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Mapping Historic Heritage in Jeonju and Wanju, South Korea: A GIS-Based Approach for Education and Public Engagement

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Abstract

In this study, spatial analysis was conducted using public GIS data provided by the Korean government, with the analysis targeting 135 designated cultural properties distributed across Jeonju and Wanju in South Korea. The cultural properties registered in this region were classified based on their era, function, and designation grade. Their centrality and functional structure were derived through kernel density analysis. Their distribution by designation grade was visualized. The analysis revealed that Jeonju’s city center is densely populated with religious and administrative heritage from the Joseon Dynasty, while Wanju exhibits a multi-nuclear landscape structure with modern life and industrial heritage scattered throughout. The results led to the design of two exploration routes: an Urban Triangle Route and a Regional Route. It was also suggested that these could be used for cultural heritage education and citizen participation. This analysis showed that interpretive and participatory utilization models can be created using only open spatial data and open-source tools. The potential for developing the research results into a regional cultural heritage interpretation platform was also suggested. Integration with multilingual commentary, generative AI commentary systems, and mobile-based AR content was proposed as the method.

1. Introduction

Recent research on Korean cultural heritage has been mainly focused on technical reports on archaeological sites or descriptive explanations of individual cultural properties. Despite improvements in the accessibility of Geographical Information Systems (GIS)-based data, analytical approaches to the spatial distribution or functional interconnectivity of cultural heritage remain inadequate. Most studies remain at the level of referencing basic information from the Korean Cultural Heritage Administration’s National Cultural Heritage Portal, with few attempts to interpret spatial patterns or structural relationships between the eras and functions of heritage sites.

By contrast, globally, GIS-based cultural heritage research is being actively conducted in combination with various technologies. These include digital recording, 3D modelling, and spatiotemporal analysis (Remondino and Stilianidis, 2022). This approach goes beyond just visualizing the distribution of sites; it also interprets historical connections, spatial hierarchies, and functional networks. In South Korea, GIS is being utilized in urban regeneration (Lee, 2015), and is also being used in tourism resource development (Park, 2016). In addition, it is being used in the construction of “smart platforms.” This is mainly being done by several local governments; one notable example being the development of a GIS-based cultural heritage management system for Jeollabuk-do (Park and Kim, 2022). In this case, administrative efficiency and infrastructure management of heritage sites were the key focus, and only limited attention was paid to interpretive applications or participatory engagement. The potential of spatial data to facilitate community storytelling and participatory heritage experiences remains largely untapped.

The increasing accessibility of GIS through open-source platforms and mobile applications has acted to lower the threshold for citizen participation, with new avenues for community-led cultural interpretation being opened up. Meanwhile, this study aims to reveal the structural characteristics and interconnectivity of cultural heritage through GIS-based spatial analyses, particularly historical continuity and functional distribution.

This study undertakes a qualitative spatial analysis using the GIS data of cultural heritage sites distributed around the city of Jeonju and the adjacent county of Wanju, in Jeollabuk-do, to address the above issues. Jeonju and Wanju have functioned as administrative and cultural centers of the wider region since the Joseon Dynasty. However, each cultural heritage site in the two administrative areas has tended to be regarded individually and fragmentarily, with little consideration of the spatial relationship between the sites. The sites’ functional distribution and potential as integrated landscape resources have also been overlooked.

Accordingly, this study establishes 135 designated cultural properties extracted from the publicly accessible National Cultural Heritage GIS platform as the analysis targets, and visually derives the spatial density and functional center structure of cultural heritage according to classification by era, function, and designation grade, as well as through kernel density analysis. Moreover, based on these analyses, two heritage exploration routes are proposed: an Urban Triangle Route and a Regional Route. These demonstrate the potential of designing educational programs, citizen-participatory interpretation contents, and tourism interpretation models based on spatial insights.

2. Methods: GIS-Based Spatial Analysis for Heritage Education

This study used GIS-based qualitative spatial analysis techniques to examine the spatial distribution, characteristics, and functions of around 135 registered cultural properties in the Jeonju and Wanju areas. The analysis focused on cultural properties spanning from the Three Kingdoms period to the present day; prehistoric sites were excluded to narrow the scope of the study.

The spatial data used in this study were obtained from the National Cultural Heritage GIS platform operated by the Cultural Heritage Administration (https://gis-heritage.go.kr/). The GIS platform is a web-based system built in 2015 and upgraded in 2022 that provides spatial data of more than 13,000 cultural assets in the KGD 2002 Unified Coordinate System in shapefile, GeoJSON, and CSV formats, and supports an advanced spatial analysis environment with interoperability with QGIS and other systems. This platform provides standardized information on the coordinates, era, designation grade, and name of designated cultural properties and registered cultural properties.

