

RESEARCH METHODOLOGY AND DECISION-MAKING IN URBAN CONSERVATION - THE REVITALIZATION OF THE HERITAGE SITE TUTUNOVIĆ PODRUM, THE CENTER OF PALILULA MUNICIPALITY IN NIŠ

Abstract:

Urban heritage sites that have undergone radical spatial transformation present major challenges for conservation practice and urban planners. This paper examines the research methodology behind the revitalization project of the former Tutunović Podrum site in the Palilula municipality of Niš. Once the geometric and social centre of the district, the complex was largely demolished after the WWII, disrupting the historical logic. Through historical research and urbomorphological analysis, the study reconstructed the site's original spatial logic and revealed greater urban potential than previously assumed. The author therefore proposed a partial restoration of the historical spatial framework supported by partial reconstruction for museal interpretation of the site's historical layers. The paper shows how such approach can guide in the revitalization of historically disrupted urban environments.

Keywords: *historic urban landscape; research methodology; decision-making process; Palilula-Niš.*

МЕТОДОЛОГИЈА НАУЧНОГ ИСТРАЖИВАЊА И ДОНОШЕЊА ОДЛУКА У УРБАНОЈ КОНЗЕРВАЦИЈИ – РЕВИТАЛИЗАЦИЈА КУЛТУРНОГ ДОБРА ТУТУНОВИЋ ПОДРУМ У ЦЕНТРУ ГРАДСКЕ ОПШТИНЕ ПАЛИЛУЛА У НИШУ

Сажетак:

Урбано наслеђе које је претрпело радикалне просторне трансформације представља велики изазов како за конзерваторску праксу тако и за урбанистичко планирање. Овај рад разматра истраживачку методологију примењену у процесу ревитализације локалитета некадашњег Тутуновић подрума у градској општини Палилула у Нишу. Некада геометријски и друштвени центар овог дела града, комплекс је у великој мери срушен након Другог светског рата, чиме је нарушена његова историјска логичност. Кроз историјска истраживања и урбоморфолошку анализу реконструисана је изворна структура, и откривен битно већи урбани потенцијал него што се претпостављало. Аутор је стога предложио делимичну обнову историјског просторног склопа, и делимичну реконструкцију уз музеолошку интерпретацију различитих историјских слојева локалитета. Рад показује како овакав приступ може допринети ревитализацији историјски нарушених урбаних средина.

Кључне ријечи: *историјски урбани предео, методологија научног истраживања, процес доношења одлука*

1. INTRODUCTION

Urban heritage conservation nowadays recognizes cities as complex, multilayered landscapes formed through long-term social, cultural, and spatial processes. For decade and a half, contemporary heritage management frameworks the understanding environments, wordly historic urban landscape, as integrated wholes shaped by multiple historical layers [1] [2]. In this context, the **Historic Urban Landscape (HUL)** approach advocates for the conservation of urban identity through the integration of historic patterns with ongoing change [3], [4].

Many urban environments in Central and Eastern Europe experienced radical transformations in the twentieth century, particularly under politically driven planning regimes. These transformations often involved the demolition or replacement of historic urban fabric in favour of modernists, investors' urbanism or political development agendas. In such cases, the spatial coherence and historical continuity of entire districts were disrupted, leading to long-term fragmentation of urban identity [5].

The alteration or erasure of built heritage can be understood within the broader phenomenon of **urban memory loss**, in which political or ideological agendas displace existing spatial hierarchies and cultural references [1], [5]. In response to these challenges, researchers have increasingly argued for methodologies that combine historical investigation, morphological analysis, and policy evaluation as part of heritage-led urban conservation practice [6], [7].



Figure 1. *Void, identity, abonnement and devastation [8], [9].*



Figure 2. *Sport terrain with spectator stands counter-orientated and last remaining historic object with tower[10].*

The Palilula municipality in Niš presents a compelling case in this regard. In the late nineteenth century, the complex known as **Tutunović Podrum** emerged as a significant architectural and social focal point in the area. Its location, at the intersection of spatial axes linking important landmarks in the city, contributed to its role as both an economic engine and a **symbolic reference** for the surrounding neighbourhood. Subsequent development followed the morphological logic established by this complex, making it a central node in the formation of the urban fabric.

