

SAVING THE PAST FOR THE FUTURE:

Archaeological Conservation and Exhibition Efforts at the Tell Site of Vésztő-Mágor

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Tells are exceptional archaeological settings, valuable not only for examining prehistoric developments but also for their potential to serve as centers of public engagement and education. However, methodological guidelines for how to preserve and present excavated trenches to the public currently are underdeveloped, particularly regarding tell sites. This paper provides the first comprehensive overview of the Vésztő-Mágor Conservation and Exhibition Program, an international collaborative initiative dedicated to preserving and presenting one of Europe's most unique archaeological features, an in situ excavation trench at the tell site of Vésztő-Mágor in southeastern Hungary. By exploring conservation and exhibition strategies for the trench at Vésztő-Mágor, the Program aims to develop a scientifically sound methodological model and set a precedent for similar preservation and engagement initiatives at other tell sites.

Keywords: tells, conservation, preservation, exhibition, Vésztő-Mágor

INTRODUCTION

Since the late 19th century, tells have been subject to intensive archaeological research due to their key importance for understanding long-term cultural developments and their high visibility as monuments in their respective landscapes. However, the thick and complex stratigraphy at tells makes their excavations extremely time-consuming and costly. Despite these massive efforts and expenses, the social utility of tell research rarely exceeds the close circles of specialists; the trenches are backfilled at the end of the excavation campaigns, and the results remain largely unknown to the general public. Therefore, the local and regional communities generally do not benefit from archaeological research at tell sites.

As spatially concentrated time capsules representing lengthy cultural trajectories, tells are ideal settings not only for exploring prehistoric developments; they also have the extraordinary potential to become centers of public engagement, education, and tourism. However, the critical first step in transforming these sites into public centers is missing. There are currently no established methodological guidelines for adequately stabilizing, preserving, maintaining, and exhibiting the fragile earthen profiles and features in excavated trenches at tell sites. The overarching question guiding the research program outlined below is: how can exposed trenches at tell sites be conserved and displayed in ways that maximize the social, cultural, and economic benefits for local and regional communities?

This paper focuses on the goals and methods of the conservation research and exhibition revitalization program carried out by an international and interdisciplinary team of archaeologists and conservators in an *in situ*, sheltered trench at the prehistoric tell of Vésztő-Mágor in Southeast Hungary.

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THE SITE AND THE *IN SITU* TRENCH

Encompassing an area of 4.25 ha and rising 9 m above a river terrace, Vésztő-Mágor is the largest tell on the Great Hungarian Plain (*Fig. 1*). Currently, the site includes two mounds that, in prehistory, constituted a single prehistoric tell.



Fig. 1: Aerial photo of Vésztő Mágor

Research at Vésztő-Mágor began at the end of the 1960's to explore both the Medieval Age monastery of the Csolt clan located on the southern mound and continued with Katalin Hegedűs's systematic excavations between 1972 and 1976 to explore prehistoric developments across the tell (FROLKING 2021; GYUCHA *et al.* 2011; HEGEDŰS & MAKKAY 1987, 1990; JUHÁSZ 2000; MAKKAY 2004) (*Fig. 2*). In more recent years, the Körös Regional Archaeological Project has carried out various geophysical investigations and excavations on the tell (PARKINSON *et al.* 2018; SARRIS *et al.* 2013).

These investigations indicate about 3,500 years of prehistoric occupation at Vésztő-Mágor. A total of 7 m stratified cultural deposits formed in the center of the tell, with the Middle Neolithic Szakálhát and Late Neolithic Tisza layers measuring up to 3.5–3.7 m, the Early Copper Age Tiszapolgár layers 0.9–1 m, and the Early/Middle Bronze Age Ottomány layers a maximum of 2 m (ECSÉDY *et al.* 1982, 183–187; HEGEDŰS 1977; MAKKAY 2004). Between the eleventh and fourteenth centuries AD, a monastery was constructed in the southern zone of the site, on top of the Bronze Age layers (JUHÁSZ 2000).

The tell and its 13-ha surroundings constitute the Vésztő-Mágor National Historical Park (henceforth referred to as Park) opened in 1982. The Park hosts about 12,000 visitors annually, which contributes significantly to the economy of the nearby farming town of Vésztő, home to 7,000 people.

