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NON-DESTRUCTIVE ARCHAEOLOGICAL INVESTIGATIONS IN THE SÁRVÍZ VALLEY

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In the early 1990s the termination of the Hungarian Archaeological Topography (MRT) program conducted by the Archaeological Institute of the Hungarian Academy of Sciences (MTA-RI) was a great loss for Hungarian archaeology, because with that national scale, uniform, and systematic surveys for archaeological site identification came to a standstill. Thereafter, although without any unified methodological and spatial framework, it was primarily pre-investment field surveys and various local research programs that provided possibilities for topographical investigations. Nevertheless, due to the rapid development of geographic information systems and remote sensing techniques, it is timely now to reconsider the potentials and frames of site identification. As one step of that long journey we investigated the archaeological heritage around Sárszentágota within the frames of a joint research program launched together with Czech, Polish, and Slovakian colleagues. We used the methods of systematic archaeological field walking, and based on that geophysics and aerial photography. One of our goals was to make the first, experimental steps towards the establishment of common methodological frameworks.

In October 2012, we conducted a one-week extensive field survey in the Sárvíz valley in County Fejér as a co-operation between institutes of higher education, science, and cultural heritage protection from the Visegrád group countries (Workshop for Reading Past and Present Landscapes in Central Europe[1]) supported by the Visegrád Fund. The aim of the project was to reconsider the methods of field walking and place them on a common footing. Data obtained from archaeological finds discovered on arable fields – brought to the surface by soil cultivation – have always formed a basis for the identification of archaeological sites. The collection and location of these provides such a great amount of data that is very difficult to handle without the implementation of geographic information systems. This was also the case in the present survey, where we carried out an intensive, systematic assessment of a network of sites and their environment over large territories and interpreted the data obtained. In addition to the application of global positioning tools (such as handheld GPS devices), our goal was to provide archaeological data – of appropriate spatial resolution – suitable for predictive archaeological modelling, as well as for spatial and network analysis. The current Hungarian and commonly used methods of field survey do not always make these possible. The more accurate data recording, at the same time, helped the investigation and understanding of the pattern that, in different archaeological periods, in which parts of the landscape – or natural geographical environment – can one expect traces of human settlement.

Extensive field surveys are primarily conducted in such territories where, on the basis of past experience, one can expect traces of human settlement (e.g. small hills and high places along watercourses), and the artefacts discovered on the ground surface are generally gathered uniformly from the whole territory without any spatial division. Intensive field survey is a likewise widespread method, during which artefacts are collected in 10×10 or 20×20 metre grids set up in the field, and the spatial distribution of different periods is defined within a given site. Evidently, the former method is suitable only for the identification of sites and their outer boundaries, whereas the latter one represents such a spatial resolution that is unnecessary for the systematic investigation of large territories, thus it is primarily used to investigate the density of finds

[1] http://www.readinglandscapes.eu

within sites. One of the main questions of the research is whether one can create such an effective method that – besides an appropriate resolution – combines the benefits of both methods.

The 6×4 km wide area selected in the region of Felsőkörtvélyes belonging to Sárszentágota in County Fejér offered a good opportunity for the investigation of general issues that emerge at national level. During the systematic archaeological field walking, we collect artefacts brought to the ground surface by ploughing. These finds are important sources of information reflecting, among other things, changes in past human settlement, as well as the relationship between man and his environment. Abundance of finds, however, also represents a major problem for the gathering of data. The more accurately we record the sites where the artefacts are discovered, the more data we can acquire from them. Nevertheless, meticulous documentation requires a detailed field survey, which is so time- and cost-consuming, that over large contiguous territories it cannot be effectively undertaken. With the development of geographic information systems, however, it is also worth to reconsider the methodology, the extant and time-honoured methods of archaeological field walking. During the research we tried to develop a method that utilizes widespread and generally used methods of field walking,[2] provides spatial data, and enables an accurate and rapid surveying of large contiguous areas.

