Archeologia e Calcolatori
19, 2008, 73-78

MAPPING RESOURCES. INSTANCES FROM THE CARPATHIAN BASIN

1. Introduction

Since the early instances of mapping in the Roman period (Tóth 2001-2002; *Balaton* 2002; http://aquincum.info/blog/paq-fejlesztes/tabula-peutingeriana.php) the production of maps and related information has always been of particular interest in Hungarian historical research (Fig. 1).

The first map with both archaeological and petroarchaeological information was compiled by Flóris Rómer on the occasion of the 8th International Congress of Prehistoric Archaeologists, held in Budapest, in 1876. It was the result of a cooperative effort, very much in the spirit of today's Web 2.0 community pages. In a series of articles "letters", Rómer, a pioneering personality in Hungarian archaeology, encouraged the learned public – lay persons and professionals – to help him collect evidence of prehistoric sites, occurrences of silex and obsidian tools (Rómer 1867, 1868). The results were published in the first obsidian distribution map, and has special scientific relevance for us as well (Rómer 1878; Biró 2005).

Maps have been a basic tool for archaeological and historical investigations ever since; through the use of geocoded open-access interactive mapping, there is a wide range of new possibilities ahead of us. In this paper a short summary of the current situation is given, with special regard to lithic analysis and the tasks in the near future.

2. Mapping resources on the Hungarian web

The starting point for map resources concerning Hungary could possibly be the server of the Department of Cartography and Geoinformatics (http://lazarus.elte.hu/index-e.html). The server is named after the cartographer of the first complete map of Hungary, Lázár deák (scribe Lazarus). The Department supplies a number of high-precision maps, including the afore mentioned one (http://lazarus.elte.hu/hun/maps/lazar150.jpg) and keeps track of the most important map servers all over Hungary. FÖMI (Institute of Geodesy, Cartography and Remote Sensing: http://www.fomi.hu/honlap/angol/) also serves aerial photography, orthocorrected in high resolution – much in demand by modern tendencies in land-use. Of course we all use generally available maps from Google Maps and Google Earth as well as the vector-based maps of the US Geological Survey (http://edc.usgs.gov/products/elevation/gtopo30/gtopo30.html).

Fig. 1 – Early mapping: representation of Lake Balaton on a Roman era silver plate from the Seuso-treasure.

Part of the maps are available in digital forms, but are not yet circulated freely on the web. Old cartographic data from the military surveys of the 18th-19th centuries are available on DVD (Tímár *et al*. 2006).

Special thematic maps are in circulation such as the Geological Map of Hungary in 1:100,000 scale (Gyalog *et al*. 2003) or the famous "puddle map" (Fig. 2, reproduced e.g. in Garam 2002), compiled after the military survey maps of the 18th-19th centuries, which attempt to reconstruct a "natural" landscape before the regulation of the rivers.

The vector-based digital maps are now available down to 1:10,000 from the complete territory of Hungary; however, they are very expensive and not allowed for public use.

3. Map-based archaeological and archaeometrical data resources from Hungary on the Internet

There are a great number of GIS based databases accumulated at various institutions, notably KÖH (Cultural Heritage Directorate) and the

