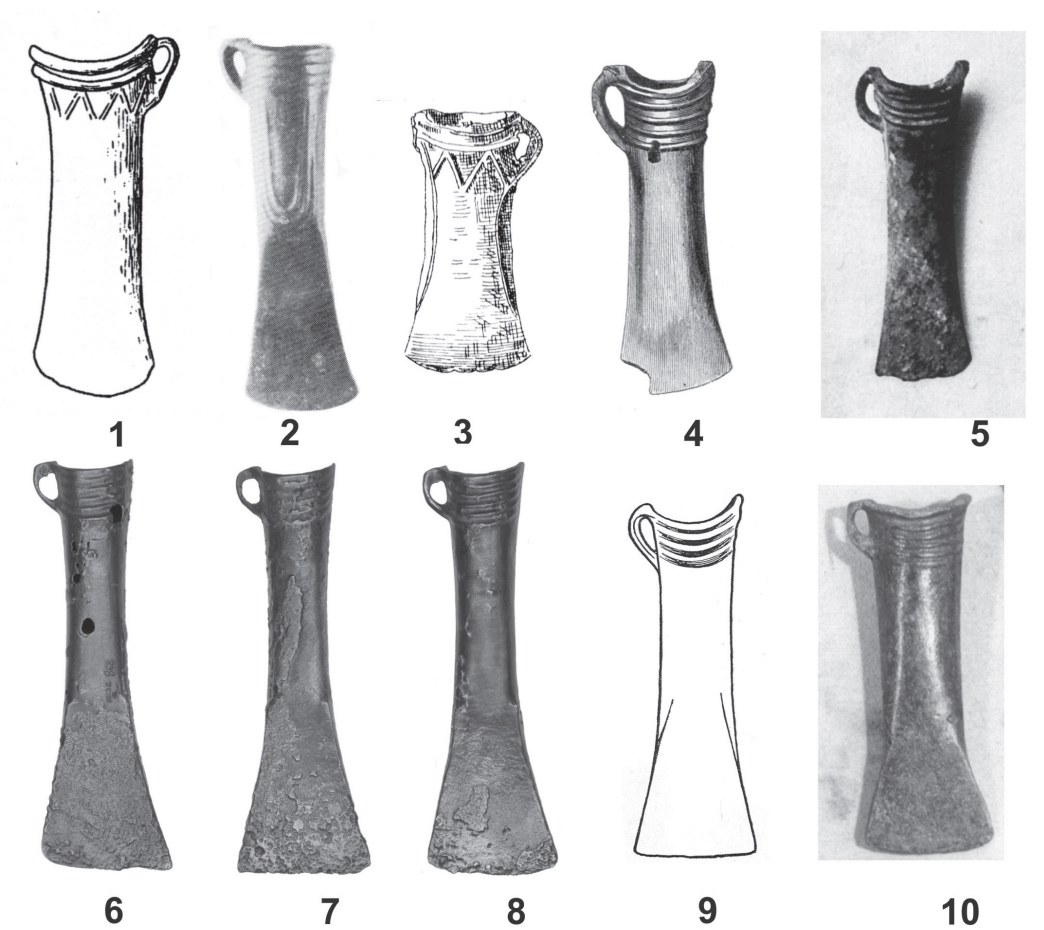

Plate 4: Above: A selection of analogies for the axe to be cast in mould 2: 1 Trösing (after Müller-Karpe 1959, Pl. 127B/8); 2 Bükkaranyos II (after Mozsolics 1985, Pl. 3/5); Berkesz (after Kemenczei 1984, Pl. CLXVIII/2); 4 Mužievo I (after Hampel 1886, Pl. XII/8); 5 Olcsvaapáti (after Mozsolics 1973, 164, Pl. 34/5); 6-8 Rozavlea; 9 Şuncuiuş (after Dumitraşcu/ Crişan 1989, fig. XVII/1); 10 Sîmbăta Nouă (Photo B. Hänsel). Below: Distribution Map of analogies for the axe to be cast in mould 2 (letters correspond to list in text).

