

# POSTER ABSTRACTS

Levent Ercanlı, Middle East Technical University; Fikri Kulakoğlu, Ankara Üniversitesi; Ali Kalkanlı, Middle East Technical University  
*Examinations of Metal Working Technologies at Kültepe Prior to the Assyrian Colony Period*

Metal played a key role in the social and economic development of early human society, and the rich metal deposits of Anatolia in particular have lent this region an important role in early trade and state formation. As shown from the analysis presented at the 1st KIM-conference in 2013, the site of Kültepe was one important center of metallurgy during the Middle Bronze Age and the Assyrian Colony Period, being itself a crossroad of trade with Mesopotamia and a node of innovation. This poster will present the results of a similar examination of metal artifacts from the site dating to the Early Bronze Age. Evidence comes from metal artifacts that were not found suitable for exhibition, and which could therefore be examined by an energy dispersive X-ray unit of scanning electron microscope for elemental analysis, as well as through X-ray diffraction for the analysis of minerals. The microstructures of the individual artifacts were tested under both the scanning electron microscope, and an optical microscope to reveal the operations on the metal applied by the ancient smiths as presented here.

Pınar Ertepinar, Utrecht University

*Archaeomagnetism and the Dating of Architectural Remains at the site of Kültepe*

Archaeomagnetism – the study of burnt archaeological artifacts – provides with crucial information on the behavior of Earth as a geodynamo. Data collection pertaining to the past 5 thousand years has recently become comprehensive enough to allow the construction of regional paleosecular variation curves (PSV), which can be used as a powerful tool for archaeomagnetic dating. This poster presents the results of a series of full-vector archaeomagnetic experiments performed



on 13 sets of samples collected at the site of Kültepe. The data allows us to assign relative dates to inferred fire events at the site, and to conclude that these fire events were not all contemporaneous with one another, or with the abandonment of the site, as has been previously hypothesized.

Selin Küçük, İstanbul Teknik Üniversitesi

*A Step-by-step Protocol for Documentation and Archiving Using Digitization in Archaeology*

Accessibility determines the destiny of fields in a media-age, and so, archaeology, even if it has further physical limits, is indeed one of the many fields inevitably in need of digitization. Digitizing archaeological materials not only leads to accessibility. It also provides better conditions for the fieldwork by providing instant access to high-resolution prints, time-saving and the possibility of immediate revision. The methodology of digitizing archaeological drawings varies according to its practitioner. A key reason for this variability is the use of different kinds of vector-based and graphical software. Since staged repetitions are an inevitable part of the recording process, the discipline of the individual user to go forward step-by-step and control each iteration is key for producing as correct a digitization as possible. In this study, the methodology of digitizing hand drawings from the field is subject to detailed scrutiny. Individual steps proposed include high-resolution scanning, co-ordinate axis determining in vector software, importing axis grid to graphical software as a base for scanned hand-drawings, generating composite plans from hand-drawn materials on a coordinate plain, and exporting it to a vector software once again to complete digital drawings. Schematic drawings, 1:1 detailed drawings, longitudinal sections, and separation of historical layers can be effortlessly produced as a result of using this approach. Ultimately, the purpose of the present poster is to suggest a protocol that will help archaeologists extend their access to data by providing a general and easily followed algorithm for how to document finds through digitization.



Ryutaro Naruhashi, University of Tokyo (東京大学) and Kaoru Kashima, Kyushu University (九州大学)

*Holocene Paleo-environmental Variability as Reconstructed from a Wetland Sediment Record around the site of Kültepe from a Hand Drilling Study*

According to the archaeological evidence from Kültepe, the site was first abandoned around 1700 BCE; however, the cause of this abandonment is not clear. A hand coring survey undertaken within a 2 km radius of the main mound collected a total of nine core samples. Sediments in were obtained continuously from the upper Pleistocene to the modern-day era in three of the cores. This study aims to reconstruct the natural environment changes around the archaeological site of Kültepe during the Holocene by measuring grain size, magnetic susceptibility, and soil colors as proxy. The depositional facies of cores #2 (taken 500 m from the mound), #6 (1 km from the mound), #7 (300 m from the mound), and #8 (300 m from the mound) indicate the depositional system around the site is generally consistent with that of a river-floodplain regime, such as back marsh, abandoned channels, and other flood plain deposits that have accumulated through the Holocene. On the other hand, in core #9 oxidized colored flood loam shows thick accumulation, and it seems that it formed as part of an alluvial fan system. This suggests that the area around Kültepe is located in a border zone between floodplain and alluvial fan. Moreover in cores #7, 8 and 9 it is noteworthy that there are earthenware fragments appearing at a similar depth of 3.00 – 4.00 m.