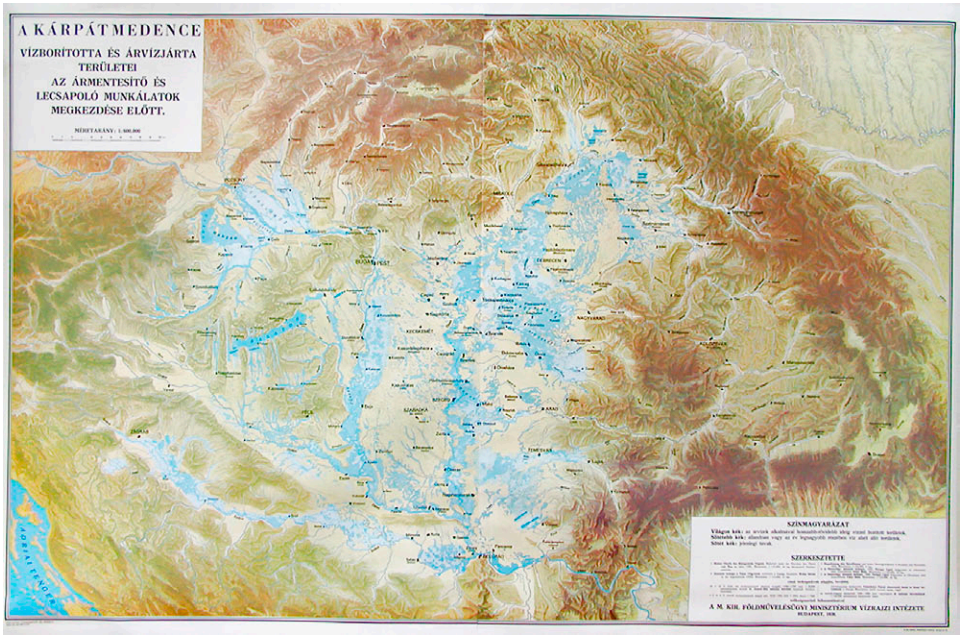

Fig. 2 – The "Puddle-map": reconstruction of hydrographical features before the regulation of rivers in Hungary. Constructed by W. Lászlóffy (1938). Courtesy of the Duna Historical Museum, reproduced after Garam 2002.

Archaeological Institute of the HAS on topographical archaeological data. The problem with these applications is that they are restricted to intranet or even personal professional use (Tóth, in press; *MRT* series). This is partly due to copyright problems, and partly to the actual danger of misuse, both in terms of IPR and criminal cases (looters).

The pioneering effort of the Budapest Historical Museum to serve map-based documentation data on the Internet on Roman Heritage Monuments (with Ingres RDBMS data on Mapinfo platform, Szentirmai 1996) declined after the compulsory data service period of the underlying grant expired. The system, however, has remained in local use ever since.

At the Hungarian National Museum, we are mainly concerned with providing provenance related information on lithics (Biró *et al.* 2004; http://www.ace.hu/litot/indexe.html) and other archaeological material with provenance data (Biró *et al.* 2004; http://www.ace.hu/atlas/). In a joint international effort, this aspect was extended to a wider Central European perspective (Hovorka 2000; http://www.ace.hu/igcp442/); however, these efforts were also stopped by the termination of the related project. More

recently, we have been involved in a project locating historical quarries (Balak 2005; http://www.ace.hu/schaf/). All of these initiatives had a dedicated web-page with many cartographical elements and underlying database. However, so far we have been able to supply only a "static" solution with thematical maps individually saved for a possible (and far from complete!) range of quarries.

Up to now, we have come closer to the idea of a shared mapping environment in the course of the Vörs project, funded by the Hungarian National Scientific Grant (OTKA T-046297, Biró, Holl, in press; http://www.ace.hu/vors/; http://www.ace.hu/vors/vorsintra/). The program concerned the interdisciplinary elaboration of a multi-period site in the SW corner of lake Balaton. We were using a project webpage with an intranet part where all details of the project – site map(s), aerial photography maps, old cartographic data, etc. – were made available for all partners. However, the data provided were not interactive. We still must organise all evidence in a map-based simple system for data analysis. We are planning to do it on MapInfo platform.

4. Future plans

In a Web 2.0 environment, it is possible to share knowledge – information, images, maps, etc. – in a common platform, to be read and/or edited by various people, from closed working groups to a wide range of professionals, even the lay audience. In Hungary, as elsewhere, the technical conditions are available, but there is difficulty in getting people to cooperate.

Currently, some systems are running and initiated. Most of them are in a germinal state but probably they will be open and accessible in the near future. A very good example is the interactive map supported database on historical gardens (http://www.tortenetikertek.hu/). In a multilingual environment, description, photos and maps of the most prominent Hungarian historical gardens are presented.

From the field of petroarchaeological applications, the project "Miss Marble" is a shared international database for marble provenance data; partly public, under development with GIS support (Zöldföldi *et al.*, in press; http://www.missmarble.info/).

In the framework of the Culture 2007 program of the EU, we are participating in the program on Historical Quarries. In this framework, we hope to convert in the near future our web-based data to an interactive geocoded map base.

Katalin T. Biró
Magyar Nemzeti Múzeum

REFERENCES

Balak M. 2005, *Erosion and Humidity: a Culture 2000 project for the study of building materials by scientific methods. An interim report / Erózió és nedvesség: kutatási program az építőanyagok vizsgálatára, a Culture 2000 program keretében*, in *Archeometriai Műhely/Archaeometry Workshop* (http://www.ace.hu/am/2005_1/AM-2005-1-MB.pdf).