During a two-week excavation in 1986, János Makkay dug a 19 x 4.5 m trench in the northern hill of the tell, with a depth ranging from one to four meters (MAKKAY 2004) (*Fig. 3*). This trench was specifically created for an *in situ* exhibition to engage visitors and provide insights into the complexity of the site's

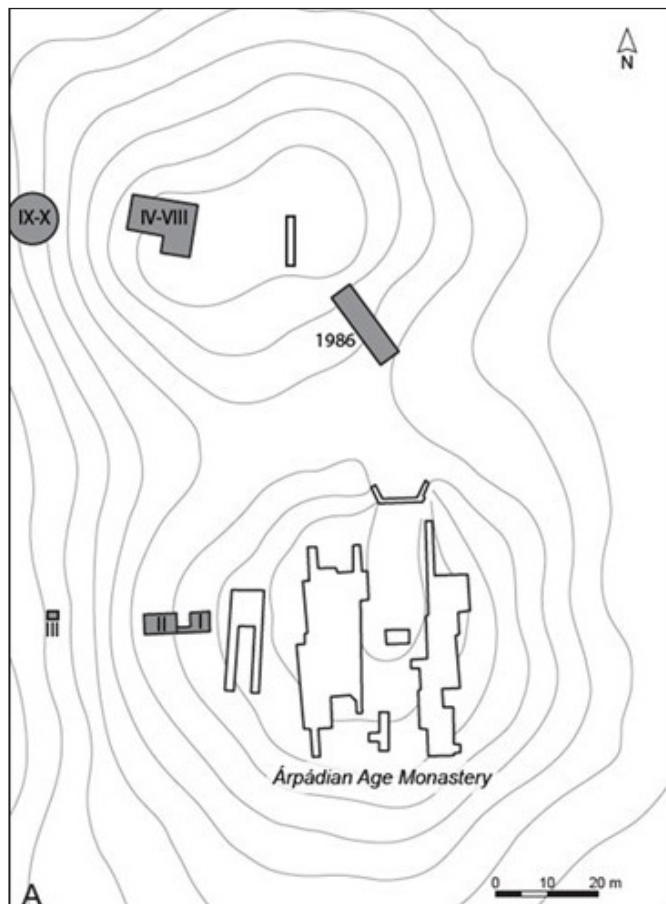


Fig. 2: Excavation trenches at Vésztő-Mágó, including the in situ trench indicated with dark grey color.



Fig. 3: The in situ trench in 2022 viewing from the south

archaeological layers and features. Numerous features, including house remains, burials, and various artifacts, were left exposed in their original locations and conditions to provide an authentic representation. Shortly after the excavations were completed, a permanent shelter was constructed to protect the trench and facilitate public access. To date, this trench remains unique in Europe: it is the only display setting where the entire, complex stratigraphy of a prehistoric tell, along with various archaeological features representing each occupational phase, can be viewed together in an accessible form under a protective structure.

THE VÉSZTŐ-MÁGÓ CONSERVATION AND EXHIBITION PROGRAM

Although the shelter has positively impacted the preservation of the trench overall, during the past decades, the exposed profiles have undergone significant deterioration: they have dried out, begun to crumble, and even partially collapsed in some parts. The extent of the damage required immediate action to preserve the archaeological heritage from further decay and to ensure this key element of the Park remains accessible to visitors. To address these issues, we established the Vésztő-Mágó Conservation and Exhibition Program (henceforth, Program) in 2021.

The Program builds on previous research efforts at Vésztő-Mágó and in the Körös region conducted by international teams, incorporating a heritage protection component of marked importance in their activities. To accomplish the Program goals, the directors of four research projects, including the Körös Regional Archaeological Project (Gyucha and Parkinson), the Prehistoric Interactions on the Plain Project (Riebe), the Bronze Age Körös Off-Tell Archaeology project (Duffy), and the Copper Age Settlement Project (Ridge) founded the Körös Consortium. They view the Program as their contribution to the development of the town of Vésztő, where their headquarters are based, and of the local community that have consistently supported their research in the Körös Region during the past decades.

Since the directors of the Körös Consortium lack expertise in conservation, in 2021, they invited specialists with extensive experience in preserving earthen architecture to join the Program. Lingle and Seifert gained their experience in addressing conservation challenges similar to those at the Vésztő-Mágor trench through their work at the Neolithic site of Catalhöyük in Anatolia (CAMPIONI *et al.* 2022; LINGLE 2023).