Çetin Şenkul, Süleyman Demirel Üniversitesi, İsparta

*Holocene Environmental Change in Consideration of Fossil and Modern pollen analysis of Kültepe (Kayseri) Region*

The new data that will be obtained within context of the project presented on the present poster has the potential to make a great contribution to our knowledge of the paleo-environmental conditions of Central Anatolia during the Holocene. The project (which is centered on the site of Kültepe) has two main targets. The first target is to reconstruct the palaeo-climatic properties of the survey area during the Holocene period. In order to designate the fossil pollens, drilling cores



will first need to be taken from Engir Lake using Livingstone and Dachnowski corer drilling equipment. Then, so as to assess the pollen diagrams more accurately, pollen units around lake Engir will be taken in order to determine how much pollen has fallen on surface and on water. The second target is to reconstruct the paleo-climatic conditions of human impact on the natural environment and the paleo-ecological development within the survey area. To achieve this goal, functional plant types are used as indicator species. Moreover, changes that occur for the rates and patterns of vegetation, which will be determined by functional plant species, human activities on natural environment, and its impact on the natural environment, will be presented as part of the project.

Hiroshi Sudo, Okayama Orient Museum (岡山市立オリエント美術館)

*The Regional Interaction between Central Anatolia and other Areas in the 4th and 3rd Millennia BCE: New Evidence from the Archaeological Survey Project in Kayseri, Turkey*

Six seasons of the Archaeological Survey Project in Kayseri (KAYAP) conducted between 2008 and 2013 has registered 124 archaeological sites, and collected thousands of archaeological finds alongside extensive geographical data. Among the finds, the author has found examples of potsherds that share a number of features with the so-called 'Red-Black Burnished Ware' (RBBW) that is generally considered as diagnostic for the Trans-Caucasian Kura-Araxes culture. An examination of their color, surface treatment, and inclusions in the material clay suggests that it is highly possible to assign these wares to the RBBW category. Furthermore, the group in question has alternate chromatic patterns depending upon to the shape of the vessels, which is also a characteristic shared with the RBBW in Central and the Southeastern Anatolia. Finally, examples of Canaanite Blades found in the Kültepe excavations, as well as the KAYAP survey, seem to have been imported from Southeastern Anatolia. Together, this material presents new evidence for regional interaction between Central Anatolia and other regions in the 4th and 3rd Millennia BCE.



Gökçe Bike Yazıcıoğlu-Santamaria, University of Chicago

*Locals, Immigrants, and Marriage Ties at Kültepe: Results of Isotopic Analyses on Human Teeth from 2006-2008 Lower Town Excavations*

While there is no doubt that Kaneš was a cosmopolitan city, identifying the geographical background of the inhabitants of individual houses has remained a challenge, especially if archives are lacking. As part of my dissertation research, in which I proposed an interdisciplinary methodology for understanding the dynamics of immigration and cultural pluralism at Kaneš, I conducted strontium (Sr) and stable isotope analyses on human teeth from intramural graves in two areas of the Level Ib lower town. The diversity of  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios in this sample clearly demonstrates the presence of immigrants from multiple locations and allows the demographic reconstruction of mixed households, when combined with age/sex data, mortuary evidence, and contextual relationship of graves. To serve as geographical reference, snail shells were collected from 100 locations in central Anatolian settlement basins along the Kızılırmak River, and the analysis of a sub-sample yielded observable trends in the distribution of  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios. Accordingly, the birthplace of certain individuals in the Kültepe houses was identified as the high Anatolian plateau, while others pointed to an origin to the south of Kayseri, possibly the Amuq, the upper Euphrates or the Tigris basin. Moreover, the widely ranging oxygen and nitrogen values, which demonstrate variability in the sources of drinking water and different levels of meat consumption respectively, imply that transhumance or marriage ties with highland communities may have been part of residential mobility patterns at the city.

