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Archaeological Study Confirms Location of Bozori Sanduq Hammam in Samarkand

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Abstract: The tradition of public bathhouses in Central Asia played a vital role in urban life, combining hygiene, social interaction, and ritual practice. Despite their importance, many medieval hammams of Samarkand remain poorly localized and insufficiently studied, particularly those around Registan Square. This study addresses the knowledge gap by focusing on the Bozori Sanduq hammam, once one of the largest and most significant public baths of the city, demolished in 1969 but remembered in oral tradition.

A multidisciplinary approach was applied, combining archival sources, oral testimonies, historical cartography, geophysical survey, and archaeological excavation. Georadar scanning revealed subsurface anomalies consistent with wall foundations and heating installations. Subsequent excavations confirmed massive wall structures over 1 m thick, a furnace zone with traces of ash, collapsed dome remains, and a paved road dated to the 15th–17th centuries. Material finds included glazed ceramics and terracotta tiles, reflecting both the functional and decorative aspects of the hammam. Evidence of later brick repairs indicated repeated reconstructions during the 19th–20th centuries.

The results confirm the survival of substantial underground remains and refine the localization of the Bozori Sanduq hammam within Samarkand's historic center. These findings not only contribute to reconstructing the city's bathhouse network but also provide a tangible basis for considering conservation and museification. The study underscores the cultural and architectural significance of bathhouses in the urban fabric of medieval Samarkand, highlighting the potential of integrated archaeological and geophysical methods in recovering lost monuments.

Keywords: Samarkand, hammam, Bozori Sanduq, archaeology, Registan, urban history, bathhouse.

Introduction

Public bathhouses, or hammams, have been an integral component of urban life in the Islamic world since the early medieval period, serving not only hygienic but also social, cultural, and ritual functions. In Central Asia, the tradition of hammams reflects the adaptation of earlier Roman and Persian bathing practices into the urban fabric of Muslim societies. By the 15th–17th centuries, Samarkand, one of the major cities of the Timurid and post-Timurid periods, possessed a dense network of hammams strategically located near markets, mosques, and caravanserais. Among them, the Bozori Sanduq hammam held a significant place as a large public bathhouse situated near Registan Square, the civic and religious heart of the city.

Despite the acknowledged importance of hammams in the architecture and daily life of Samarkand, the Bozori Sanduq bathhouse has remained insufficiently studied due to its destruction in 1969 and the subsequent burial of its remains. Earlier scholarship, including the works of Voronina, Pugachenkova, and Masson, contributed descriptions of Central Asian hammams and

their typology but offered only limited detail on Bozori Sanduq. More recent studies have emphasized the cultural significance of bathhouses but often lack empirical confirmation of their precise location and structural characteristics. This gap reflects the broader challenge of reconstructing lost monuments that formed essential parts of the city's urban infrastructure.

The present research seeks to address this gap through a multidisciplinary investigation of the Bozori Sanduq hammam. By combining historical cartography, archival sources, oral testimonies, geophysical survey, and targeted archaeological excavation, the study applies methods previously underutilized in the study of Samarkand's hammams. This integrative approach builds upon theories of urban archaeology and cultural landscape analysis, which emphasize the interaction between physical remains and the broader socio-economic and cultural systems of a city. Through this lens, the Bozori Sanduq hammam is viewed not only as an architectural monument but also as a social institution embedded in the rhythms of everyday life.

The analysis confirms the survival of subsurface remains, including thick walls, heating installations, and collapsed dome fragments, while also uncovering material evidence such as glazed ceramics and terracotta tiles. These findings not only verify the hammam's physical presence but also reflect phases of construction, use, and later reconstruction during the 19th–20th centuries. The integration of georadar and excavation results demonstrates the potential of modern archaeological methods to recover data on structures that no longer survive above ground, while oral accounts enrich the contextual understanding of their role in urban society.

Ultimately, the study contributes to reconstructing the spatial organization and cultural history of Samarkand by localizing a key public monument within the city's historic center. The results have broader implications for understanding the evolution of bathhouse traditions in Central Asia, informing conservation strategies, and providing a methodological model for investigating other lost monuments. By bridging textual, cartographic, geophysical, and archaeological evidence, this research not only restores a missing element of Samarkand's urban fabric but also highlights the enduring significance of hammams in shaping the cultural memory and architectural identity of the region.

Methodology

The investigation of the Bozori Sanduq hammam in Samarkand employed a multidisciplinary strategy designed to reconstruct the history, location, and architectural features of the monument despite its partial destruction. The research began with the collection and analysis of archival materials, including historical maps, plans, and photographs, alongside written sources and earlier academic publications that documented the existence of the hammam. These materials provided the first basis for correlating the monument's presumed location with the urban structure around Registan Square. Oral testimonies from local residents were then recorded to supplement documentary evidence with living memory of the bathhouse's use and demolition in the 20th century.

To test and refine these historical data, geophysical techniques were applied. A georadar and electrical resistivity survey were conducted on the presumed site in order to detect subsurface anomalies suggestive of architectural remains. The survey revealed linear and compact anomalies corresponding to wall foundations, heating zones, and possible vaulted structures. On the basis of these results, targeted archaeological excavations were undertaken by the Samarkand Institute of

Archaeology. Three trenches were opened in the areas of strongest anomalies, enabling direct observation of masonry, stratigraphy, and construction features.