Following the establishment of the socialist regime after the Second World War, most of the physical structures associated with the Tutunović Podrum complex were demolished in the context of broader ideological urban restructuring. The removal of this spatial anchor disrupted the historical urban matrix, resulting in a prolonged period of functional decline and identity loss for the surrounding area. Earlier attempts to maintain activity on the site—such as the introduction of sports facilities—were insufficient to recreate the spatial coherence and social vitality formerly associated with the location (fig.1).

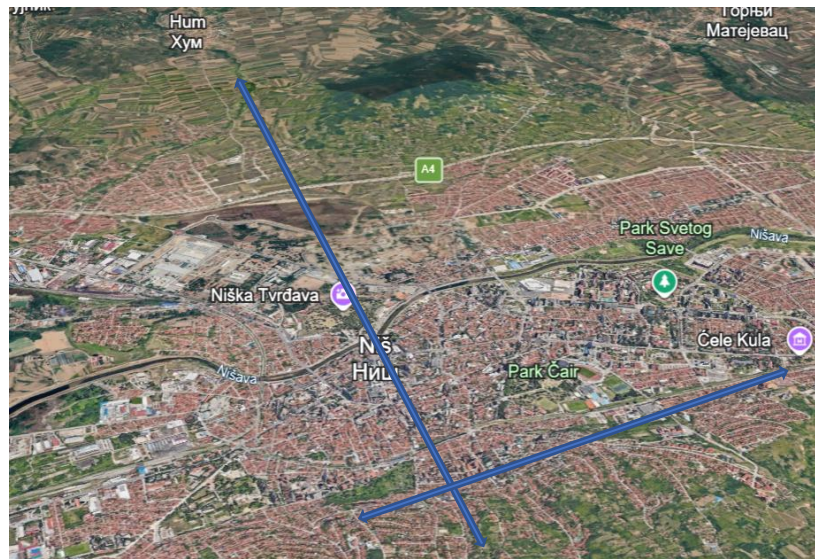


Figure 3. The complex Tutunović Podrum is located on intersection of extension of axis Humska čuka-Stambol gate of Fortress of Nish and east-west axe passing through Scull tower [11]; changes by author.

Recent research initiatives have sought to revisit the historical spatial logic of the Tutunović Podrum site, with an initial goal of limited restoration subsequently recognised as insufficient.

The present paper focuses on the research methodology and decision-making process that guides the site transformation (fig.2-3). Building on established principles from the Historic Urban Landscape framework [2], [3], the study combines historical research, urban morphological analysis, and interdisciplinary evaluation to reconstruct the spatial logic of the original complex and inform planning decisions. Through this case study, the paper demonstrates how systematic research can support urban conservation strategies that address both physical and symbolic disruptions in historically altered environments.

2. METHODOLOGY

The research methodology of this study was designed to investigate the potential for healing of the Tutunović Podrum site in Niš, emphasizing urban conservation principles and the recovery of collective memory. Recognizing that the site has been shaped by over 60 years of both civic and socialist urban history, the approach integrates historical research, urban morphological analysis, and decision-making evaluation into a coherent, interdisciplinary framework [1], [3], [6].

Historical Research and Archival Documentation (fig.4) marked the first stage [4,6]. It focused on reconstructing the original spatial and cultural configuration of Tutunović Podrum. Historical maps, cadastral plans, and archival photographs were systematically collected from both public and private sources, including municipal archives and private collections known to contain documentation of pre-war Niš. The study aimed to identify the morphological hierarchy, street alignments, parcel structures, and spatial relationships that had historically defined the complex and its surroundings.



Figure 4. Excerpt from archival documentation [8].

Photogrammetry was employed to capture lost elements. There were no high-resolution photographs from archival sources. Scarce photographs from private collections were georeferenced and processed using Agisoft Metashape Professional. Multiple overlapping images were aligned to produce dense point clouds representing both surviving and inferred architectural volumes. The techniques included Structure from Motion (SfM) to derive 3D spatial coordinates from 2D photographs and multi-view stereo (MVS) to generate detailed surface meshes. Historical photos were corrected for perspective distortions and combined with contemporary drone-acquired images, ensuring alignment with existing urban topography.