Alongside its primary goal of preserving the *in situ* trench at Vésztő-Mágor, the Program undertakes innovative, evidence-based research aimed at developing best-practice methodologies for the long-term conservation and exhibition of excavated tells across southeastern Europe. As the only trench in a tell in Europe that has remained exposed for several decades, Vésztő-Mágor serves as an ideal testing ground for refining preservation techniques and display concepts. The methods and resolutions developed at Mágor not only create new opportunities for archaeological research but also enhance the accessibility and understanding of the archaeological heritage for the general public, paving the way for similar conservation and exhibition projects.

PROGRAM SCHEDULE AND METHODS

To achieve these dual goals, the multiyear Program is composed of three consecutive phases. Phase I activities incorporate the stabilization of the *in situ* trench and conservation research to establish Phase II mitigation technologies and procedures. In Phase II, the shelter will be reconstructed, a climate control system will be installed, along with an environmental monitoring program to ensure the maintenance of ideal temperature and moisture levels as key factors in the lasting preservation of earthen architecture. Phase III will focus on the rejuvenation of the exhibition in the trench using advanced technologies to attract visitors and enhance accessibility. Although research-based conservation in the trench is the Program's top priority, we consider the systematic collection and analyses of archaeological data to be vital as well.

PHASE I



Fig. 4: The soil probes in the eastern profile wall

In Phase I, a major direction of conservation efforts is conducting research to gather environmental data from the trench, which will help determine the most suitable procedures and technologies for its long-term preservation. In 2021, seven dataloggers were installed across the trench to record changes in temperature and relative humidity over the years to come. In 2022, four soil probes were installed in the eastern profile to explore how moisture moves within the earth immediately surrounding the trench (Fig. 4). These data will be used to determine the technical parameters of a temperature and moisture control system that will ensure optimal preservation

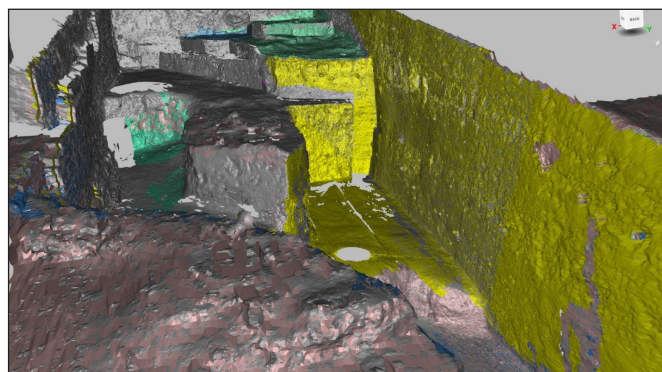


Fig. 5: Detail of a pointcloud generated by Arcted 3D scanning in 2023

conditions in the *in situ* trench, promoting its sustainable display. In addition, as part of the conservation efforts, 3D scanning is carried out that allows for quantifying material loss from season to season, as well as understanding deterioration rates of any applied conservation treatments (Fig. 5).

In sum, this multiyear quantifiable research is instrumental in receiving feedback on how any modification to the environment impacts the exposed and underlying sediments. This, in turn, enables the development of an effective conservation management plan, as well as the implementation of appropriate environmental monitoring strategies and programs.

Active interventions constitute the other key component of Phase I conservation efforts. Three four-week field seasons were completed during the summers of 2022 to 2024, with two additional seasons needed to complete Phase I activities. So far, the focus has been primarily on the most deteriorated northern section of the trench, progressing towards the central section (Fig. 6). To date, four main methodological approaches have been employed to stabilize the trench and ensure its long-term preservation. These approaches are as follows:



Fig. 6: The northern, most deteriorated part of the *in situ* trench prior to conservation efforts in 2022



Fig. 7: Cutting back profiles in the northeastern part of the *in situ* trench in 2022

Cutting back profiles. The goal of this method is to remove the dried-out, crumbling, and friable surfaces of the profile walls and to create smooth, vertical surfaces. This not only increases the stability of the profiles but also facilitates a more precise and visually clear presentation of their stratigraphy, thereby enhancing the visitor experience (Fig. 7). The target depth of the trimming varies depending on the condition of the earthen profiles; during previous field seasons, this depth ranged from 5 cm to as much as 40 cm, tailored to the varying conservation needs of different sections in the trench.

