

**COMPLEX, ARCHAEOLOGICAL, ENVIRONMENTAL
ARCHAEOLOGICAL AND ARCHAOMETRICAL ANALYSES
OF THE LATE BRONZE AGE SETTLEMENT AT DOMASZÉK-
BÖRCSÖK TANYA
(TUMULUS CULTURE)**

DATA TO THE MIDDLE AND LATE BRONZE AGE
OF THE SOUTHERN GREAT HUNGARIAN PLAIN.
RELATIONSHIP BETWEEN MAN AND ENVIRONMENT IN THE
DOROZSMA-MAJSAI HOMOKHÁT DURING THE BRONZE AGE.

PhD Theses

GÁBOR SÁNTA

Supervisor:

Dr. Pál Sümegi

University of Szeged
Department of Geology and Paleontology

Introduction

The goal of my work and PhD Thesis was a complex, archaeological, environmental archaeological, archaeometrical investigation of a selected Bronze Age site (Domaszék-Börcsök tanya) connected to the Late Bronze Age Tumulus Culture.

My research was aimed at getting new data to the problem of cultural change that occurred in the transition from Middle to Late Bronze Age. Furthermore, if it is possible, reconstruct the causes and the procession of this change, by a complete archaeological, geo-archaeological and archaeometrical analysis of a concrete settlement.

Methods

My methods included geo-archaeological, archaeological and natural historical ones: organic matter/carbonate content measurement in sediments, wet geochemical analysis, typology, analogic methods, seriation, local and regional settlement pattern investigation, XRF, PIXE, microPIXE, microscopy (stereobinocular and electronmicroscopy), etc. Anikó Tóth analysed the archaeozoological and Ferenc Gyulai the archaeobotanical material so I used their data in its context with similar finds. To lighten the problem I overviewed some unpublished Tumulus Culture material of the narrow area, and

investigated some questions and problems of the Middle and Late Bronze Age of the wider area (Vatya, Perjámos and Hatvan Cultures).

Location

The site is located in the eastern edge of Dorozsma-Majsai Homokhátság (next to the Tisza Valley). Its soil is sandy and weak. The soil has a bad water-bearing ability, the weather are prone to drought. Breaking up of this soil caused wind-blown sand, and tended to drop erosion the sandhills. There is no evidence of human activity before Middle Copper Age in the pollen sequence of Kiskundorozsma-Putri-rét core drill, so there was no settlements here in the Neolithic and Early Copper Age on the sandhills.

Environmental changes

I reconstructed the human environmental conversion from the Neolithic to the early Iron Age in the southeastern region of Dorozsma-Majsai Homokhát. From the late Copper Age human societies became the most important shapers of the landscape. There are evidences of cyclic deforestation and cereal pollen was detected. In the Koszider Phase (the latest period of Middle Bronze Age) a short (100-150 years) but strong cereal pollen maximum built up, which can be connected to the Vatya Culture. However, there aren't any known Vatya

settlements in the neighbourhood of the site. The nearest is about 30 km towards north-northwest.

At the end of the Koszider Period the first Tumulus societies appeared, and settled at Domaszék-Börcsök tanya. This pollen zone has the highest concentration of plantain (*Plantago*) in the core drill. There is another Late Bronze Age settlement in the area at the site Szeged-Kiskundorozsma Subasa (excavated on the rescue excavations of M5 motorway). This settlement is considerably younger (BD-Ha A, Pre-Gáva) than our investigated settlement at Domaszék-Börcsök tanya. Based on the finds, there is no connection (in time or people) between the two settlements. This Pre-Gáva society used the investigated area as pasturelands, but the presence of cereal pollens indicate the closeness of the settlement. During the later phases of the Late Bronze Age (from 1100 BC, Ha B) and in the Early Iron Age, quantity of cereal pollen dropped to zero, while that of heliophil weeds stayed high. This is attributable to the presence of pasturelands, a wide net of roads, but no arables here.

Dating the settlement by archaeological methods

I could estimate the age of the settlement more precisely than the cemeteries. Based on the analogies of the finds, especially from Szeged-Bogárzó and Dunaújváros-Duna-dűlő, I could determine the lifetime of the settlement Domaszék-Börcsök tanya from the Reinecke BB1 period (the late Koszider

phase), to the Reinecke BC period (maybe its earlier phase). The settlement was not inhabited at the end of the use of the Tápé-Széntégláégető cemetery.

Dating the earliest phase is based on some imports of Vattina and Perjámos Cultures and some considerably well dated pottery sherds (knot-legged jar and bowl patterned with prodded triangles, known types of Koszider period and Magyarád Culture) from features 1. and 425.