In this study, the data for 135 cultural heritage sites were extracted as a CSV file by filtering the information for Jeonju and Wanju. The data preprocessing phase included the following important steps:

1) Cleaning the data to remove duplicate entries resulting from multiple designations for the same physical location.

2) Standardizing the historical period classification from existing granular timeline designations into the following four consistent categories: Three Kingdoms; Medieval (Unified Silla–Goryeo); Joseon; and Modern/Contemporary.

3) Functional classification according to each site’s primary historical use: Religious; Political/Military; Educational; Residential/Daily Life; Modern Heritage; and Others (e.g., textual records, paintings).

4) To enhance data accuracy and analytical depth, spatial coordinates were verified using satellite imagery. Sites with significant displacement were manually corrected. Designation grade information was incorporated: National Treasure; Treasure; Provincial/Municipal Heritage; Registered Modern Heritage. This allowed weighted analysis that took into account cultural significance.

These data were then used for analysis. Specifically, we calculated the value of each heritage site based on its era (Three Kingdoms, Medieval (Unified Silla–Goryeo), Joseon, Modern/Contemporary), its function (Religious, Political/Military, Educational, Residential/Daily Life, Modern Heritage, Others), and its designation class (e.g. National Treasure, Treasure, Provincial/Municipal Heritage, Registered Modern Heritage). This approach made it possible to analyze the distribution and density of sites by function.

This public, data-driven approach goes beyond simple spatial visualization, providing a basis for the quantitative analysis of functional distribution and period-specific concentrations of cultural heritage. It can also be used to design educational, interpretive, and tourism content, helping to structure and give meaning to local heritage (Evans and Daly, 2006). This method enables quantitative interpretation of spatial clustering. It also facilitates comparative visualization across different heritage features and eras. Structured classification also enables cross-tabulation and pattern recognition, which is essential for designing context-aware heritage education content. To visualize the spatial density and centrality of cultural heritage, a kernel density heat map analysis was conducted. The analysis was divided into two parts based on scope: urban (Jeonju city center, with a kernel radius of 1,000 meters) and regional (the Jeonju–Wanju metropolitan area, with a kernel radius of 10,000 meters). Additionally, the designation grades of the sites (National Treasure/Treasure; Provincial and Municipal Heritage; Registered Modern Heritage; and Other Cultural Materials) were visualized using different style criteria to reveal differences in distribution according to grade.

3. Results and Discussion

3.1. Spatial Distribution, Characteristics, and Functional Status of Cultural Heritage Sites

The 135 cultural heritage sites in the Jeonju and Wanju areas have been categorized by function and era. Their spatial distribution exhibits the following characteristics. Firstly, sites with administrative and religious functions are concentrated in the center of Jeonju. Joseon Dynasty sites are the most abundant in terms of era, whereas sites from the Unified Silla and Goryeo Dynasties account for a relatively small proportion. Meanwhile, modern and contemporary heritage sites tend to be located alongside major road networks and near universities and commemorative facilities.

Table 1 presents the characteristics of these cultural heritage sites in detail. The characteristics revealed in this table are as follows:

Firstly, 85 (63%) of the 135 cultural heritage sites in the Jeonju and Wanju areas date primarily from the Joseon Dynasty. This suggests that the area was a center of administration and culture during this period. The fact that many of the sites fall under the “religion” or “daily life” categories indicates their close relationship with everyday life. This concentrated distribution implies that various types of heritage sites, such as fortress walls, government offices, temples, and Confucian academies, developed organically within an urban context. Of the 85 sites from the Joseon Dynasty, 46 (54%) had a religious function, indicating that Confucian-Buddhist institutions were a major cultural component of the period. On the other hand, of the modern and contemporary heritage (22), 11 belonged to the “modern heritage” category and 8 were religious features, suggesting that modern facilities such as schools, museums, and churches are key targets for conservation efforts.

Unified Silla and Goryeo sites are relatively few, but they form a spatial pattern concentrated on ritual and political-military functions, suggesting a distinctive distribution of medieval royal and religious power. In addition, Jeonju City has recently been recognized for its importance as the capital of the Later Baekje (Hubaekje) Kingdom, which was founded by King Gyeonhwan at the end of the Unified Silla period. He built and utilized Namgosanseong and Donggosanseong fortresses, which served as palace sites. He also built a wall within Jeonju City, traces of which have been found through recent excavations of the Jonggwangdae site (JCHRI, 2024). These

historical circumstances account for the high concentration of Later Baekje Kingdom-related sites in Jeonju.

Secondly, modern and contemporary heritage exhibits distinct functional distribution characteristics. Of the 22 sites in total, nearly half (11) fall under the “modern heritage” category, eight of which relate to religious functions. This reflects the preservation of cultural heritage through the introduction of Western-style facilities, such as schools, museums, and public buildings, after the Japanese Occupation period, as well as the continued existence of religious facilities. Notably, the creation of a distinct category for modern heritage suggests that the targets of preservation have been extended beyond historical and cultural properties to include modern and contemporary cultural assets.

