

METAL ORES AND TRADE ON THE MIDDLE DANUBE¹

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Although the copper sources of both Serbia and Transylvania have long been known in the literature (cf. Childe 1929; Gaul 1942), most research has tended to stress either the earliest appearance of metallurgy in this area (for example, Jovanović 1971; Renfrew 1969a), or its period of greatest development (Rusu 1963). Relatively little interest has been shown in that rather amorphous period which is termed "Middle Bronze Age". This is especially true for the southern part of the Middle Danube region, embracing the Banat, Oltenia, and eastern Serbia. Studies concentrating on chronology, and metal typology, such as Popescu (1944) and Hänsel (1968) include this area as a matter of course, treating it as a cul-de-sac or a region peripheral to the major metallurgical centers of the interior of the Carpathian Basin or the east Alpine region. While this view is to some extent justified, it takes into account neither the probable mechanics of copper production nor the vital role played by the cultures of this region with respect to their northern neighbors.

Temporally, the Middle Bronze Age in the southern part of the Middle Danube area may be roughly correlated with Reinecke Bronze B–D in the Central European chronological system (Müller-Karpe 1959; Garašanin 1959, Foltiny 1955), or Tószeg B2–D (Childe 1929), Tószeg D (Nestor 1932) or Bronze III–IV (Mozsolics 1957) in several interpretations of the Hungarian system (cf. Hänsel 1968 for an exhaustive overview of the relative chronology). In absolute terms, this span still basically depends on chronological connections with Egypt through Aegean intermediaries (Hachmann 1957). Depending on the choice of a high or low chronology, the Middle Bronze Age may begin as early as 1650 or as late as 1525 BC (Thomas 1970). The central part of this period, corresponding to Reinecke Bronze C, may be taken as contemporaneous with Late Helladic IIIA in Greece, but problems again arise in connection with the dating of Reinecke Bronze D–Hallstatt A, the end of the Middle Bronze Age. Müller-Karpe (1959), dates this in the thirteenth to twelfth centuries, depending on the date given for the LH IIIB–HC transition in the Aegean, which may be as early as 1230 or as late as 1180 (Thomas 1970). What radiocarbon dating can do to these limits remains to be seen, but for the moment we will not be far wrong in setting the sixteenth and thirteenth centuries B.C. as our *termini*.

Culturally, the Danube alluvium from the mouth of the Morava to the Isker drainage in Bulgaria is most closely associated with the "Žuto Brdo" or "Girila Mare" culture in the Middle to Late Bronze Age (Vasić 1907, 1910, 1911; Garašanin 1959, 1973; Dumitrescu 1961; Mikov 1970). Known largely from "urnfield" cremation cemetery assemblages, the hallmark of this culture is a highly ornate style of pottery decoration, predominantly incised and stamped volutes, spirals and arcs on the slipped and polished exterior surfaces of biconical and two-stage urns, roughly conical bowls, and cups with spherical bodies and cylindrical necks (see Dumitrescu 1961 or Garašanin 1959 for a complete description and illustrations). This ceramic group may be distinguished from the assemblages further upstream along the Danube alluvium in the Banat and Srem, including the lower Tisza, Timiș, Mureș, and Karaš drainages, which define the Vatina "culture" (Milleker 1905; Childe 1929; Vulić and Grbić 1938; Garašanin 1959, 1973). Although certain shapes, especially in the cup series, occur in both Žuto Brdo and Vatina assemblages, the latter is distinguished by the presence of false cord-marking, simpler urn bowl shape and decoration, and relatively lesser complexity of design motifs. "Vatina", like "Žuto Brdo", is known primarily from cremation cemetery assemblages. It must be stressed, however, that Vatina is not "provincial" or imitation Žuto Brdo ware, but partakes of a different esthetic tradition. On this ground, as on others which fall outside of the scope of the present study, these two groups may be considered to represent two different "cultures" or "peoples" (see Bankoff 1974 for a fuller discussion).

Having thus briefly sketched the chronology and cultural subdivisions of the area, let us turn to the problem of the relationship of these groups to each other and to their more northerly neighbours with respect to mining, manufacture and trade of mineral resources.

