Metallurgical Provinces of Eurasia in the Early Metal Age: Problems of Interrelation

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General chronological frame of the Early Metal Age (EMA) in Eurasia limited from IX/VIII up to turn II/I mill. BCE. The chronological scale of this investigation founded on the systematized date base of more than 3.5 thousand calibrated $^{14}$C analyses. EMA can be subdivided into five unequal in chronological sense periods. The Early Metal Age was the epoch clear domination of the western metallurgical centers – particularly up to III mill. BCE. In all probabilities the apogee of the western predominance was incarnated in the immense of the famous Scythian world, in the limits of the first millennium BCE – i.e. beyond the EMA. The eastern centers take up the initiative of westward pressing after collapse of the Scythian world.

KEY WORDS: metallurgical provinces; Early Metal Age; Eurasia.

The second period of EMA – the Copper Age dated from V mill. BCE (Fig. 1(B)). The most impressive and remarkable peculiarities of this stage were: 1) the great mining and metallurgical revolution that was occurred a big distance away from area of Proto-Metal – in the Northern Balkan and Carpathian basin; 2) formation of the Carpatho-Balkan metallurgical province (CBMP) as the several closed related metallurgical and metalworking centers (Fig. 3, map). General area of CBMP was equaled approximate 1, 5 million sq. km spread from Danubian basin in the Western flank to the Mid and Low Volga basin in the Eastern flank of this province. The most characteristic features of CBMP are 1) casting and hammering of various heavy tools and weapons made from chemical pure copper; 2) big number of gold decorations and ornaments (Fig. 3). Metallurgical revolution and CBMP formation emerged independently from the centers of Proto-Metal area where in V mill. BCE continued limited production of primitive handmade copper goods. Specific and symbolic sites of CBMP are the s. c. “gold” Varna necropolis in Eastern Bulgaria and Ai bunar – copper (polymetallic) mine in Southern Bulgaria.

Three different blocks of chalcolithic cultures of CBMP were spread in various regions of this province (Fig. 3, map). The central and most significant cultural block occupied the rich with different copper and others mineral deposits areas in the North-Balkan and Carpathian (Karanovo VI-Gumelnita, Varna, Vinca C-D, Tiszapolgar and others archaeological cultures). This block was the main producer of copper that was distributed eastward to the neighbouring settled farming cultures (Cucuteni-Tripolie culture) and more distant pastoral steppe communities (Dniepro-Donets, Sredni Stog, Khvalynsk cultures). Final centuries of the fifth and early fourth mill. BCE was the time of disintegration and disappearance of the earliest metallurgical province in
Eurasia. One very paradoxical fact: the inheritance of lively CBMP was scarcely clear reflected in the production of following and more late metallurgical systems.

In place of the CBMP appeared extremely powerful Circumpontic metallurgical province (CMP) i.e. surrounding Black Sea (or Pontos Euxeinos in old Greek). About two thousand years (IV–III mill. BCE) this province became the central production metallurgical system in Eurasia. With CMP were linked two important historical periods in the history of the Eurasian peoples – Early and Middle Bronze Age.

The third period of EMA – the Early Bronze Age dated in general from IV mill. BCE (Fig. 1(C)). This time the great explosion of metallurgical producing took place in the regions occupied by cultures of the former PrM period: Anatolia, Mesopotamia, Levant (Fig. 4, map). The exclusive importance of the space expansion of this former area was owing to the Caucasus inclusion - and not only the South Caucasus, but also the North Caucasus. To the north of the main Caucasus range – in the foothills and steppe – pastoral cultures developed, and these communities were extremely dissimilar to the southern ones where the domination of settled farming cultures was evidently. The listed regions were the main space for formation of so-called Proto-Circumpontic metallurgical province (Proto-CMP). Total area of Proto-CMP was equaled approximately 1.7–1.9 million sq. km. Its cultures adjoined to the Black Sea just to the south and east shores (therefore the early phase of CMP was named Proto).
Emergence of high quality metal producing was very similar to technological explosion. At the same time all Proto-CMP production was absolutely dissimilar the previous – Carpatho-Balkan metallurgy – both from technological and morphological point of view. Firstly: absolute domination of arsenical bronzes – Cu+As and Cu+As+Ni. Secondly: big number of gold and especially silver ornaments and sacral products (the silver was not used in the centers of Carpatho-Balkan MP).

One very paradoxical situation was close connected with Proto-CMP. In practice all mining, metallurgical and metalworking focuses were located in the southern zone of province occupied by settle farming communities: the Late Uruk and its synchronous cultures and sites in Anatolia, Kura-Arax and some others cultures in the Southern Caucasus (Fig. 4, map). But in addition to that we must note that the lion share of different metals artifacts was concentrated in the famous and rich elite’ graves of the northern pastoral culture kurgan cemeteries – so called Maykop kurgan community (Fig. 4). In general collection of the metals in the kurgans of the northern Proto-CMP’ zone exceeded the southern one more than 15 times! Especially it was reflected on the precious metals – Au and Ag. We have to note else one very remarkable distinction from previous, more earlier Carpatho-Balkan system: in the CBMP mass of metals in the sites of central producing cultural block surpassed in tens times the copper artifacts in peripheral blocks and mainly in the graves of stock-breeding steppe communities.