Balaton 2002, *Balatoni térképek, avagy hogyan örökítették meg a Balatont a római kortól napjainkig a kartográfusok / Archive virtual exhibition of the Balaton Múzeum, Keszthely* (http://www.museum.hu/museum/temporary_hu.php?IDT=911&ID=723).

Biró K.T. 2005, *Gyűjtemény és adatbázis: eszközök a pattintott kőeszköz nyersanyag azonosítás szolgálatában / Collection-and-Database Approach in the Study of Lithic Raw Material Provenance*, in *Archeometriai Műhely/Archaeometry Workshop* (http://epa.oszk.hu/00800/00846/00005/pdf/AM-2005-4-TBK.pdf).

Biró K.T., Holl B. in press, *GIS application on a multi-period prehistoric site, Vörs-Mária-asszonysziget*, in *Proceedings of the XV Congress UISPP (Lisbon 2006)*.

Biró K.T., Dobosi V., Schléder Z. 2000, *Lithotheca II. Comparative Raw Material Collection of the Hungarian National Museum*, Budapest, Magyar Nemzeti Múzeum.

Biró K.T., Scharek P., Szakmány G. 2004, *Towards an atlas of prehistoric (non-metallic) raw materials in the Carpathian Basin*, in *Actes du XIV Colloque UISPP, Section 2 (Liège 2001)*, *Archeometry*, BAR International Series 1270, Oxford, Archaeopress, 57-60.

Garam E. (ed.) 2002, *Guide to the Exhibition of the Hungarian National Museum*, Budapest, Magyar Nemzeti Múzeum.

Gyalog L. *et al.* 2003, *Magyarország 1:100,000-es földtani térképe (Geological map of Hungary in 1:100,000 scale)*, CD, Budapest, Magyar Állami Földtani Intézet.

Hovorka D. 2000, *Internationales IGCP/UNESCO Projekt Nr. 442 "Raw materials of the Neolithic/Aeneolithic stone artefacts: their migration paths in Europe"*, «Archeologie Österreichs», 11, 2, 76-77.

MRT: *Magyar Régészeti Topográfia*, Series of Monographs published on regional archaeological topographic data according to districts, vols. I-XIII, Budapest, Akadémiai Kiadó.

Rómer F. 1867, *Első obsidian-eszközök Magyarországon (First obsidian implements in Hungary)*, «Archaeologiai Közlemények», 7, 161-166.

Rómer F. 1868, *Ó-kőkori eszközök Magyarországon*, «Archaeológiai Értesítő», 1, 3-8.

Rómer F. 1878, *Les silex taillés et les obsidiennes en Hongrie*, in *Congrès International d'Anthropologie et d'Archéologie Prehistorique VIII, Compte-Rendu*, 2, Budapest, 5-17.

Szentirmai K. 1996, *Aquidata adatbázis*, in E. Marton (ed.), *The Future of our Past 93-95. International Conference of Informatics*, Budapest, Magyar Nemzeti Múzeum.

Timár G., Molnár G., Székely B., Biszak S., Varga J., Jankó A. 2006, *Digitized Maps of the Habsburg Empire – The map sheets of the second military survey and their georeferenced version*, Budapest, Arcanum, 1-59.

Tóth E. 2001-2002, *The Roman Province of Dacia. The Road Network* (http://mek.oszk.hu/03400/03407/html/14.html).

Tóth J.A. in press, *HERMA; The Cultural Heritage Information System in Hungary*, in *On the Road to Reconstructing the Past. 36th CAA Conference (Budapest 2008)*.

Zentai L., *Térképek a web magyar részén* (http://lazarus.elte.hu/hun/moterkep.htm).

Zöldföldi J., Hegedüs P., Székely B. in press, *Interdisciplinary database of marble for archaeometric, art historian and restoration use*, in *37th International Symposium on Archaeometry (Siena 2008)*.

ABSTRACT

Publishing provenance data on the Internet requires the integration of various resources, some of them easily accessible, some of them costly and protected by various copyrights. Our work is based on thematical and archive maps, special fieldwork and research projects, data published in technical literature and stored in related databases. This paper will survey the accessible resources we use for creating an "Atlas" of prehistoric raw materials for the Carpathian Basin, both commercial and public domain elements and will concentrate on the additional new value as well as problems of continuous maintenance. New developments in supporting reference collections at the Hungarian National Museum will be discussed as well.