Constructing sacrificial support structures. These structures provide support for profiles experiencing severe basal deterioration, friable soil structure, and extremely poor retention. The support prevents accidents and further deterioration that could threaten the preservation of the entire trench and possibly the shelter (Fig. 8). These sacrificial support structures are built using mudbricks made of the tell's own soil by adding water, aged chaff, and perlite, with the original archaeological interfaces lined with geotextile (LINGLE & SEIFERT 2024). This method ensures permeability for moisture and soluble salts to pass through to the surface. The sacrificial support structures will be smoothed, and the archaeological layers and features documented during the Program will be reconstructed to enhance the visitor experience.

Protecting platforms. To mitigate erosion due primarily to moisture loss, a layer of geotextile is applied on platforms. The geotextile not only facilitates controlled moisture evaporation but also provides physical protection to the structure of the platforms. This geotextile layer is covered with soil sourced from the tell, serving a dual purpose: on one hand, it helps retain moisture, and on the other, it ensures visual uniform-



Fig. 8: Construction of sacrificial support structures in the northern section of the in situ trench in 2023

ity of the surface, thereby enhancing the aesthetic appearance of the platforms and the overall visitor experience.

Handling profile cracks. Cracks and gaps that have developed in the profiles are filled with a specialized injection mortar, which provides effective support in sections prone to collapse. The mortar used contains Paraloid B44 (a methyl methacrylate/ethyl acrylate copolymer), sieved soil sourced from the *in situ* trench, and perlite. This material not only ensures mechanical stability at critical points but also serves as a so-called „pillar support.” Due to its moldability, it can be adapted to the stratigraphy in areas where the use of sacrificial support is not feasible or appropriate, thereby preserving the integrity of the profile in its structurally most sensitive sections.

Additional conservation activities. Throughout the field seasons, staged artifacts in the trench are cleaned using deionized water and ethanol, and, if necessary, are restored. Features and objects that cannot be removed from the trench are cleaned and conserved in place. Finally, we undertake measures to address immediate deterioration risks within the trench, such as cleaning vents and replacing compact fluorescent lights that are causing significant thermal fluctuations.

Archaeological work is largely limited to cutting back dried out profiles across the trench. During the excavations, major periods of occupations were delineated based on the recovered materials and the vertical stratigraphy representing each major period. The layers belonging to these major periods are parsed into multiple stratigraphic groups. These stratigraphic groups contain multiple distinct deposits. In addition to excavation and documentation, a systematic sample collection program is conducted retrieving flotation, sediment, micromorphology, and C14 samples in order to better understand the development and use-history of the tell (Fig. 9). The data obtained during the Program will be summarized in a synthesizing monograph, which will provide a comprehensive overview of the development and cultural significance of the Vésztő-Mágor tell by integrating earlier and more recent research.

PHASE II: SHELTER RECONSTRUCTION

Maintaining a stable microenvironment within the trench is critically dependent on the structural integrity of the shelter, making its renovation a central focus of the ongoing conservation efforts, designated as Phase II of the Program. In 2022, a local structural engineering firm, Construct Plan Ltd., a long-standing



Fig. 9: Taking a micromorphological sample

partner of the Park, was contracted to conduct a detailed assessment of the shelter's current state. Due to the absence of original blueprints, their condition survey included a sondage to expose the building's foundation and evaluate its overall stability. The assessment revealed that, while the shelter is, in general, good structural condition, specific rehabilitation measures are essential to optimize the structure for maintaining consistent environmental conditions. Key issues identified for remediation include addressing water leakage, modifying the existing ventilation system, and installing a double-door entry.

In 2024, the engineering team was provided with the multiyear environmental data collected by the above-mentioned dataloggers and soil probes, allowing for informed engineering decisions that reflect micro-environmental trends within the trench. The comprehensive shelter reconstruction documentation—comprising blueprints for temperature, moisture, and air circulation control systems, along with an operational protocol and detailed cost estimates—is anticipated to be completed by early 2025. In collaboration with the Municipality of Vésztő and the Park, the Program will subsequently initiate the drafting of grant proposals based on these cost estimates to secure the necessary funding for the shelter's reconstruction.