The Proto-CMP period has highlighted very brightly a new situation with mutual interrelations of different cultural models. On the basis of the emerged geo-ecological structure three general independent long-lasting subsistence strategies of Eurasian archeological communities were formed at the turn of the forth and third millennium BCE on the vast territories of Eurasian continent: 1) hunting, fishing and gathering, located mainly in the forest zone; 2) mobile (nomadic or semi nomadic) stock-breeding in the giant Eurasian Steppe Belt stretched from Black Sea area to the Yellow Sea and 3) sedentary agriculture dominated in the more southern areas of continent. The problems of interrelation’ character between the main productive centers of metallurgical provinces were complicated by interaction between the population of three mentioned general subsistence strategies. It became especially obviously at process of transformation Proto-CMP into reality of Circumpontic metallurgical province.

The fourth period of EMA – the Middle Bronze Age dated in general from III mill. BCE (Fig. 1(D)). This period was characterized by variety of very important changes which have captured large blocks of various cultures on wide spaces surrounded of Black Sea (Fig. 5, map). The major changes were reflected in structure of the mining, metallurgical and metalworking centers which have generated the Circumpontic metallurgical province (CMP).
Undoubtedly that CMP was the producing system in Eurasia in the third mill. BCE.

Firstly: there was a sharp expansion of territory CMP from 1.7–1.9 million sq. km to 4.5–5.0 million. This expansion has captured spaces former CBMP – that is Balkan peninsula and Carpathian basin, and also the wide steppe and forest-steppe areas from Low Danube up to South Urals. In this period the total space of copper/bronze-bearing cultures in Eurasia was equaled approximately 10–11 mill. sq. km. (Fig. 1(D)).

Secondly: formation of two blocks practically equal on spatial coverage cultures. Southern block – the domination of different settled farming populations. Northern block – the full supremacy of mobile pastoral horse-riding kurgan communities – first of all s. c. Yamnaya (pit-grave) and catacombay (catacomb-grave). Despite of contrast character their general subsistence strategies, both blocks have appeared very closely interconnected, and it was most brightly reflected in metal.

Thirdly: there were observed processes of rather smooth transformation of technological and morphological canons of the former ProtoCMP on which base has arisen real CMP (Fig. 5). The arsenical bronzes (Cu+As) served as the basic type produced in the province. However quite new Sn-bronzes began to play the leading role in the southern block of the cultures and metallurgical centers. Metallurgy and metalworking in the northern steppe block were based on the As-bronzes and chemical pure copper.

Fourthly: the sharp distinctions in metallurgy and metalworking for the northern steppe block from the former Proto-CMP stage clear reflected in the presence of considerable number of casting clay moulds in the graves of mas-
ters-molders (Fig. 5). More impressive evidences of start of mining and metallurgy was connected with the huge copper mining and metallurgical center Kargaly located in South Urals’ steppe (Fig. 5, the copper founder burial). The Kargaly complex was the source of big mass of chemical pure copper for the giant Yamnay community. The main source of
different type of As-bronzes for Catacomb-community was used South-Caucasian and Anatolian centers. In this respect the Caucasus was the regular bridge between South and North zones of CMP.

And finally the fifth point: the bridge between South and North of CMP operated also during the Proto-CMP period. However the picture of distribution of the mass of the major metals – Cu (bronzes), Au and Ag – between South and North of CMP assumed s. c. “normal” aspect. In CMP system the lion share of copper and bronzes concentrated in the CMP’ southern area. And at the same time the gold and silver ornaments were found in complexes of the northern stock-breeding zone extremely rare.

The fifth period of EMA – the Late Bronze Age, dated mainly in the frame of the II mill. BCE to the turn of II/I mill. BCE. Beyond doubt the major event of this period was the phenomenal giant space leap of distribution of the metal-bearing cultures (Fig. 1(E)). The total space of these high-technological cultures and communities increased approximately in four times and covered about 40–43 mill. sq. km. Other main event was the fast disintegration of Circumpontic metallurgical province – undoubtedly the central Eurasian system during the previous millennium. We can now possibility discern up to eight more or less different or even extreme dissimilar metallurgical provinces spreading out from Atlantic to the Pacific (Fig. 6). In the fifth period the

Fig. 7. Eurasian Steppe Belt (1) and the dividing border (2) between the East and the West. The arrows point to the Dzungarian Gate between Altay and Tien-Shan mounts systems.
metal-bearing cultures and communities occupied all two main geo-ecological Eurasian zones including the Great Steppe Belt. The cultures of the forest (taiga) zone were mostly still in the Neolithic.

The problems of interrelation’ character between the main productive centers of metallurgical provinces were complicated by interaction between the population and cultures of two general parts of Eurasia, – and it has become distinctly clear only in the fifth period of EMA. Reliance on the basic position of modern anthropology, linguistics, and also different ideological systems allow to plan the watershed line between East and West. The dividing line between East-West parts passes on the Yenisei value, crossing so called Dzungarian Gate between Altay and Tien Shan mount systems, and surrounding Pamir and Himalaya aimed down up to the Indian sub-continent (Fig. 7). The metallurgical contacts and character of interrelations between eastern and western parts we can observe in the Xinjiang among the materials of eastern focuses of the Circumpontic metallurgical province and later in the rich metal collections of the West-Asian and East-Asian steppe provinces. In this sphere extreme interest presents so called Seima-Turbino transcultural phenomenon: their impressive metal forms of eastern sources spreaded from the Western China up to Baltic Sea at the turn of the III and II millennium and in the early centuries of the II mill. BCE.

The Early Metal Age was the epoch clear domination of the western metallurgical centers – particularly up to III mill. BCE. In all probabilities the apogee of the western predominance was incarnated in the immense of the famous Scythian world, in the limits of the first millennium BCE – i.e. beyond the EMA. The eastern centers take up the initiative of westward pressing after collapse of the Scythian world.

Notes:
In this limited paper it would be impossible to cite the huge number of literature sources: the touched problematic is extreme wide. I mention only some general author’s publications in the western languages and two big books in Russian: