GAMIFIED PASTS: POTENTIAL OF URBAN AND SOCIAL INFRASTRUCTURE IN BALKAN CAPITALS TO SUPPORT GAMIFIED HERITAGE PRESENTATION – CASE STUDY SKOPJE

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_ Milja Mladenović

PhD, Postdoctoral Research Fellow, Center for Advanced and Postdoctoral Research - University "Ss. Cyril and Methodius" (CAPRIS UKIM), Skopje, North Macedonia, milja.mladenovic@capris.ukim.edu.mk [0000-0002-3988-0186]

ABSTRACT

The New Heritage Paradigm promotes interactive, gamified, and user-oriented approaches to heritage presentation, redefining how historical cities are experienced. Raising interest in urban heritage, which supports identifying the inhabitants and visitors with the multiple pasts of the cities, calls for new methods of heritage presentation that bridge entertainment, education, tourism and urban design. By integrating urban landscapes, both tangible and intangible heritage elements into dynamic interpretations, cities can assume roles traditionally fulfilled by museums. This approach enhances in situ engagement with urban heritage and fosters reconnecting urban spaces with their historical pasts in a gamified and interactive manner.

This research explores Skopje's urban infrastructure to evaluate its potential for supporting gamified heritage presentations. Combining traditional site analysis, from land use and urban functions to accessibility and safety, with new analyses explicitly aiming at the city's potential to communicate heritage through digital media, such as internet coverage, or proximity to active attractors of the younger population, as well as visibility of heritage elements, this research shows how the equipment and infrastructure of public spaces have the potential to transform cities into storytelling playgrounds.

The findings reveal how urban functions and public space infrastructure can facilitate immersive storytelling and interactive urban design. By demonstrating the potential to merge heritage interpretation with urban planning, this study offers a novel approach to revitalising historic urban landscapes while supporting education, tourism, and community engagement.

KEYWORDS _ *Interactive urban design, gamified past, urban heritage, edutainment, digital infrastructure*

INTRODUCTION

Gamification of urban spaces offers an interactive approach to engage with cities and their heritage. This paper examines how Skopje's public spaces can support planning and urban design for gamified environments, transforming heritage site interactions and treating public places as educational playgrounds. The methodology merges traditional urban analysis- land use, spatial distribution, and user profiles- with an interpretive layer evaluating the visibility, accessibility, and digital connectivity of heritage sites to assess their potential for gamified presentation.

The paper is divided into three sections. The first section is the literature review of crucial concepts that help place gamification into urban design, while linking it to heritology and the interpretive principles of the New Heritage Paradigm. This section will introduce the concept of gamification and its spatial impact, which is significant for planning gamified places of interaction with heritage.

The second section is the urban analysis of Skopje's historical core. This section connects heritage sites to urban infrastructure and existing gathering places, with the exemplary focus on the Ottoman heritage. It discusses how to gamify areas with multiple heritage sites, making them attractive to a broader range of users. Cultural and educational institutions are linked with heritage sites as spatial carriers of historical information. When connected to a network of parks and recreational spaces, these elements form a site-specific relationship between different uses of space, enhancing the potential for gamification. Finally, internet coverage in the observed area is analysed by mapping public internet coverage via open network databases to identify locations that could support seamless gamified presentation areas. The subsequent third section provides an overview of the three zones identified in the previous section. It defines optimal gamification principles for heritage presentation based on the differing existing values of public spaces in the three zones: Macedonia Square and its immediate surroundings, the Old Bazaar, and the University complex. This section proposes the potential for gamification regarding the visibility of heritage sites within the public space.

The results of this research propose a new analytical aspect of communicating Skopje's urban heritage in a gamified manner, grounded in the spatial characteristics of the surrounding public space. This aspect reflects the distinct narratives emerging from each analysed zone: a space of multicultural heritage (Old Bazaar), a space of multitemporal layering (Macedonia Square), and a space of gamified education (University complex). This differentiation allows for tailored approaches to gamification, highlighting how public space characteristics and functions influence the storytelling capacity of urban environments.

BACKGROUND RESEARCH

The New Heritage Paradigm proposes new ways of interpreting heritage beyond traditional monuments and sites, presenting it in an easily understandable and attractive way for a broader range of visitors. (Moscardo, 1996). Specifically in the context of historical cities, the expansion of values and information from cities preserved in a singular moment in the past into cities as spaces of multiple pasts (Ashworth, 1997) opens a requirement for new ways of identifying, interpreting and presenting complex, cumulative heritage (Bartolini, 2013).

Extending space beyond its physical limitations into the virtual realm enables adjusting the type of information conveyed to each user group. When communicating heritage within public space to younger users, *gamified environments* become spaces that use the city as a background for presenting digitised information (Qabshoqa, 2015). To engage visitors in interaction with heritage sites in cities, gamification fulfils Kalay and Marx's principles of establishing a "*place within cyberspace*" by enabling presence in multiple times and realities, memorable experiences, and diverse experiences (Kalay & Marx, 2005). Defining interaction with heritage as an attractive collective experience in the public space of the city, the "*continuously elitist attitude*" of traditional spaces of museums (Krstović, 2021)

shifts to a more democratic interaction in terms of requiring previous knowledge for interacting with heritage, predetermined narrative, or selectivity within a variety of pasts (Cheshmehzangi, 2021).

Expanding interaction with heritage from museum spaces into open public spaces of the city, squares, parks, and streets takes over the role of the museums (Vinson, 2001) and brings heritage interaction into everyday life through common places of the community. Extending from museums into public spaces of the city, the interaction with heritage becomes the question of urban design. Optimising interaction with heritage as an entertaining experience, or *edutainment* by following principles of behaviour in video-game environments (Malpas, 2007), interaction with heritage through gamified ambiences proposes an overlap between physical spaces, heritage data, and digitised models that convey the interaction between visitor/user and heritage site (Champion, 2014). This principle further raises the question of the link between physical public spaces, their multiple pasts that should be interpreted under the New Heritage Paradigm, and the digitisation of heritage sites in a user-oriented way.

CASE STUDY: SKOPJE

Skopje's urban heritage and its gamification potential

Although Skopje has a long and layered history, its urban centre has gradually shifted through time, ultimately settling along the banks of the Vardar River, where the city's fortress, Old Bazaar, and main square are now located (Marina and Penčić, 2009). The present-day city centre contains heritage strata from the Byzantine and medieval periods, with remains preserved in situ at the fortress, while other elements marking the period—particularly monuments—are dispersed along the southern bank of the Vardar. The Old Bazaar and its immediate surroundings are predominantly associated with Ottoman urban heritage, both tangible and intangible, with its traces still visible in the winding streets, clustered shops, and religious structures embedded in today's urban fabric. The succeeding period, marked by liberation and the westernisation of Macedonia, is represented more sporadically throughout the city.

The newer periods of heritage in the city are related to the 1963 earthquake and the modernist rebuilding of the city that followed. The partially and fully destroyed buildings of the urban core represent traces of urban memory that can be revived through gamified heritage interpretation and compared to the subsequent phase of the modernist reconstruction and plans for modern urbanisation of Skopje. As this final modernist state of Skopje's development is embedded in the residential and commercial zones of the city, the exemplary focus of tracing 'gamifiable' heritage is on the Ottoman period and its resonance within the contemporary structure of the historic urban tissue (Fig.1).

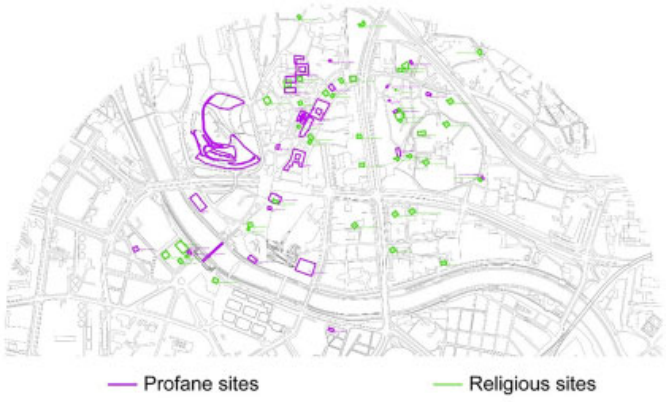

Figure 1: Ottoman heritage sites in Skopje

In the context of gamifying heritage sites, available data about the past, such as maps, drawings, stories, diaries, and other sources, can be combined and integrated into a storytelling gamified environment that utilises precise locations and remains of heritage sites as physical anchors for virtual play (Mladenović & Živković, 2023). This approach allows digitised data about Skopje's named historical periods to enhance interactions with heritage sites in gamified virtual and mixed-reality environments. Each period's characteristics improve narrative design in interfaces that blend role-playing interactions with augmented historical settings or guide users through quizzes and trivia. By connecting various periods and sites, these environments can link fortresses, bazaars, squares, and surrounding areas by theme, period, or predefined user preferences in storytelling networks of urban heritage.

Skopje's urban infrastructure for gamifying heritage sites

When defining the optimal kind of gamification, it is necessary to know how users are already attracted to each observed space. This is researched through a site analysis of the historical core, focusing on existing gathering spaces, narrowed to those related to heritage presentation, and the ones that gather younger users. As an analysis-specific aspect for gamification, Skopje's urban spaces are observed through their internet coverage, helping data stay in the virtual realm while being accessible through devices around the city (Fig.2).



Figure 1: Aspects of site analysis: cultural institutions, educational institutions, parks, WiFi hotspots

The dense network of cultural, religious and public institutions in the observed area of Skopje's historical core is mainly situated in the Old Bazaar, and sporadically within the modernist blocks built after the 1963 earthquake. Their location in the Bazaar area, filled with heritage sites and historical ambience, influences the gamification character of heritage interpretation. Cultural heritage institutes, churches, mosques, galleries, and museums are, by their character, spaces of cultural continuity and can serve further as spaces for conveying heritage information through gamified environments. As potential stakeholders and spatial anchors of virtualised gamified environments, these institutions and sites represent locations where interaction with spatial information can occur in mixed reality, utilising physical buildings as places where the user's attention is brought to physical space.

Educational institutions in the urban fabric are the core attractors of younger users. Gravitating around schools and faculties, gamified zones can attract the existing users of the space and offer a new, digitised level of communication with the public space. The dispersion of educational institutions in relation to heritage sites is mainly placed within the walking distance of cultural institutions and heritage sites, making the connecting zones of educational institutions familiar spaces that can support an additional level of information, interpreted entertainingly. Linking gamified environments to schools enhances the socialisation of younger users through a familiar interface while placing digitised spaces within the broader socio-historic context of the city. This approach complies with the New Heritage Paradigm and promotes users' identification with the city by treating urban spaces as interactive educational playgrounds where users are present and motivated (Moscardo, 1996).

Parks within the historical core are identified in the four locations: the park of the Skopje Fortress,

the Women Warrior Park near the main square, urban greenery surrounding the University complex, and the riverside greenery on both banks of the Vardar River. While urban greenery does not in its own right contribute to the gamification of public spaces, it marks the pedestrian, safe areas where younger users can independently interact with space, and where the potential hazard of focusing on space through a device is minimised.

The internet coverage of urban areas through WiFi hotspots is necessary for seamlessly interacting with gamified environments through personal devices, as identified via a mapped database of open networks (WiFi Map application). The significance of open networks concerning the New Heritage Paradigm is in democratising heritage sites and enabling publicly accessible means of interacting with heritage (Mladenović, 2023). The mapped data shows a higher concentration of open networks in the commercial zone surrounding the Macedonia square, and the coverage extending on a smaller scale into the Old Bazaar. Considering this spatial situation of digital infrastructure in Skopje, the Macedonia Square can be utilised both as a compact point of communicating heritage in a gamified trivia-like storytelling about the city, anchored in the monuments and hidden sites in the square. At the same time, it can also be a starting point for downloading and beginning a city exploring game in a quest-based interface that can create a network of all heritage sites and gamified spaces in Skopje's historical core.