The dense point clouds generated through photogrammetry were imported into Autodesk ReCap and Blender to produce high-resolution 3D mesh models. These meshes formed the basis for architectural reconstruction, with careful attention to volumetric accuracy, roof geometry, proportions, and gate alignments. Reconstructed elements were cross-checked against historical maps, cadastral plans, and written records to ensure morphological and spatial authenticity.

In contemporary urban conservation, photogrammetry and 3D modelling are widely recognized as effective tools for digital heritage preservation, as highlighted by [6], [11], [12]. The 3D models served for visualization and a quantitative analytical tool. By overlaying historical and contemporary urban grids, the team assessed changes in street alignment, visual corridors, parcel morphology, and block relationships. Tools such as QGIS and AutoCAD Civil 3D enabled metric analyses. This integrative workflow aligns with current recommendations for evidence-based urban conservation [2], [13], [14] and allows a scientifically grounded justification for partial reconstruction, balancing historical authenticity, interpretative presentation, and contemporary functional needs.

Additionally, the research reviewed secondary literature on the historical and socio-economic role of the complex in the late 19th and early 20th centuries, emphasizing its dual significance as an economic facility and symbolic civic node.

Particular attention was given to references connecting Tutunović Podrum to the broader spatial structure of the Palilula municipality, including axes linking the site to the Niš Fortress and other historical landmarks [15]. Following the historical reconstruction, the methodology employed a detailed urban morphological analysis to examine changes resulting from post-war socialist interventions. This involved a comparative study of historical and contemporary spatial layouts, street networks, block formations, and the distribution of public spaces. Special focus was placed on identifying disruptions in spatial continuity, loss of historical reference points, and fragmentation of urban identity [6], [16].

Morphological analysis was complemented by on-site measurements, photogrammetric surveys, and visual documentation to capture the current state of surviving structures and open spaces. This step

allowed the research team to evaluate the potential for partial reconstruction and assess the compatibility of historic spatial relationships with contemporary urban requirements [1], [3] (fig. 5).

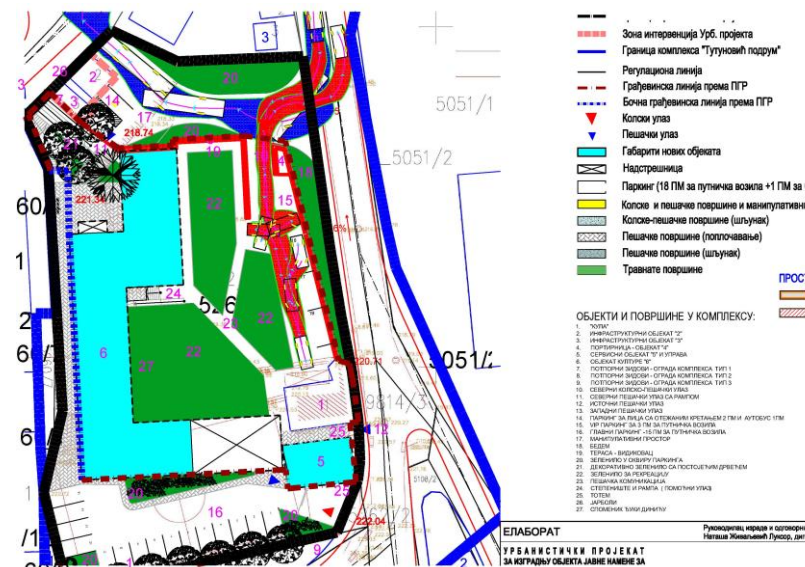


Figure 5. The research and the project were executed under the PE Institute for Urban planning Niš [17].

The third stage integrated findings from historical research and morphological analysis into a framework for urban conservation. Rather than pursuing full reconstruction, the methodology focused on a partial restoration approach based on verified historical data. This included the reconstruction of the surviving tower and other elements with documented forms, as well as the design of a museal setup to present multiple historical layers of the site.

