

Archaeology

Prehistoric Metallurgy in Mountainous Colchis (Lechkhumi)

Nana Rezesidze^{*}, Nino Sulava^{*}, Brian Gilmour^{}, Tamar Beridze[§],
Rusudan Chagelishvili^{*}**

^{*}*Georgian National Museum, Tbilisi, Georgia*

^{**}*School of Archaeology, University of Oxford, Oxford, Great Britain*

[§]*Al. Janelidze Institute of Geology, Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia*

(Presented by Academy Member David Lordkipanidze)

ABSTRACT. The present paper is an introduction to our new archaeometallurgical research project and gives a brief overview and context to the recent results of exploratory fieldwork and some excavation conducted in the Lechkhumi region of mountainous Colchis (in particular the Tsageri Municipality of this part of West Georgia,) and their place in an already established archaeological context. Lechkhumi is one of the historic provinces of West Georgia and because of archaeological metalwork finds here forms a significant part of the known Colchian bronze culture and is now considered to be an important centre of prehistoric copper and bronze metallurgy. However, Lechkhumi has been archaeologically perhaps the least studied region in Georgia so far. Current interdisciplinary investigations of the late Bronze Age copper sites of Lechkhumi region is an attempt to establish and assess the significance of the region and its place in the contemporary metallurgical production and culture of this part of ancient Colchis. The results of recent archaeometallurgical investigations conducted in mountainous Colchis and in particular in Lechkhumi are introduced in the paper. Thirteen unknown archaeometallurgical sites are defined in the study area. Fragments of metallurgical production: metallurgical furnace, tuyeres and abundant slags have been obtained as a result of archaeological excavations conducted since 2016 on the site Dogurashi-I on the left bank of the river Tskhenistskali. Archaeological investigations will continue until the complete study of the site. According to C¹⁴ analyses results of the charcoal from the furnace and slag the absolute age of the site was established 13-9 BC. XRF and quantitative analyses results indicate that we deal with copper production. © 2018 Bull. Georg. Natl. Acad. Sci.

Key words: metallurgy, Colchis, Prehistoric, Lechkhumi

The discovery and development of metallurgical production and especially the study of the processing of metals from ore to final artefact, the trade and use of artefacts and the processes involved their deposition and survival is believed to be one outstanding achievement in human history.

The appearance of metal clearly had a continuing and fundamental impact on the development of society and state formation. Accordingly, the study of the ancient metallurgy remains topical in today's world. It has become evident that the Caucasus region overall and Georgia in particular were of

great importance in the mastering and developing of copper and bronze production technology. In this it has played a key part in the understanding and reconstructing of early metallurgy in the ancient world [1]. Its position between Asia and Europe and proximity to the old world civilizations to the south have been significant as has the formation of Caucasian – Asian social-cultural and economic relationships [2].

The present paper is an introduction to our new archaeometallurgical research project and gives a brief overview and context to the recent results of exploratory fieldwork and some excavation conducted in the Lechkhumi region of mountainous Colchis (in particular the Tsageri Municipality of this part of West Georgia,) and their place in an already established archaeological context. Lechkhumi is one of the historic provinces of West Georgia and because of archaeological metalwork finds here forms a significant part of the known Colchian bronze culture [3,4] and is now considered to be an important centre of prehistoric copper and bronze metallurgy.

Lechkhumi is a relatively small but significant historical-geographic region of western Georgia and includes the territories of present day Tsageri, and part of the Tskaltubo and Ambrolauri municipalities. To the west it is separated from the Samegrelo region by the Askhi mountain massif, to the north from Svaneti region it is separated by Lechkhumi range, to the east the boundary with Racha region runs along the river Askhistskali and to the south the boundary with Imereti region passes along the mountain crest on the river Lekhidara left bank and the Khvamli mountain massif.

