

The production and trade of Cypriot copper in the Late Bronze Age

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Cyprus is well-known for its abundant copper ore deposits. This mineral wealth enabled the island to acquire a dominant position in the long-distance metal's trade of the East Mediterranean during the Late Bronze Age. For many decades the provenance of the copper oxhide ingots, the majority of which is sourced to the mines of the Solea axis in the north-western foothills of the Troodos Mountains, and hence the Cypriot Late Bronze Age received extensive scholarly attention. It is commonly suggested that by the 13th century BC (LCIIC) the economic and socio-political organisation of the island consisted of several polities within which various types of sites interacted in a regional network under control of a local elite. These regional networks had developed to organize the transshipment of copper from the mining and smelting settlements located in the foothills of the Troodos Mountains towards the urban coastal or port centres from where the copper was exported. The networks are therefore commonly related to the *chaîne opératoire* of copper production and the multi-phase process of the smelting of copper sulphide ores, i.e. chalcopyrite (CuFeS₂), the main ore type available on Cyprus.

However, the actual technological process related to the production of copper and its spatial organisation within the island remain poorly understood. Evidence of large-scale metallurgical workshops to be expected for a major copper-producing and -exporting agent in the eastern Mediterranean are known only from Enkomi while to date only one primary smelting workshop, that of Politiko-*Phorades*, and one mining settlement, namely Apliki-*Karamallos*, have been excavated. Nevertheless, small numbers of metallurgical remains have been found in practically all excavated Late Cypriote sites. A comparative and multidisciplinary study of this material by means of a variety of analytical techniques can lead to a better perception of the production and exchange of Cypriot copper. Consequently it can also contribute greatly to the further understanding of the sociopolitical and economical organisation of the ancient Cypriot society.

The systematic study of the uninvestigated metallurgical remains from a number of important LCIIC sites located along the much-discussed southern river valleys, namely Maroni-*Tsaroukkas*, Kalavassos-*Ayios Dhimitrios* and Alassa, and from the inland agricultural site of Arediou-*Vouppes*, in comparison to the published results from other contemporary sites, has led to the conclusion that the technology in the production of copper was not absolutely uniform. Furthermore, the current evidence does not support the assumption that copper production is of primary importance in the economy of every region. Therefore we may assume that by the 13th century BC the production and export of Cypriot copper took place at two levels: 1) the large-scale and highly specialized production of oxhide (and bun) ingots under control of the 'king' of Alashiya, who may possibly have resided at Enkomi, at yet unidentified sites located within the mining region of the Solea axis for the export of bulk metal within a state-controlled maritime trading system; and 2) the regional small-scale production of copper at both coastal and inland sites for local use, and export by the regional ruling authorities within private exchange contacts. The proposed alteration of the trading systems of the Late Bronze Age Eastern Mediterranean towards an increase in the private trade of metals and metal scrap was further explored and confirmed by the macroscopic study of the rediscovered copper ingot fragments from the eminent late 13th century BC Cape Gelidonya shipwreck.