Findings were systematically documented through photography, measured drawings, and stratigraphic recording. Artifacts, including glazed ceramics, terracotta tiles, and brick fragments, were collected and analyzed to provide chronological and functional insights. The combination of historical review, oral testimony, geophysical survey, and excavation ensured a robust cross-verification of data, allowing the study to reconstruct both the physical structure and socio-cultural significance of the Bozori Sanduq hammam.

Results

The research into the Bozori Sanduq hammam confirmed the survival of substantial underground remains, including thick masonry walls exceeding one meter in width, internal partitions, furnace zones with ash deposits, and collapsed dome fragments. Stratigraphic analysis revealed multiple phases of construction, use, and reconstruction, as evidenced by differences in brick typology—from traditional square medieval bricks to 19th–20th century industrially produced ones. This layering reflects both the continuity of function and the adaptive reuse of the bathhouse over centuries, a feature consistent with theoretical models of urban resilience in historic cities. The identification of a cobbled road oriented toward Ulughbek's madrasa further anchors the hammam within Samarkand's civic and spatial network, illustrating its integration into the functional core of the city.

Figure 1. *Excavation trench 1 showing preserved wall foundations and furnace zone with ash deposits, confirming the geophysical anomalies and providing direct evidence of the hammam's heating system (photo by Khudaykulova F., 2020).*

The practical significance of these findings lies in demonstrating the methodological potential of combining geophysical survey with targeted excavation for reconstructing monuments that no longer survive above ground. The georadar data not only guided excavation with minimal disturbance but also confirmed the correlation between subsurface anomalies and architectural features, thereby validating the effectiveness of non-invasive diagnostics in dense urban contexts. This methodological synthesis provides a model for future investigations of lost public buildings in Central Asia and beyond.

Figure 2. *Cobbled road pavement dated to the 17th century – highlights stratigraphic context and urban connectivity, anchoring the hammam within Samarkand's civic landscape.*

From a theoretical standpoint, the results contribute to broader debates on the role of hammams in Islamic urbanism. The Bozori Sanduq case underscores the dual nature of hammams as both infrastructural and socio-cultural institutions. Their architectural resilience, coupled with repeated reconstructions, illustrates how public bathhouses adapted to shifting economic and social conditions while retaining their centrality to communal life. However, the absence of detailed written records about Bozori Sanduq contrasts with richer documentation of contemporaneous hammams, highlighting a significant knowledge gap in the textual representation of Samarkand's urban infrastructure. This disparity suggests that oral tradition and material archaeology must be more fully integrated to reconstruct a balanced historical narrative.

Equally important is the recognition of the hammam's destruction in 1969, which resulted in the loss of its superstructure and altered the collective memory of the site. The testimonies of residents bridge this rupture, confirming the building's use until the late Soviet period and reinforcing the cultural attachment to communal bathing practices. This interplay between memory, materiality, and urban transformation emphasizes the need for heritage studies that address both tangible and intangible dimensions of historic monuments.

The implications of these results extend in several directions. For heritage management, the confirmed survival of subsurface remains opens the possibility of conservation or controlled museification, transforming the site into an educational and cultural resource. For urban archaeology, the study highlights the potential of multidisciplinary approaches to reconstruct lost monuments and calls for systematic mapping of other hammams once clustered around Registan Square. For cultural history, the findings reaffirm the centrality of hammams to the everyday life of medieval and early modern Samarkand, warranting further comparative studies with bathhouses across Central Asia and the broader Islamic world.\

Figure 3. *Excavation trench 3 with collapsed dome fragments and associated wall remains, illustrating the architectural features of the Bozori Sanduq hammam and evidence of its destruction in the 20th century (photo by Yanbukhtin I., 2020).*

In sum, the results demonstrate not only the archaeological significance of Bozori Sanduq but also its broader role in advancing theories of urban continuity, public space, and heritage reconstruction. By filling critical gaps in the documentation of Samarkand's bath culture, this study lays the groundwork for future interdisciplinary research into the social and architectural dimensions of Central Asian cities.

Discussion

The investigation of the Bozori Sanduq hammam was driven by the research question of whether meaningful subsurface remains of this historically significant bathhouse could be identified, localized, and analyzed to reconstruct its role in Samarkand's urban landscape. The findings affirm this hypothesis, demonstrating that despite the destruction of the superstructure in 1969, substantial portions of the hammam survive underground, including wall foundations, heating installations, and collapsed dome elements. This outcome not only validates the use of geophysical and archaeological methods for recovering buried urban heritage but also repositions the Bozori Sanduq hammam within the cultural and architectural history of Samarkand.