I consider the inhabitants of the settlement as the successors of the Vatyá Culture. There is an early Tumulus phase of this, which is correlated the Late Vatyá, and after it, the settlement developed continuously, but, with a lot of Vatyá characteristics. May this society be a community of Vatyá-Alpár group in the procession of cultural changing?

Model for cultural change

I made a model to explain the changes of the transition from the Middle to the Late Bronze Age. First works ascribed the appearance of Tumulus culture in the Hungarian Plain to a wandering from the Middle Danube Region (Bóna, 1958, 1992, Mozsolics, 1957, Kovács, 1975, Csányi, 1980, Trogmayer, 1975, etc.). Nowadays we consider that only small groups may moved here from the Middle Danube Region. In the Vatyá cemetery of Dunaújváros-Duna dűlő was discovered a continuously developing society from the Nagyrév to the Tumulus Culture. The 33, Vatyá-Rákóczfalva-Tumulus shaped burials fit into the

cemetery's order, and, the motifs and shapes of pottery are real successors of the Vatya-Koszider pottery (Vicze, 2011, 46, 139, Pl. 171-229.).

Late groups of Vatya (Vatya-Koszider) adopted the signs of the neighbouring cultures' material. This process is sign, that these groups' connections was tended more to abroad, as towards the centre of the Vatya. This process is the sign of the weakness or, disappearance of the inner cohesion in the Vatya's centralised tribal society in this period. The level of integration was low, but the level of interaction (e. g. trade of copper) was the same, or increased. I don't explicate here the evidences of centralised tribal structure of Vatya Culture (see Halstead-O'Shea, 1982, Reményi, 2003). Dunaújváros-Kosziderpadlás and Solt-Tételhalom was more important than other fortified tells based on their dimensions and the quantity (and quality) of the bronze and gold finds that came to light from their neighbourhood. Thiessen Polygon analysis was made to determinate the fortified tells' role (Fig. 102.). In the Mezőföld area there was a typical hexagonal settlement pattern caused by the equable distribution of goods (Christaller, 1933). There is no evidence that the line of tells along the Danube's right bank was a defensive line. This pattern was caused only by the geomorphological endowments.

In this time the data suggest that the biggest socio-economical entity of Vatya was the *tell* (centre) and its *oikumene* (periphery), sometimes (Dunaújváros) the centre's power was overdosed some next, small fortified tells. However, the plain and very similar material of Vatya suggest strong cohesion

and integration during the Vatya I-III period, which may be an evidence for a higher socio-economical structure above the tell settlements.

The assumed changes in culture and lifeways of Vatya was caused by the environmental-climatical changes (climate became cooler and wet) which was suggested by Pál Sümegei and Elvira Bodor based on the analysis of Sós-kút mid-Holocene sequence (Sümegei – Bodor, 2005). Plant cultivation was spread onto all lands which was cultivable at that age's cultivation level. If economy is stable only when it is growing, stagnation or recession may generated socio-economical problems in the surplus-depended Vatya. Surplus is needed to trade metal, metal is needed to stabilize the society – wars, or signs of ranking, bronze depots as the signs of the cohesion of society or the ability of the tribal aristocracy to call the gods or good spirits, and keep out the evil ones. They may started to convert plant foods into domesticated animals, and their lifeway from plant cultivation to animal husbandry (Halstead – O'Shea, 1982).

Lifeway

The inhabitants of Domaszék-Börcsök tanya's lifeway in the earliest phase of the Late Bronze Age was pastoralism. They bred more cow and sheep, and less horse and dog. The pollen data has strong evidence for deforestation and creation of open areas, not only on the banks and sandhills but in the river meadows. Approximately 30-50 % of total forest was logged down.

Domesticated animal stock has higher value than cereals, so the animals' trading value is higher, too. Live stock is easily saved in danger. In the days of surplus, animals were easily traded into metals or any other rare goods – copper, tin, bronze semi-products, gold or salt (Halstead – O'Shea, 1982). This lifeway was very successful.

Metal and trade

Archaeometallurgy is very important in my work. The measurements of 59 bronze artifacts was complemented in 2009 and, mainly, in 2010 (Ljubljana), and in 2011 (Debrecen). I have cleared the steps of metalwork in the Tumulus Culture and tried to reconstruct the trade roads. Arsenic and nickel as trace elements in the copper are common, accompanied by antimony and silver. Copper deposit of Dobsina (SK) contains a lot of gersdorffite (AsNiS), releasing As-Ni trace elements after smelting. This evidence suggest that the copper was traded from the former Felvidék (now Slovakia), or eastern Alps (Mitterberg), and maybe from the Bor-Majdanpek/Vaskő-Dognácska/Rézbánya area. On the Maros, people traded salt and gold.

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