The basis for the examination was a 100×100 metre virtual grid projected over the survey area. The field survey was conducted by groups of four, walking parallel with each other along the North—South or East—West axis, covering the whole sample area. The 100×100 metre units of find gathering were not marked in practice, they appeared only on the handheld GPS devices of field surveyors. The spatial position of each artefact (pottery, debris, and visible features) discovered on the ground surface was recorded by GPS, and the finds were packed by 100×100 metre units that served a basis for the survey. This method

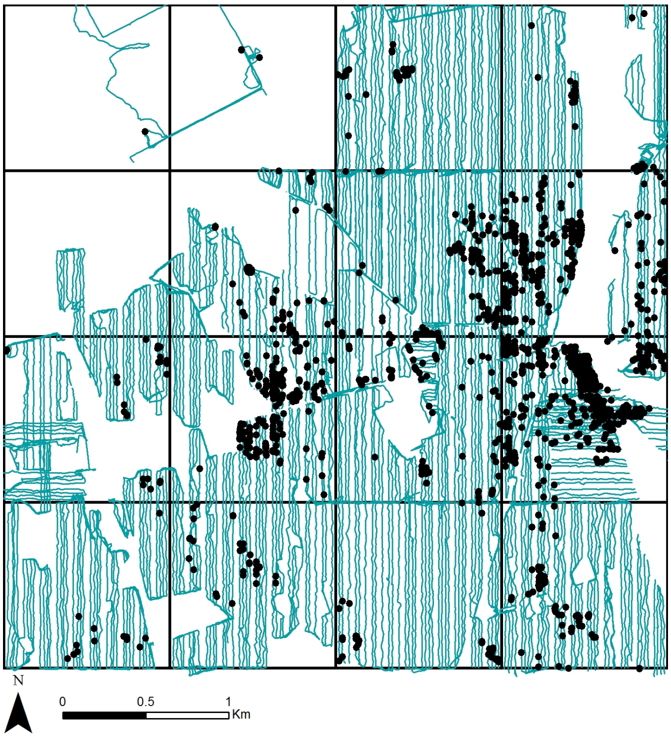

Fig. 1: The investigated area with the surface scatter of finds recorded with the help of GPS during the field survey

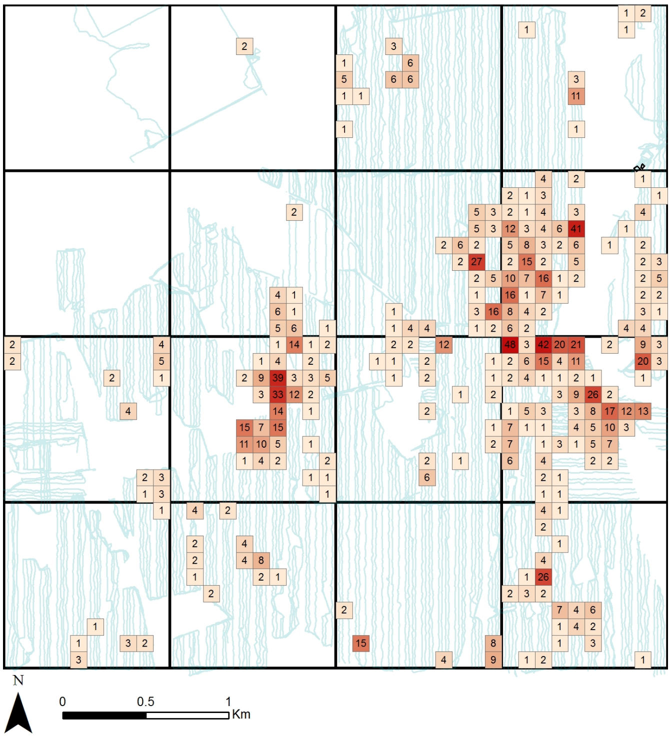

Fig. 2: The intensity (number of pieces) of the entire material in 100×100 metre units

[2] Jankovich-Bésán, Dénes: A régészeti topográfia helyzete és jövője (The state and future of archaeological topography). In: *A középkor és a kora újkor régészete Magyarországon* (Archaeology of the Middle Ages and the Early Modern Period in Hungary), eds Benkő, Elek – Kovács, Gyöngyi (Budapest: MTA-RI; 2010), 885–894; Barford, Paul – Brzezinski, Wojciech – Kobylinski, Zbigniew: The Past, Present and Future of the Polish Archaeological Record Project. In: *The Future of Surface Artefact Survey in Europe,* eds Bintliff, John – Kuna, Marin – Venclová, Natalie (Sheffield: Sheffield Academic Press, 2000), 73–92.