PHASE III: EXHIBITION DEVELOPMENT

The Program is collaborating with the Park and Hungarian firm Pazirik Ltd. (www.pazirik.hu) to design a revitalized, cutting-edge exhibition within the trench, aimed at enhancing visitor engagement and providing new perspectives on the prehistoric heritage of Vésztő-Mágor. Given the trench's unique setting, it serves as an ideal space for integrating innovative interpretative approaches, maximizing educational and experiential potential. Pazirik Ltd. has developed a preliminary design concept and is working closely with Construct Plan Ltd. to define the technical specifications needed for the exhibition. Incorporating these specifications into the construction design documentation is a proactive measure to mitigate potential issues during implementation. The Program, in partnership with the Park, will offer expert advice, manage grant applications, and oversee project management to realize the exhibition. This collaborative effort seeks to ensure a seamless integration of architectural and interpretive elements, enabling the positioning of Vésztő-Mágor as an outstanding European site for the preservation and presentation of cultural heritage.

KNOWLEDGE TRANSFER: A KEY COMPONENT OF THE PROGRAM ACROSS PHASES

The Program is specifically designed to optimize knowledge transfer to both heritage professionals and the public, recognizing the critical value of disseminating insights and methodologies developed across each phase. This emphasis on sharing expertise is intended to support current and future professionals in establishing, preserving, and exhibiting *in situ* trenches at prehistoric tell sites throughout southeastern Europe.

Education remains central to our approach, providing students a rare, practical opportunity to engage directly in archaeological and conservation practices essential to *in situ* heritage management. By incorporating and training the next generation of heritage specialists, the Program fosters a cadre of professionals equipped to support the preservation and exhibition of tell trenches.

Another pillar of the Program's knowledge transfer strategy involves continuous engagement with the professional community and sharing our results broadly. Therefore, our findings and developments are routinely presented at prominent European and US conferences and workshops, accompanied by publications that disseminate the Program's conservation and archaeological results (LINGLE & SEIFERT 2024; DUFFY *et al.* under review; SEIFERT *et al.* under review).

Furthermore, in Phase III, we aim to further extend the the Program's impact by organizing workshops. These workshops to be held in Vésztő—inviting archaeologists and conservators with experience in tell excavations from Southeast Europe—are primarily intended to share practical knowledge and methodological approaches in the conservation of the *in situ* trench. Additionally, we will provide opportunities for professionals specializing in exhibition design to gain direct experience with the design and implementation strategies applied at the Vésztő-Mágor trench, thereby enabling them to further develop the professional skills and competencies necessary for *in situ* heritage presentation.

This comprehensive, interdisciplinary approach ensures that the knowledge and experience gained within the framework of the Program are widely disseminated to both professional and lay communities. It also contributes to enriching the professional discourse related to archaeological conservation and heritage preservation in Southeast Europe, supporting the spread and development of sustainable heritage conservation practices.

CONCLUSIONS

The *in situ* trench at Vésztő-Mágor, unparalleled on the continent, provides invaluable insights into the region's ancient past and holds remarkable educational potential. The conservation of the trench, paired with a revitalized exhibition and increased publicity as a result of Program activities, is anticipated to significantly enhance visitor numbers to the Park. The Park, as an important cultural center, is an integral part of the local community's life, playing a central role in its identity and the organization of regional events. The rejuvenation of the *in situ* trench further strengthens these functions, ensuring that the Park will continue to play a defining role in local and regional cultural life in the future.

The Program's methodological advancements extend beyond Vésztő-Mágor. These advancements will result in the establishment of best-practice guidelines for the preservation, conservation, and exhibition of excavated trenches at tell sites, addressing a notable gap in heritage protection and management. The application of the guidelines elaborated by the Program will allow other tell sites in southeastern Europe to become public engagement centers while maintaining their archaeological integrity. This approach not only supports the sustainable presentation of archaeological heritage but also contributes to strengthening the cultural identity of local and regional communities.

Moreover, by involving students in the project, the Program ensures the transfer of critical conservation knowledge to the next generation of heritage specialists who will be capable of leading similar efforts in the future. Program impact will be further amplified through on-site workshops with regional archaeologists, conservators, and exhibition designers, fostering a community of practice dedicated to the sustainable preservation and presentation of prehistoric tells. This integrated approach, built into every stage of the Program, ensures that Vésztő-Mágor's unique trench not only preserves history but also promotes a collaborative model for the preservation of tell sites across southeastern Europe.

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