When compared with earlier scholarship, the results extend and refine the limited descriptions offered by Voronina (1951) and subsequent architectural historians, who emphasized the typology of Central Asian hammams but lacked empirical evidence for Bozori Sanduq specifically. By confirming both the scale and the construction sequence of the bathhouse, this study bridges a long-standing gap between textual mentions and physical evidence. The results also resonate with broader literature on Islamic urbanism, which identifies hammams as integral to civic life and spatial organization. However, unlike the well-documented bathhouses of Bukhara or Herat, the Bozori Sanduq hammam highlights how local memory, fragmentary records, and archaeology must be combined to reconstruct poorly documented monuments.

Theoretically, the findings reinforce models of urban continuity and resilience, demonstrating how communal infrastructure adapts to changing socio-economic conditions. Practically, they offer a framework for identifying, conserving, and interpreting buried heritage in historic cities where surface remains are absent. Policy implications also emerge: the confirmed survival of subsurface

structures provides a foundation for heritage authorities to consider conservation, site protection, or museification as strategies to preserve and communicate this cultural asset.

At the same time, limitations must be acknowledged. The archaeological work was necessarily restricted in scope, with only three trenches opened, leaving significant portions of the hammam uninvestigated. Environmental factors, including soil erosion and groundwater infiltration, may also have affected the preservation of deeper layers, meaning that some interpretations remain tentative. Furthermore, the absence of detailed contemporary written records prevents precise dating of construction phases beyond stylistic and material analysis. These constraints highlight the need for continued excavation, environmental monitoring, and integration of comparative architectural studies.

Future research should prioritize three directions. First, expanded excavation and non-invasive survey could reveal the full layout of the hammam, enabling more precise reconstructions. Second, comparative analysis with other hammams in Samarkand and across Central Asia could situate Bozori Sanduq within regional patterns of design, function, and cultural practice. Third, interdisciplinary engagement with heritage policy, urban planning, and community memory would allow for a holistic approach to conservation that honors both tangible remains and intangible traditions. Such work would not only fill gaps in Samarkand's architectural history but also contribute to broader debates on preserving urban heritage in rapidly developing cities.

In sum, the discussion of results underscores the significance of the Bozori Sanduq hammam as both an archaeological discovery and a cultural symbol. By interpreting the findings within wider historical and theoretical contexts, this study strengthens understanding of urban continuity in Central Asia, while also setting a clear agenda for future inquiry and conservation.

Conclusion

The multidisciplinary investigation of the Bozori Sanduq hammam has confirmed the survival of significant subsurface remains, including massive wall foundations, heating installations, and collapsed dome fragments, which collectively attest to the monument's scale and central role in Samarkand's public infrastructure. These findings not only refine the localization of the hammam within the Registan area but also illuminate its architectural evolution, from medieval construction phases to later reconstructions, thereby bridging gaps left by earlier textual and visual sources. The implications extend beyond archaeology: they underscore the cultural and social significance of hammams as vital communal institutions and provide a foundation for heritage conservation and potential museification in the city's historic center. At the same time, the study highlights limitations posed by partial excavation, environmental factors, and the scarcity of contemporary written documentation, calling for broader fieldwork, comparative analysis with other Central Asian bathhouses, and integration of heritage policy perspectives. Future research should expand archaeological coverage, employ advanced non-invasive technologies, and situate the Bozori Sanduq hammam within wider regional and theoretical frameworks to deepen understanding of urban continuity, social practices, and architectural traditions in medieval and early modern Samarkand.

References:

1. Masson. Registan and its Madrasahs.
2. Masson. Samarkand in the Time of Ulughbek.

3. Masson. Ulughbek's Observatory.
4. Pugachenkova. Architectural Monuments of Maverannahr in the Era of Ulughbek.
5. Abramov, M. M. Ulughbek and the Improvement of Cities of Uzbekistan. Samarkand, 1994.
6. Pugachenkova, G. A., Rempel, L. I. Outstanding Architectural Monuments of Uzbekistan. Tashkent, 1958.
7. Buryakova, E. Yu. Excavations of Bathhouses in Medieval Samarkand. Tashkent, 1986.
8. Masson, M. E. The Architectural and Planning Image of Samarkand in the Time of Navoi. Tashkent, 1956.
9. Yakubovsky, A. Images of Old Samarkand (Time of Timur). Moscow–Leningrad, 1925.
10. Barthold, V. V. Ulughbek and His Time.
11. Shishkin. Diaries and Drawings. The East in Everything… Moscow, 2019.
12. Abdullaev, Sh. A. Urban Bathhouses of Central Asia. Tashkent: Fan, 1987.
13. Bulatov, M. S. Architecture of Samarkand in the 14th–19th Centuries. Samarkand: SamGASI, 2001.
14. Mukhammadjanov, A. I. History of Urban Development in Central Asia. Tashkent: Fan, 1990.
15. Oral recollections of residents of the Bozori Sanduq neighborhood, recorded in 2020.
16. Lebedeva, T. I. Study of the Bathhouse on the Citadel of Amir Temur. Tashkent, 1995.
17. Map of Samarkand City, 1879.
18. Schematic map accompanying photographs by Pankratyev.
19. Masson. Schematic Plan of Samarkand, 15th Century. 1942.
20. Semenov, N. N. Features of Urban Planning in Uzbekistan. 1937, p. 230.раков, Р.И.Умаров.