Lechkhumi is archaeologically perhaps the least studied region in Georgia. Here, during fieldwork conducted in 1961-1962 in the Tskhenistskali river gorge, and the village of Tskheta in particular, in a small-scale archaeological survey 15 antique period (mid-first millennium BC) burials were excavated [5]. In 1970-1971 an 8-5th century BC

Colchian settlement was excavated in the same locality with typical Colchian ceramics and a stone casting mould for a fylfot (swastika) form of Colchian bronze buckle [6]. Another Colchian settlement was found during archaeological excavations of 1989-1991 in the valley of the Rioni [7]. After a long break archaeological excavations in Lechkhumi recommenced in 2012 the main aim being the study of both burial and settlement in the Tskheta and Dekhviri environs (See the 2012, 2014, 2015, 2016 reports of Lechkhumi (Tskheta-Dekhviri) archaeological expedition). In spite of the limited character of these investigations the findings are of great archaeological importance as they provide evidence of Lechkhumi's development over the period from the beginning of the first millennium BC to the earlier first millennium AD.

Aside from excavated archaeological remains Lechkhumi is rich in accidental findings, in particular late Bronze/early Iron copper alloy and iron artefacts: 11 bronze hoards [8], small bronze samples of various forms [9], weaponry [10] and agricultural tools, jewelry [11] as well as ceramics. The existence of a wide variety of Colchian Bronze Age material (copper alloy tools or other industrial artefacts, weaponry, copper ingots, copper alloy secondary casting cakes all related to the production of metallurgical artefacts, as well as typical Colchian ceramics) in Lechkhumi prompted the conducting of reconnaissance expeditions here by the Georgian National Museum in 2011-2015. As a result 14 unknown early smelting sites identifiable by slags, tuyeres, crucibles etc. were located [12]. In 2016 the next stage of this survey involved the archaeological investigation of one of the sites identified in the preliminary survey, the site 'Dogurashi I located in the vicinity of the river Tskhenistskali eastern tributary, 'Dogurashis Gele' (7 km from Tsageri, GPS – N 42° 40' 41. 0" E, 42 47' 05. 4". 860m.). As with other sites this had been identified by the prospecting for surface remains in the form of slag and other waste material, this site

being chosen because of its seemingly good survival.

In the archaeological investigation at 'Dogurashi I' in 2016 seven trenches were excavated. Undisturbed archaeological layers varying between approximately 10 centimeters and more than 2.5 meters in thickness were excavated with a total working area of 100 m². This revealed the remnants of metallurgical production including the base of an otherwise destroyed metallurgical furnace [13,14], tuyeres, crucible fragments and the abundant remains of slag, the main stony waste by-product of the copper smelting carried out here – mostly recovered (about 8 m³) from one trench. The sequence of slag waste dumps suggested to us that this is the main (and possibly only) industrial area for this site although a more complete archaeological investigation of the site is planned to look for other furnaces and earlier evidence of slag dumping.

Archaeometallurgical waste debris (mainly fragments of slag, crucibles and tuyeres) from 'Dogurashi I', as well as samples similar waste debris retrieved from other recently located archaeometallurgical sites of the Lechkhumi region, was shipped for laboratory analysis to the Oxford University, Research Laboratory for Archaeology and the History of Art. Charcoal from the furnace and slag found on 'Dogurashi I' was also sent to Oxford for ¹⁴C dating which indicated the lifespan of the site cover the period from the 13th to the 9th century BC. Semi-quantitative and qualitative analysis as well as identification by photo microscopy is being conducted on the metallurgical production remains (crucible fragments and slags) in the same laboratory and the results will be published soon. However, preliminary analysis of the production waste remains so far located in Lechkhumi has confirmed that a series of similar sites were all linked to early copper production and the radiocarbon dating results from Dogurashi I suggests there were all

linked to copper production in the transitional late Bronze Age to early Iron Age.