These aspects of site analysis reveal three potential zones for gamification near cultural institutions, heritage sites, educational institutions, and parks with open internet networks. The zones are Macedonia Square and its northern counterpart on the Vardar River, the Old Bazaar area, and the University complex (Fig. 3). Despite being a rich heritage site and safe for public use, the Fortress is excluded from further analysis due to a lack of public internet coverage.

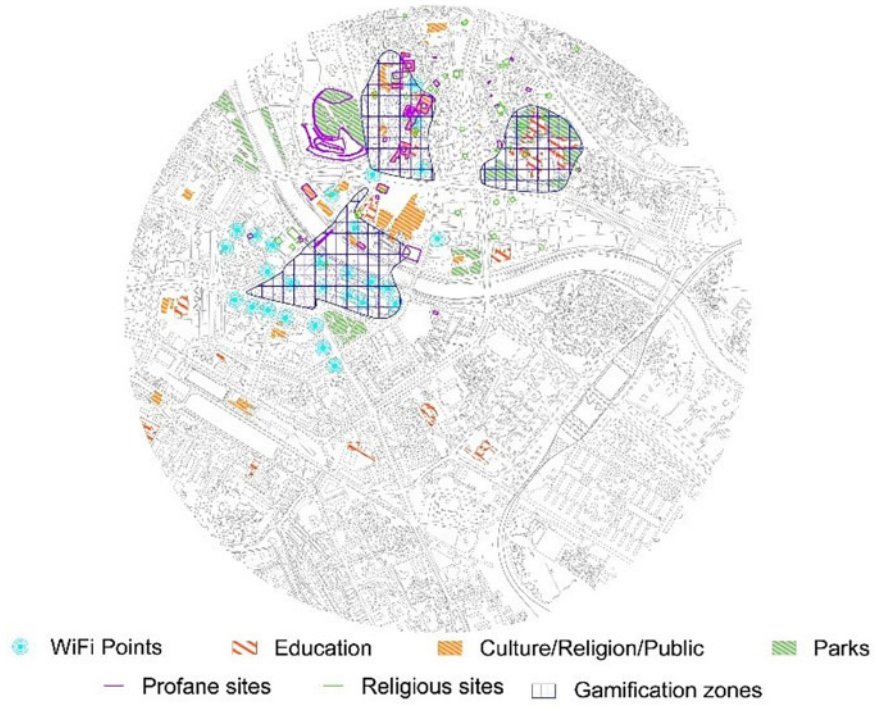

Figure 3: identified potential gamification zones on an overlapped map of heritage sites and urban infrastructure

Potential gamification zones in Skopje

The three identified zones for gamified interaction with Skopje's heritage are located within walking distance from one another, enabling diverse approaches to gamification in terms of interface or theme of gamified interaction. While the first two zones (Macedonia Square and Old Bazaar) are the key tourist attractions in the city's pedestrian zone, their significance extends to the local community in terms of helping the inhabitants connect and identify with the city by learning its heritage.

The zone of the university complex unveils potential for specialised gamified learning within an educational complex, offering a direct relationship between the dominant function of space and the method of conveying information about heritage sites. Addressing identification with the city and heritage through entertaining learning environments and *edutainment* models for interpreting heritage, these zones become educational playgrounds within the city. (Fig. 4).

