Aspects of ancient metallurgy

Abstract

These 22 papers dedicated to various topics related to ancient metallurgy, from prehistory to Crusader times in the 12th century CE, appeared in a Special Issue 2017 of the journal “Materials and Manufacturing Techniques”, Taylor & Francis in volume 32, Nos.7-8, page: 709-925.

Book presentation

Eight years after the 2009 special issue on “Manufacturing techniques from Prehistory to the Renaissance“, that covered more materials, from stone, to glass, painting, metals and ceramics, archeology has become once again guest of the Journal Materials and Manufacturing Processes. The 2017 special issue is entirely dedicated to various “Aspects of Ancient Metallurgy”, from the mining of ores, through smelting, distribution, workshops, finished products and special technologies and finishing of objects. The essays in this volume highlight the production and processing of metals through the ages, from the beginning of metallurgy to medieval times, and covers various regions, from Portugal to the UK, from Italy to Central Europe, to the Near East, Africa, India and South America. Since at least three decades scientific analyses are regular and integral part of archaeological research, while before analytical programs existed, but were the exception. Nevertheless, there are now cases in which some kind of analytical work is carried out just because having analytical data attached to a paper as an appendix is “fashionable” and seems to be a must for the modern archaeologist, but these studies are often without plan and certainly not a relevant research. The papers collected in this issue focus on finds and objects in context, as cultural documentation and key for the understanding of the metallurgical techniques of a period. For these studies the authors used manifold approaches, thus comparing previous analyses and reading ancient texts, applying anthropological examination and detective work, as well as, obviously, analytical methods.

What we have learnt in the few decades since the study of systematic ancient metallurgy was born, is that we have to know where metals come from, how they were smelted, how the working processes and alloying practices changed their properties, and how they were finished. We know now that the analytical part cannot be separated from the cultural, historical and archaeological context. Only in this way we can untangle complex tales and hidden matters, separated from the cultural, historical and archaeological context. Presentations on Roman materials begin with the paper by Arne Jouttijärvi on Roman alloying practice, based on an amazingly large database of around 8900 analyses. Filipa Lopes et al., discuss the antropomorphic handle attachments of the Roman situlae from Conimbriga (Portugal). Estelle Ottenwelder et al. describe in detail the production process of Early Medieval “Gombiky”, i.e. spherical pendants made of precious metals or gilded copper, from the “Lumbe Garden” cemetery at the Prague Castle.

The section on iron begins with a paper by Alessandra Giumlia-Mair, on an Iron Age smithy in Zambana (Trento) in Northern Italy. Janet Lang gives an excellent overview on Roman iron and steel, and also discusses the production of steel in the furnace, surface carburisation and fire welding. Adám Thie et al. present the metallographic examination of two medieval knives from Kobići (Republic of Croatia), one of which is pattern-welded and, at least for the moment, the only example of this technique in Croatia. Francisco J. Franco Pérez & Marc Gener Moret discuss the extensive work carried out in the “hauzeolac”, the mountainside ironworks in Biscay (Baque Country, Spain): survey, excavation, experimentation and materials characterization. Jiří Hošek et al. present the metallographic work carried out on an interesting example...
of pattern-welded and silver inlaid sword, excavated at Kyjov, in the Czech Republic, and describe their experience with the manufacturing process of the replica. Papers on non-European materials consist in Vincent Serneels' work on the smelting site of Korsimoro in Burkina Faso, where he conducted two fieldwork campaigns in 2011 and 2012, and identified chronologically separated and different traditions in the period between 600 and 1000 AD. Sharada Srinivasan describes the technique of production and the characteristics of ultra-high carbon 'wootz' from Tamil Nadu at Mel-siruvalur. This very special steel was apparently exported to the West in antiquity, and might be the famous ferrum Indicum, mentioned by Greek and Latin texts. Finally, the last paper, by Béla Török et al., discusses the manufacturing process of medieval arrowheads and chain-mail fragments from the Crusader Al-Marqab citadel (Syria).

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Conflict of interest

Author declares that there is no conflict of interest.

References