The entire region of older folded metamorphic rocks that make up the Timok Basin of eastern Serbia is of crucial importance for a study of the metal resources of the southern part of the Middle Danube. The zone of copper-bearing strata stretches from the Danube to Dimitrovgrad on the Yugoslav-Bulgarian border. To the east are the large copper deposits at the north end of the Isker gorge at Eliseina, which do not extend farther east than Etrepole (Gaul 1942). Within this entire area, copper occurs both in oxidized forms and in some places as native copper (Jovanović 1971). Eneolithic copper mines have been identified at Rudna Glava near the modern mines at Majdanpek (Jovanović

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1969, 1971), and Late Bronze/Early Iron Age workings at Zlotska Pečina near Bor (Tasić 1969). Erosion in the ancient crystalline schists of which this mountainous region is composed, has exposed ore-bearing strata, not only in the Danube gorges (Yugoslavia 1944–45), but also along the Pek and Timok, as well as their smaller tributaries (Riznić 1888). Copper ore is also found in some quantity in Macedonia and in western and central Serbia (Jovanović 1971). There is no sign at this time of “scrap metal” being shipped or hoarded for re-use.

Data are less certain for Romanian copper sources. Nonferrous ores are found particularly in Maramureş, in the southwestern edge of the Bihor Massif. Here the so-called Munţii Metalici are rich in primarily polymetallic ores, containing copper, lead and zinc, and sometimes silver and antimony (Matley 1970; Osborne 1967). These mountains are transected by many rivers, flowing eastward into the Mureş or Someş, which in turn flow westward out of Transylvania (Pounds 1969). The valleys are steep, narrow, and heavily forested, thus providing but limited access to the interior of the massif. There is no evidence that these ores were utilized in the Middle Bronze Age.

Tin sources, of course, are also a major problem. Analyses of finds from the latter part of this period (Reinecke Bronze D–Hallstatt A) show a percentage of tin of up to ten percent in pieces from both the southern part of the Middle Danube and Transylvania (Junghans, Sangmeister and Schröder 1960; Popescu and Rusu 1966; Veselinović 1952; Nadj 1955; Vinski 1958). Since tin is unknown in this area, Milleker (1940) and Childe (1929), would bring the tin used in Transylvania from mines in the Saxo-Bohemian Erzgebirge or Bavaria. However, as Muhly (1973a) has recently noted, the Erzgebirge tin deposits are hydrothermal deposits in veins of granite rock, and would have been completely inaccessible to the metal-workers of the Bronze Age. In that case, we must either posit now-depleted tin sources in the Banat (Milleker 1940) or include the (tin-) bronze producing centres of Transylvania in a Cornish tin network (cf. Muhly 1973b). The possibility that either or both of these alternatives may be “imaginative fantasy” (Muhly 1973a: 170) should be kept firmly in mind.

Since the ore-producing parts of the area are thus sharply defined, we must examine the ways by which material could be traded or shipped from one part of the region to another. Although easy movement both by land and by water was possible along the Middle Danube and along the Tisza, Trogmayer (1963) states that the area between the two rivers formed a boundary that was only semi-permeable. This area is a low sandy plateau with loess tracts that become more pronounced to the south. Ehrich (1965) sees this interfluvial area as a major north-south dividing strip during the Neolithic, somewhat differentiating Transdanubia from the west, and itself sometimes differentiated from the Hungarian Plain. It forms the division between Paulik’s (1968) eastern and western Carpathian areas. Thus, while the interfluvial area divides the southern part of the Middle Danube drainage from the larger Hungarian Plain to the north, it also forms a natural dividing line between east and west, possibly reflecting a vegetational difference on either side of the 760 mm isohyet. In terms of trade routes or exploitation of copper sources, it is thus possible that central and western Serbia was a source of metal for an area to the northwest, while the copper deposits of the eastern Serbian and Bulgarian region supplied a predominantly Transylvanian market.

Routes into or out of the eastern edge of the Banat along the Danube are difficult to reconstruct. At low water narrow sand banks line the sides of the Djerdap defiles, but the only possible overland path which would not stray far inland from the Danube would involve zig-zagging along the slopes on either side. While not impossible, this is certainly not the easiest route of contact between the ore sources and the interior of the Carpathian Basin (Pounds 1969). The Romanian side of the Djerdap is linked to the interior of the Banat by way of the Porta Orientalis formed by the confluence of the Cerna and the Danube (Yugoslavia 1944–45). From the Danube at Orşova it is possible to ascend the Cerna to the small divide that separates it from the headwaters of the Timis (at Teregova) and then follow the Timiş down-stream past Caransebeş, to where the valley broadens and turns westward into the Banat.

