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FOR THE ATTRIBUTION OF HISTORICAL-ECONOMIC TERMS IN PALEOMETALLURGY

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ABSTRACT

The article is dedicated to the problematic issues of defining and differentiating terminology related to paleometallurgy. The aim of the research is to conduct a comprehensive analysis and systematization of technological processes involved in ancient metallurgical production, grounded in historical-economic data.

It should be noted that certain terms denoting ancient metallurgy and metal production acquire distinct meanings depending on the technological and operational characteristics of mining-metallurgical associations. Their content often reflects the methodological approaches of historical-metallurgical studies of a given metallogenic region and in most cases does not reflect the historical process to which the studied objects belong. Consequently, the clarification and precise explanation of these terms become essential.

The research area focuses on the Caucasus region during Bronze Age, which, from a historical-cultural perspective, is divided into three major metallurgical centers: The North Caucasus, Central, and Lesser Caucasus metallurgical centers.

The research employs an interdisciplinary method – integrating archaeology, geology, mining, chemistry, engineering-technical and mathematical statistics criteria for the metallurgical achievements.

The developed terminological system, which is based on the analysis of the work-organizational structure, production scales, and geographical distribution of paleometallurgical sites, enables an objective evaluation and classification of metallurgical achievements. Individual terms can be effectively applied both to present the achievements of metallurgical centers operating on the territory of Georgia and to assess the cultural achievements of the Caucasus-Western Asia region and the metallurgical province around the Black Sea.

KEYWORDS: PALEOMETALLURGY, METALWORKING, ORE, CAUCASUS, BRONZE AGE.

The historical economic data has attached special importance for the definition of the working-organizational structure of the old metallurgical production and for the complex analysis of the basic technological processes, which derive from the historical peculiarities of the functioning of the ancient copper-bronze and iron-steel enterprises.

In connection with the problem, some terms of ancient metallurgy and metalworking are essential which are at the present stage of the study of the history of metallurgy. At the present stage of the study of the history of metallurgy, these terms undergo the appropriate differentiation according to the principles of determining the working technical-technological aspect of mining and metallurgical associations. The content of the terms is related to the method of historical-metallurgical research of a particular metallogenic region and, in many cases, does not reflect the historical process to which the object of study belongs. Thus it is necessary to clarify the terms, to differentiate their meaning (Черных Е.Н., 1976: p. 166; Inanishvili G. and others 2010: p. 48).

The existence of forms of prehistoric societies' collective ownership characteristic also extends to metallurgical production. At the same time, a precondition is created for the development of a mechanism for the division of labor and the created product. Metallurgical production is separated from other areas of economic agriculture and develops with a different organization of production, with a centralized demand for the product, taking into account the regularities of the external market.

The geographical area of distribution of the Transcaucasian metallogenic ores, their geological-geochemical data, determined the scope of the ancient metallurgical production in these areas. The geographical proximity of the mining facilities to the copper and iron production zones, in the foothills and coastal zone, facilitates the formation of ore processing and metallurgical hotspots. The mining production monuments related to the historical development of non-ferrous and ferrous metallurgy in the Transcaucasia are united in a similar, uniform system with basic working schemes and engineering-technical characteristics (Mujiri T. 1994: p. 6).

Historically, current organizational-technological changes in metallurgical production require differentiated terminology to define the functional, geographical-expansive, trade – cultural relations and area of operation of industrial associations.

The modern stage of the study of the history of metallurgy has established the meaning of the terms denoting the technological process of the corresponding stage of metal fabrication. We will discuss about the using of some of these terms. Accordingly, first of all, there are defined the relevance of the terms to the historical information embedded in them – "Metallurgy" and "Metalworking".

The term "metallurgy" refers to a set of production processes related to the extraction of metal from an ore, its casting and the creation of a primary product. The term metalworking encompasses a combination of technological processes used to obtain finished products from semi-finished or primary molds by molding and forging complex items (combat, agricultural and ritual weapons, jewelry). At the advanced stage of metalworking, it combines the use of metal casting and subsequent forging processes to create versatile products.

Discussion of the above terms as a process, in any historical period and in a certain geographical area, presents such historical-metallurgical and historical-technological terms

as “metallurgical hearth”, “metallurgical center”, “mining metallurgical center”, “metallurgical province” (Inanishvili G. 2018: p. 50).

In terms of the history of technology, metallurgy and metalworking are based on natural data in a certain geographical area, which is typical for this zone. The ancient metallurgical centers developed primarily in the geographical area where there were rich metallogenic zones: copper, iron, lead, arsenic, tin, antimony, and other metals. The conception and development of paleometallurgy also required a supply of fuel, water, and refractory clays. The population living in a region rich in such natural resources is aware of the nature of the metal, its properties, creating a precondition for the existence of metallurgical hotspots. The metallurgical tribes formed by these natural-economical conditions spread their influence on the neighboring communities. They preceded the people living there in agricultural activities, and actively influenced their way of life. This influence is especially evident in the distribution of their products outside of the metallogenic region. The products of the metallurgical tribes are distributed in the neighboring regions in the form of finished products or molded rods. A society that does not have a metallurgical production is forced to import or manufacture products in imitation with the imported ones.

In some cases, metallurgical tribes’ impact on the neighbor’s geographical environment is generated by local metal processing centers, which begin to exist by processing imported materials. If the required amount of ore resources are discovered in the region, it will be possible to establish local metallurgical production centers. The existence of inter-tribal contacts, in the subsequent historical section, leads to their industrial expansion, expansion of the scope, and unification of separate metallurgical centers. In this case, a metallurgical center or a mining – metallurgical association is established. With the further increase of the geographical area of their activity and production scale, a more substantial cultural-economic unio – Metallurgical Province is created. (Inanishvili G. 2018: p. 51)

“Metallurgical hearth” creates its own metallurgical production, within the chronological and geographical boundaries of the products it is part of the area of a larger paleometallurgical union. A population with a homogeneous culture is located within its borders. Production samples are characterized by special (different from other) typological and technological features, signs. The metallurgical hearth has its own zone of influence for its technological scheme. Across the South Caucasus region, metallurgical hub unification systems are distinguished at different stages of Bronze Age economic development: on the southern slopes of the Central Caucasus – the metallurgical hubs of Abkhazia, Svaneti, and Racha; In the Lesser Caucasus – the centers of the Chorokhi Basin, Adjara-Guria and Bolnisi-Dmanisi.

The “metallurgical center” includes rich and multifaceted metallogenic areas, which are located in one adult geological-geographical region, where are developed the main part of the existing ore production and the mining system. Exploited ores are characterized by homogeneous, single-system geochemical data. The region combines several synchronously operating metallurgical centers, the products of which create a common-uniform look of the production. Metallurgy is one of the main activities of the local tribes. Archaeologically the region includes well-dated metallurgical production facilities, which are a direct argument for the existence of metallurgical production here historically. The products of local metallurgical production have a certain territorial area of distribution, which may change during the