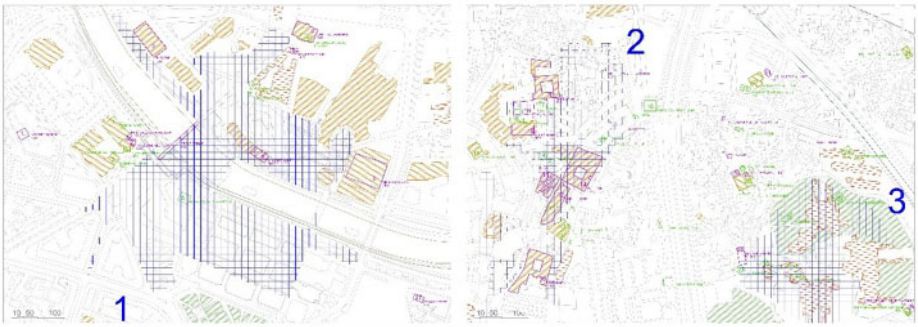

Figure 4: Gamification zones: 1 - Macedonia Square; 2 - Old Bazaar; 3 - University complex

The Macedonia Square zone contains multiple visible and invisible heritage sites, offering an overview of various periods of Skopje's heritage and the shift of the urban centre from the northern to the southern bank of the Vardar River. In its spatial manifestation within a pedestrian area (1), the zone utilises the pedestrian area and the structure of the modernist City Trade Centre (GTC) to create a multitemporal spatial anchor for gamified interaction. Implementing gamified environments in this zone activates existing monuments depicting historical figures, open spaces and elements of the post-earthquake modernist heritage as storytelling spaces about the city's multiple pasts. As a key anchor for connecting the exemplary Ottoman heritage through gamified environments, the Stone Bridge is the visible element of space, while the zone at its southwestern exit is the invisible heritage site of the former mosque. The gamified storytelling environment in this zone enables both narrative interaction through multimedia learning and roleplay, enabling users to 'time travel' through different stages of the Square's history.

The zone of the Old Bazaar (2) is dominantly related to the Ottoman heritage. Like the Macedonia Square area, this zone is entirely pedestrian and, as such, safe for independent interaction for younger users. The larger number of spatial anchors and restored buildings provides physical insight into what the city looked like in the past, while the cultural institutions provide infrastructure for linking the existing exhibitions, common interactions and spatial habits with the past, by being emphasised and explained through the virtual realm. Having kept its historical use as a commercial centre, this zone can be emphasised through immersive interactions linking the narrative aspect of the gamified environment to the street names and types of trade today and in the past. The University complex (3) is a modernist architectural site that serves as a place of higher education. Although its contemporary design belongs to the modernist period, the building was constructed on the site of former mosques and adjacent to the ruins of the hammam. Consequently, this area can utilise a virtual interpretation of the past to embody a lost ambience through a gamified virtual environment, connecting contemporary life in the city to its urban memory.

CONCLUSION

Analysed by their urban infrastructure and the presence of attractors that contribute to the gamification concept, three zones within Skopje's historical core are identified as potential spaces for implementing gamified interaction with heritage sites. This way, the already frequent urban areas can become interactive storytelling playgrounds for education, learning about heritage, and consequently forming a bond between users and space by enabling users to be present in the moment of the past, as suggested by Moscardo (1996). This kind of approach extends from the traditional heritage interpretation methods and adapts to the principles of the New Heritage Paradigm.

Specified key aspects of site analysis were defined to find a basis for linking virtual information with the physical city, such as the presence of cultural institutions, educational institutions, parks, and internet networks. This enables urban designers to establish a network of optimal spaces for incorporating gamified environments. Adding a gamified level of interaction with spatial information through a gamified interface represents a familiar environment for younger users. It can be integrated into urban design by anchoring it to the contemporary city's physical spaces, buildings, locations, and elements. In this way, the visibility of past periods reemerges through the virtual sphere, offering a first-person experience of past ambiences while also maintaining the functionality of urban spaces in their contemporary use.

The findings of the Skopje case study underscore the broader urban design potential of integrating gamified heritage approaches into existing public and social infrastructure. By activating layered historical narratives through spatial and digital means, cities can transform ordinary urban zones into interactive learning environments that foster cultural awareness, play, and belonging. Given the shared historical patterns, infrastructural typologies, and youth-oriented public spaces across Balkan capitals, this approach holds strong potential for adaptation and replication.

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