Current interdisciplinary investigation of the late Bronze Age copper site of 'Dogurashi I', together with the location and study of similar sites will enable us to establish and assess the significance of the Lechkhumi region and its place in the contemporary metallurgical production and culture of this part of ancient Colchis.

Archaeological excavations of the second to first millennium BC copper smelting site at 'Dogurashi I', together with the search for and preliminary examination of similar sites, are the first stage in the study of prehistoric metallurgy in Lechkhumi area in particular and the wider Caucasus mountain region of Colchis in general [15]. Further survey - including the search for ancient mining traces and a study of possible ore sources – as well as excavation should establish Lechkhumi as one of the ancient centres of metallurgical production in the late Bronze Age. In addition to this the many and rich variety of chance archaeological finds – mostly votive hoards from Lechkhumi or the surrounding area – can now be studied as part of this programme of work. The region is well known for this characteristic Colchian metalwork and its place in the metal production of the region as well as its significance in Colchian culture can now be much more effectively studied.

This project to locate and study the previously unknown archaeometallurgical landscape of the Lechkhumi region will become a valuable contribution on a regional scale as well, as providing a much more complete idea of the scale of prehistoric Colchian metallurgy across the wider region of (what is now) western Georgia (Adjara, Guria, Samegrelo and Svaneti). The widespread nature and extent of this late Bronze Age copper smelting industry across western Georgia was virtually unknown before the past few years (Gilmour *et al* forthcoming) although its importance in understanding metal production in

the late Bronze Age and the transition to iron is very significant.

Due to its geographical and geological setting the southern Caucasus, and Georgia in particular, was a very favorable area for the development of early metal mining, smelting and production [2] as shown by the recent discovery of late Bronze Age archaeometallurgical sites in Lechkhumi. It should also be emphasized, that the recognition of general tendencies and consistent patterns of Bronze Age (archaeological period when intensive metal production began) mining and metallurgical sites, interrelations and development remains of our current interest as well. Across Georgia overall, and the southern Caucasus in particular, the processing of ancient metal in the form of pure /native copper and high-grade copper ores dates back to the beginning of the fourth millennium BC if not earlier.

During the fourth millennium BC a new and widespread metal production industry developed this being promoted by increased demands for

metal goods, one consequence being the progressive identification of more ore deposits and their exploitation throughout the region.

In the highland zone of West Georgia the surviving evidence indicates that the production capacities of ancient mines in terms of volumes of copper ores extracted here significantly exceeded local or regional needs. Our preliminary interdisciplinary archaeological-geological investigations also support the idea that the source of ore raw material in the Lechkhumi region is of local origin. The location, mapping and investigating of ore occurrences and mines of the study area should help resolve this issue, as will the location and investigation of more late Bronze Age copper smelting sites.

Acknowledgments. This work was supported by the Shota Rustaveli National Science Foundation (grant PhDF 2016_143). The author is grateful to Academy Member David Lordkipanidze for his guidance and kind support.

არქეოლოგია

უძველესი მეტალურგია მთიან კოლხეთში (ლექხუმი)

ნ. რეზესიძე*, ნ. სულავა*, ბ. გილმორი**, თ. ბერიძე§, რ. ჩაგელიშვილი*

*საქართველოს ეროვნული მუზეუმი, თბილისი, საქართველო

**ოქსფორდის უნივერსიტეტი, არქეოლოგიის სკოლა, ოქსფორდი, დიდი ბრიტანეთი

§ივანე ჯავახიშვილის სახელობის თბილისის სახელმწიფო უნივერსიტეტი, ალ.ჯანელიძის გეოლოგიის ინსტიტუტი, თბილისი, საქართველო

(წარმოდგენილია აკადემიის წევრის დ. ლორთქიფანიძის მიერ)

სტატიაში წარმოდგენილია მთიან კოლხეთში, კერძოდ კი ლექხუმში ჩატარებული ბოლოდროინდელი არქეომეტალურგიული კვლევა, სადაც აღმოჩნდა 13 უცნობი არქეომეტალურგიული ძეგლი. 2016 წელს დაწყებული არქეოლოგიური გათხრების შედეგად,