Fig. 3: Geophysical survey of the site of a Bronze Age hill fort (Piotr Wroniecki, Martin Krajnak, Marcin Jaworski)

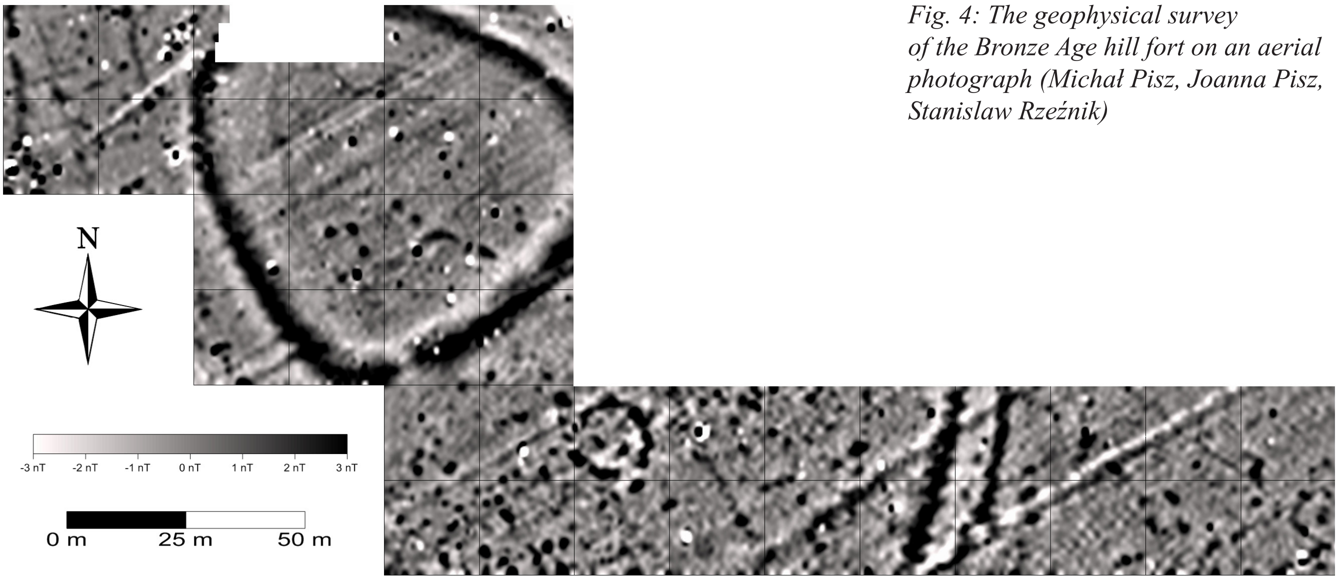

Fig. 4: The geophysical survey of the Bronze Age hill fort on an aerial photograph (Michał Pisz, Joanna Pisz, Stanislaw Rzeźnik)

made the work much more effective as a team of four could generally examine a 1 km^2 large territory within one working day depending on the density of features. The survey resulted in a dataset manageable by geographic information systems, which enabled not only to define the exact boundaries of sites, but also to create intensity maps of 100×100 metre resolution about archaeological periods within the sites. (*Figs. 1–2*)

In one week we carried out the systematic and complete field survey of a 13 km^2 large territory, and after dating the collected finds we could clearly outline areas inhabited in different archaeological periods. By the precise spatial delimitation of the dispersal of finds suggesting a major Bronze Age settlement, the sparse Copper Age and Iron Age finds, Roman material covering a large contiguous area, scattered Avar finds, Árpád Period finds suggesting dispersed settlements and a few late medieval finds, we made an important step toward the identification and interpretation of archaeological heritage in the territory.

In addition to the comprehensive field survey of the area, we gained more accurate information about the inner structure of sites due to geophysical measurements and aerial photographs prepared by our Polish and Slovakian partners on the basis of the results of field walking. We studied the Bronze Age hill fort and its environs, Roman buildings and roads by measurements of soil magnetic susceptibility and aerial photographs taken by a camera suspended from a kite. In the case of the Bronze Age hill fort a formerly unknown double trench showed southeast of the earthworks. The debris discovered on the Roman surface during field walking could be connected to buildings found beneath by geophysical measurements (*Figs. 3–4*).

Recommended reading

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