Other routes may have linked the ore-producing regions of central and western Serbia to the north. Sites on the Jadar and its tributaries (Belotić, Bela Crkva) point to a route along the Jadar valley from the ore sources in the vicinity of Valjevo to the confluence of the Jadar with the Drina, thence down the Drina to the Sava. The fine flat land skirting the northern edge of the Cer Mountains would have made it unnecessary to follow the Drina all the way to its mouth. This route would then proceed into Srem, possibly crossing the Sava near Hrtkovci (Gomolava), and continue into the Banat via a route which followed the right Danube bank to Slankamen, where it would branch off up the Tisza. An alternative route could ascend the Kolubara from the ore sources around Valjevo and proceed up the Sava. Assuming western Transylvania, or eastern Hungary to have been the destination, the former journey could have been made directly in somewhat less than two weeks, while the Kolubara route would have taken about half that time, assuming a maximum daily distance of less than thirty kilometers on the plains and fifteen kilometers in the mountains. It is even possible that the regions around Kragujevac in central Serbia were connected with the north via a route running down the Morava and utilizing the valleys of its eastward-flowing tributaries, such as the Lepenica, to gain access to the ores of this area. It must be kept in mind that despite the relatively short distances to be traversed, this trade might equally have been indirect rather than direct.

The distribution of sites along the southern Middle Danube strongly suggests that the cultures of the Middle Bronze Age in this area represent a group of interlinked local trade networks. Trade in limited metal resources,

would, among other effects, promote contact between communities and the interchange of ideas through personal contact (Renfrew 1969b). While this hypothesis must be dealt with in greater detail elsewhere, it seems reasonable to propose that the primary suppliers of copper in the region were the people living along the Danube, those of the "Žuto Brdo", "Cirna" or "Girila Mare" culture, whose site distribution closely follows the distribution of the oxide ores of the Timok eruptive basin (cf. Gaul 1942; Garašanin 1959; Berciu 1967). The Vatina culture of the Banat alluvium represents secondary suppliers, purveying southern resources to the more northeasterly Transylvanian artifacts occur far to the north of the metal source areas. The primary exception is the "winged pin" (Majnarić-Pandžić 1971), which may represent status goods in a "kula-like" trading partner exchange or elite distributional system (Sherratt 1972). Even these pins, however, are limited to the Vatina area, reflecting the northern part of the trade network. While one is tempted to postulate a trade in perishables or agricultural products directed southwards from the richer Banat alluvium towards eastern Serbia, this remains in the realm of speculation. The Karaš-Nera interfluvial region, thickly settled with Vatin and Žuto Brdo sites, seems to have been an intensive point of contact between the two groups, perhaps meriting consideration as a "port of trade" (Polanyi, et al. 1957).

The central and western Serbian sites, both of the "West Serbian Vatin culture" (Garašanin and Garašanin 1956; Garašanin 1959), and the "Belotic-Bela Crvka" group (Garašanin 1958, 1962, 1967) are part of a related trade network. Their relative wealth of metallic grave goods, tumulus burial practices, and amber, all differentiate these sites from those of the Vatina and Žuto Brdo areas, and suggest more direct northwesterly contacts than were available to regions farther to the east. It is distinctly possible, although untestable, on the basis of present data, that the contacts of this central and western area were directed west of Fruška Gora up the Danube through Bačka to the Hungarian Plain. The complexity of interrelationships within the area may very well be underestimated, and the unity of western and central Serbia may be questioned. One can sense a close connection between the eastern part of this group and the area around Beograd (via the Kolubara) and farther east (via the Lepenica), which could be differentiated from the more western Serbian material. Further investigations along the Jadar and Drina are sorely needed; the lack of settlement material in particular is extremely crucial. Needless to say, each of these problems requires study before a more complete picture of cultural interaction in this highly complex area can emerge.

This paper has tried to illustrate several facets of the problem of metal resources and trade in the Middle Bronze Age in a very limited area. I have tried to propose hypotheses which can be tested by metallurgical analyses or further archaeological data. None of the postulated routes may have been used, nor may any of the groups have interacted in the way which has been proposed. Nonetheless, a necessary step for the further development of any sort of coherent picture of life in the area in the Middle Bronze Age requires that we stop treating cultures as assemblages of pots and begin treating them as groups of interacting individuals whose activities and motives are the focus of our inquiry.

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