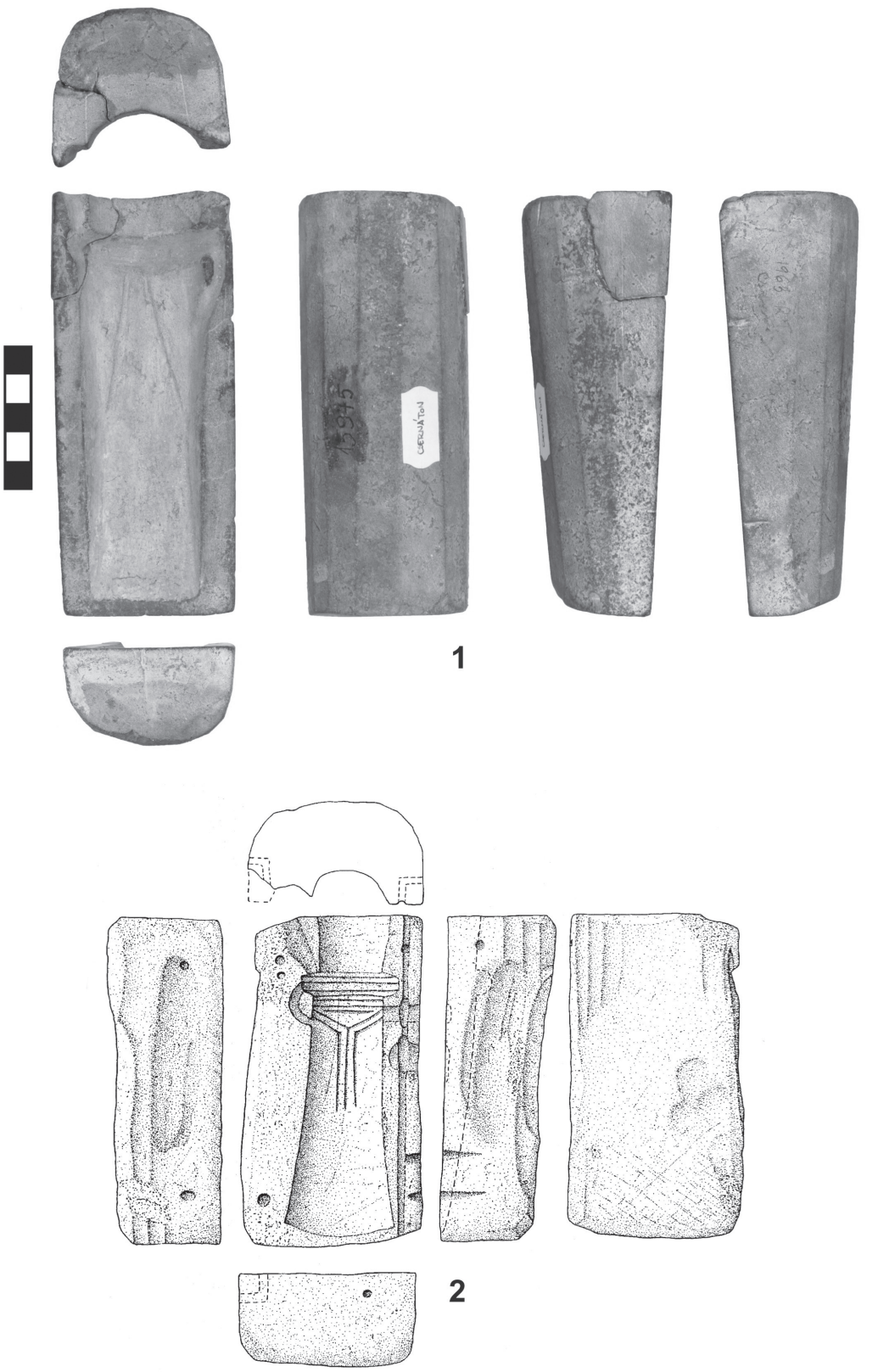

Plate 5: 1 The mould from Cernat; 2 Mould from Pleniţa (after Boroffka/ Ridiche 2005, fig. 3/2).