Ceramics production and trade across the Great Hungarian Plain: Chemical analysis of Bronze Age ceramics from Békés 103 in Eastern Hungary

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ABSTRACT

The Bronze Age in Europe is noted for an increase in foreign interaction and trade, yet some areas show few signs of receiving non-local goods. Using chemical analysis of Bronze Age ceramic paste from the cemetery of Békés 103 and nearby clay sources, this poster seeks to investigate trade networks and exchange between the people of the site and other areas of the Great Hungarian Plain. Using LA-ICP-MS, we examine the extent of trade and the degree to which the community participated in the exchange of goods compared to other areas of the Great Hungarian Plain.

Combining new data with information from previously excavated ceramics, this project further explores the movement of ceramics on the Great Hungarian Plain by examining whether or not there are differences between graves in terms of acquisition and use of local versus non-local ceramics.

METHODS

By using Inductively Coupled Plasma Mass Spectrometry (ICP-MS), archaeologists can essentially learn more about the chemical makeup of ceramics. This archaeological method is used for identifying elements from the periodic table, with some restrictions, that are present in the samples and additionally showing the quantity of each.

To compare with the ceramic samples, clay core samples were first taken from the site of Békés 103 and the surrounding area around Békés County in order to learn more about the production of ceramics and trade within the Körös Region (Figure 7). Additionally samples were taken from around the Mures River in Romania (Fig. 2). The locations to where the samples were taken were strategically picked based off the modern and ancient locations of old palaeomargens and the amount of modern pollution affecting the water and surrounding soil. A small team composed of experts and students used a auger to remove clay, measure the depth of the hole, record the location of where the samples were taken from, and test the quality of the material. A total of twenty-nine samples of clays were taken, bagged, and labeled.

RESULTS

The 2015 ceramic samples were compared to an earlier set of samples run during 2013 (Riebe and Duffy 2014) from Békés 103 and five other sites on the Hungarian Plain (Fig. 7).

A Hierarchical Cluster Analysis (HCA) of the 2015 ceramic samples indicates that three of the samples are outliers from the rest (Fig. 8), including samples run during 2013. One of these sherds comes from a so-called “Swedish Helmet Bowl,” while the others come from typical burial vessels—an urn and a mug from separate burials. These sherds can be differentiated from the rest of the ceramics analyzed on elemental plots (for instance, Al and Fe) as shown in Fig. 9 and likely were obtained from more distant production locations.

Comparing the most recent sherd samples from Békés 103 to other sites (Fig. 7), does not provide an immediate indication as to where these vessels may have come from, although G7535 (Fig. 8) is similar to ceramics from the site of Turkev-Terhalom and might originate closer to the Tisa river valley.

Unfortunately, analysis of clay samples collected during 2015 has not yet been completed, but may shed further light on the production locations of these sherd. Soil samples (surfacal basis primarily) analyzed during 2013 do not provide good matches for individual site chemical signatures (Fig. 10), suggesting that more detailed analysis of clay samples in the vicinity of individual sites in Hungary may provide a better explanation for chemical variability as opposed to a geologically homogeneous environment.

CONCLUSIONS

With the data and analysis that we have so far, we cannot confirm that the people were sourcing clay from the nearby water sources. We can only assume that the people were most likely doing so. If the people were in fact using local clay, then they had no need to obtain any foreign-made ceramics, since they could produce their own. Three of the ceramic samples that were taken had a chemical signature that does not match the other samples. Even though the people had a nearby source of clay, these sherds demonstrate that trade was occurring and few people were in fact obtaining foreign-made goods. Our present assumption may change with further analysis, especially including more clay and ceramic samples in our data set.

REFERENCES