This approach follows internationally recognized principles, including Historic Urban Landscape recommendations [2] which emphasize the preservation of cultural significance and historical authenticity while accommodating necessary contemporary interventions. In this context, the intervention aims to address both physical and symbolic voids, allowing the site to function as a centre for cultural engagement while respecting the layered history of Niš [4].

A crucial addition to the methodology was the evaluation of decision-making processes at the municipal level. Following the discovery of the full spatial and historical potential of the site, the municipal authorities were prompted to reconsider initial plans that had focused solely on restoring surviving physical elements. Research findings were presented to the city administration, demonstrating the broader significance of the site within the urban matrix and its potential role in revitalizing the district's identity if the scope of intervention extends.

The 4-step methodological framework described above enabled a comprehensive understanding of the Tutunović Podrum site, integrating historical authenticity, urban morphology, and contemporary conservation principles into the project design. The partial reconstruction, supported by museal installations, aimed to ensure that all historical layers—pre-war civic life, socialist interventions, and contemporary renewal—are respected and interpreted.

3. RESULTS / CASE STUDY: RECONSTRUCTION AND PARTIAL RESTORATION OF TUTUNOVIĆ PODRUM

The intervention at Tutunović Podrum represents (2025-ongoing) a unique example of urban intervention in Niš, combining architectural reconstruction with historical interpretation to restore spatial and symbolic significance.

The surviving tower building, the only remaining structure from the pre-war complex, was carefully reconstructed based on data from heritage institution. Historical photographs, archival plans, and comparative visual analyses were applied for the rest of the complex. Volumetric proportions, façade details, and entrance alignments were restored to match verified documentation, respecting the principle of minimum intervention and historical authenticity [3] (fig.6).

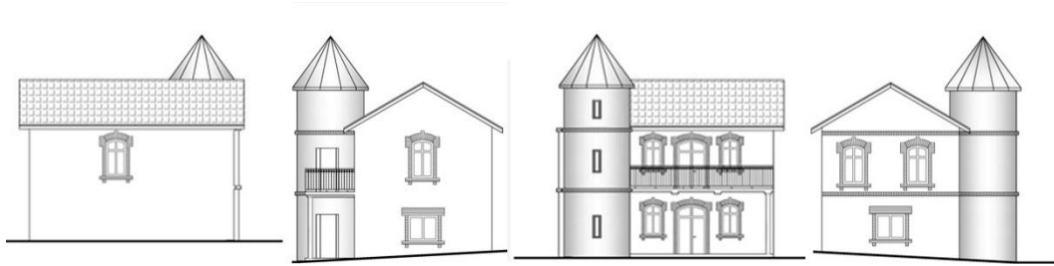


Figure 6. Reconstruction of the tower [8].

The surrounding open space, formerly a sports court with stands oriented away from historic sightlines, was reorganized according to genuine volume of Tutunović Podrum, to reinstate visual axes toward the Niš Fortress and surrounding historical landmarks.

This measure reestablished the tower's role as a civic visual anchor within the urban landscape, reinforcing the historic spatial logic of the Palilula municipality centre [4]. The alignment of pathways and pedestrian routes was carefully planned to restore connectivity with adjacent urban blocks, mitigating decades of spatial fragmentation and disconnection caused by the socialist-era interventions [5].

Most importantly, as a result of detailed analysis revealing a more complex spatial and cultural potential than previously assumed, municipal authorities were prompted to reconsider the scope of the intervention, expanding it from a modest restoration to a broader urban conservation strategy grounded in documented historical evidence and morphological understanding. Therefore, new facilities – identical to the originals in volume and urban relevance were incorporated into intervention plans (fig. 5).

3.1. INTEGRATION OF MUSEAL FUNCTIONS

Another key feature of the intervention is the incorporation of museal and interpretative functions, within new and restored facilities, ensuring that all historical layers—pre-war civic life, socialist-era transformations, and contemporary restoration—are represented and accessible to the public. The reconstructed tower houses a permanent exhibition highlighting the site's history, including its role in the local wine industry and social life of late 19th- and early 20th-century Niš. Temporary galleries and conference rooms are added to maintain continuous activity and public engagement, creating a dynamic cultural hub within the Palilula city-municipality.