მდინარე ცხენისწყლის მარცხენა სანაპიროზე მდებარე ძეგლზე - „დოღურაში I“ (GPS – N 42°40'41"/ E 42°47'0". 860 მ) გამოვლინდა მეტალურგიული წარმოების ნარჩენები: მეტალურგიული ქურა, ქურის საქმენი მილები და დიდი რაოდენობით წიდეები. არქეოლოგიური სამუშაოები გაგრძელდება ძეგლის სრულ შესწავლამდე. წიდიდან და ქურიდან აღებულ ნახშირებზე გაკეთებული C^{14} ანალიზის მიხედვით, ძეგლის აბსოლუტური თარიღია ძვ.წ. XIII-IX სს. ჩატარებული სპექტრული და რაოდენობრივი ანალიზების შედეგების გათვალისწინებით საქმე გვაქვს სპილენძის წარმოებასთან..

REFERENCES

1. Abesadze T. (1969) Metal production in the Transcaucasus during the third millennium B.C. Tbilisi (in Georgian).
2. Gambashidze Ir., Mindiashvili G., Gogochuri G., Kakhiani K., Japaridze I. (2010) Ancient metallurgy and mining in Georgia VI-III millennium B.C. Tbilisi (in Georgian)
3. Sakharova L. (1966) Pozdnebronzavaya kultura uschelij reki Tskhenistskali. Synopsis to MSc Thesis, Tbilisi (in Russian).
4. Sulava N. (2014) The prehistoric metallurgy exhibits of Tsageri Historical Museum. *Proceedings of the Tsageri History Museum. I*: 33-35 (in Georgian).
5. Sulava N. (1996) Mountainous Colchis in Antiquity (Lechkhumi). Tbilisi (in Georgian).
6. Sulava N. (2008) On a small mould discovered in mountainous Colchis. *Ancient mining in Turkey and the Eastern Mediterranean (AMITEM)*, Ankara. 299-305.
7. Gabidzashvili G., Sakharova L., Sulava N., Sulkhanishvili D. (2004) The results of Lechkhumi archaeological expedition exploration (1989-1991). *Archaeological sites works in Georgian 1989-1992*, 121-123 (in Georgian).
8. Sulava N. (2014) Bronze hoard of Tsageri History Museum. *Proceedings of the Tsageri History Museum. I*: 46-53 (in Georgian).
9. Sulava N. (2014) A New Archaeological Discovery from Tsageri – the Bronze Bull. *Proceedings of the Tsageri History Museum. I*: 54-59 (in Georgian).
10. Ramishvili Q. (2014) Colchic Axe from Tskheta. *Proceedings of the Tsageri History Museum. I*: 60-66 (in Georgian).
11. Kakhelishvili T. (2014) Beads of the Tsageri History Museum. *Proceedings of the Tsageri History Museum. I*: 108-121 (in Georgian).
12. Sulava N., Chagelishvili R., Kalandadze N., Beridze T. (2013) Newly discovered monuments of the ancient iron metallurgy: research perspective and expected outcomes. *The Thracians and their Neighbors in the Bronze and Iron Ages. (Proceedings of the 12th International Congress of Thracology)*, I: 375-379.
13. Khakhutaishvili D. (1987) Proizvotstvo zheleza v drevney Kolkhide. Tbilisi (in Russian).
14. Khakhutaishvili D. (2009) The Manufacture of Iron in Ancient Colchis. Oxford.
15. Erb-Satullo N., Gilmour B., Khakhutaishvili N. (2015) Crucible technologies in the Late Bronze-Early Iron Age South Caucasus: copper processing, tin bronze production, and the possibility of local tin ores. *Journal of Archaeological Science*, 61: 260- 276.

Received January, 2018