Figure 7. The site of Tutunović Podrum currently hosts the monument to Đuka Dinić, the National hero of World War II [18].

By presenting multiple temporal layers, the museal strategy respects the principle of stratified heritage, acknowledging both civic and socialist histories without privileging one over the other (fig. 7). This approach mitigates the risk of a new urban memory loss, and instead fosters healing and reconciliation with the past, providing residents with a meaningful link to collective memory [3], [6].

3.2. URBAN AND SOCIAL IMPACTS

The intervention has begun to reverse the prolonged degradation of the Palilula municipality, restoring a sense of spatial coherence and identity, providing an opportunity that residents recognize the site as a central urban node, which had been absent for over six decades. Preliminary surveys indicate increased public interest, and a growing awareness of the historical and cultural significance of the area [1]. Rehabilitation of the surroundings by some well-informed private investors has already begun as response to the on-going public intervention.

By reinstating spatial hierarchies, sightlines, and functional relationships, the intervention reestablishes the site as heart of the Palilula municipality, providing a model for urban conservation in post-socialist contexts [16], [4]

4. DISCUSSION: URBAN MEMORY, HEALING AND MULTI-LAYERED HERITAGE

Re-evaluation of original intentions regarding the intervention highlights the importance of evidence-based decision-making in urban conservation projects, ensuring that interventions are justified by research rather than solely by political or financial considerations [5], [6]. The process demonstrates how detailed methodological work can influence policy and guide responsible conservation interventions, bridging the gap between theoretical recommendations and practical urban planning.

The case of Tutunović Podrum illustrates how urban interventions can serve as mechanisms for healing and reconciliation with the past [1], [3]. Unlike the post-war socialist-era interventions, which sought to erase existing civic memory and impose ideological narratives, the current restoration emphasizes the acknowledgment and presentation of multiple historical layers. By incorporating pre-war civic functions, adjusted to contemporary needs, socialist-era transformations, and contemporary architectural interventions, the project exemplifies a methodology of layered heritage conservation [2], [3], [6].

The project respects historical authenticity, integrates museal interpretation to present multiple layers of heritage, and reestablishes spatial and social connections that had been disrupted. This approach demonstrates that urban conservation has the potential to facilitate a process of recovering collective memory and urban identity.

The integration of museal functions, interpretative design, and public programming allows the site to become a living cultural node, facilitating social engagement [2], [4]. The project therefore addresses physical and emotional gaps, counteracting decades of spatial fragmentation, social disengagement, and historical amnesia [1], [19].

5. CONCLUDING REMARKS

By reinstating key architectural elements, visual alignments, and spatial relationships, the project reconnects the site to its historical and symbolic significance, reactivating its role as the geometric and civic centre of the Palilula municipality.

The intervention also establishes a precedent for layered urban conservation in Niš, an approach rarely, if ever, applied locally. Through the integration of museal programming, conference facilities, and temporary exhibitions, the project preserves the multiplicity of historical experiences without privileging one layer over the others. This strategy ensures that the site remains socially relevant, resilient, and culturally instructive, offering a model for other cities facing similar challenges of politically motivated urban erasure [14], [19].

Ultimately, the Tutunović Podrum project demonstrates that urban conservation is a methodological and ethical endeavour. When adequately executed, it allows cities to reclaim lost memory, reconcile with the past, and restore identity, reinforcing the importance of collective memory in shaping resilient, meaningful urban spaces.

ACKNOWLEDGEMENT

This paper is based on the author's own research conducted while serving as the team leader responsible for the preparation of the urban-architectural design commissioned by the City of Niš, Serbia. The work was carried out under the auspices of the Public Enterprise Institute for Urban Planning Niš, authorized for the preparation of the planning documentation in 2025. The author further developed ideas presented in a lecture delivered at the **Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka, Republika Srpska** on October 16th, 2025.

The discussion with faculty members and students contributed to the refinement of the research methodology presented in this work.

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