Thirdly, there are relatively few heritage sites from the Three Kingdoms and Medieval (Unified Silla and Goryeo) Periods, and these sites tend to be concentrated in religious and political/military areas. They mostly comprise facilities related to the ruling class and state power, such as temple sites, fortress walls, and government offices. They can be seen as spatial manifestations of this power.

Overall, Jeonju and Wanju boast the greatest number of religious heritage sites, centered around temples and *seowon* (Confucian academies), which form the core of historical religious and educational spaces. In modern times, everyday heritage sites such as schools and record-keeping facilities appear, demonstrating diversification in function. There are only a few heritage sites from the Unified Silla and Goryeo periods, and they are connected to Jeonju’s symbolic significance as the capital of the Later Baekje Kingdom, making those few historic sites historically significant.

Of the 135 cultural heritage sites, 70 are religious sites, accounting for around 51.8% of the total. This is a much higher proportion than those related to education (3.7%) or everyday life (12.6%). These figures demonstrate that religion has traditionally played a central role in urban areas.

An examination of the distribution of cultural heritage from the Joseon Period reveals that most of the cultural and administrative records are found in Jeonju’s Hanok Village, particularly the Gyeonggijeon area. This reflects the historical hierarchy of the city center. In contrast, modern industrial and lifestyle heritage sites such as the Samnye Cultural Arts Village, the grain warehouse, and the former pumping station are scattered throughout the Wanju region. These three heritage sites differ from other heritage sites in that they have been modified and used uniquely, as is examined below.

Function / Period	THREE KINGDOMS	MEDIEVAL (UNIFIED SILLA–GORYEO	JOSEON	MODERN & CONTEMPORARY	TOTAL
RELIGIOUS	5	11	46	8	70
POLITICAL / MILITARY	2	3	10	1	16
EDUCATIONAL	–	1	4	–	5
RESIDENTIAL / DAILY LIFE	2	1	12	2	17
MODERN HERITAGE	–	–	–	11	11
OTHERS (E.G., RECORDS, PAINTINGS)	1	2	13	–	16
TOTAL	10	18	85	22	135

Table 1. Functional and Chronological Classification of Cultural Heritage Sites in Jeonju and Wanju

3.2. Results of Spatial Analysis

The results of visualizing the cultural heritage of the Jeonju and Wanju areas in terms of designation grade, density, and exploration routes, as well as other visual elements, are presented in Figures 1 to 3.

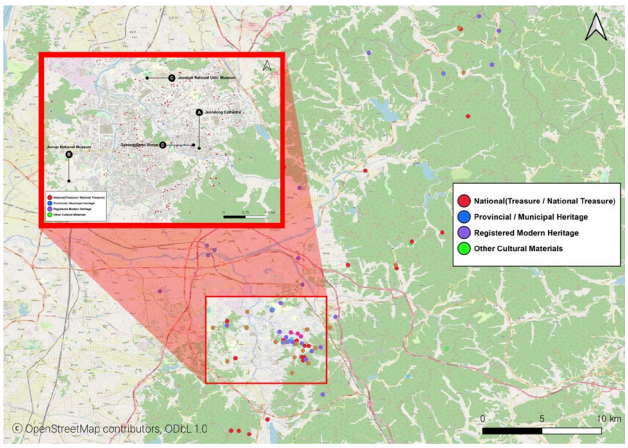

Figure 1a. Distribution of designated cultural heritage sites in Jeonju and Wanju by designation grade

Figure 1 presents the results of the spatial visualization of designated cultural heritage sites in Jeonju and Wanju, divided into the overall regional distribution (Figure 1a) and an enlarged view of the dense area in the downtown area of Jeonju (Figure 1b). In both figures, the symbols are color-coded according to the official designation grade of the cultural properties. Major heritage sites are emphasized visually by enlarging the symbol size and adding their names.

Figure 1a illustrates the distribution of cultural heritage sites across Jeonju and Wanju. National designated cultural properties (National Treasures and Treasures) are mainly concentrated in the downtown area of Jeonju, particularly around the Hanok Village, Gyeonggijeon, and Jeondong

Cathedral, reflecting the symbolic status of this area as the administrative and religious center during the Joseon Dynasty. In contrast, registered and locally designated cultural properties are distributed in areas outside the city center, such as Hyoja-dong, or in urban expansion areas. This reflects the cultural accumulation that has taken place since the Modern Period.

In the Wanju area, cultural heritage sites are mainly distributed along major road networks (national and local roads), while the mountainous areas in the east have a low density of cultural heritage sites but a scattered distribution of religious heritage sites, such as temples. This center-periphery structure is interpreted as resulting from the simultaneous influence of urban formation during the Joseon Dynasty and modern urban planning.

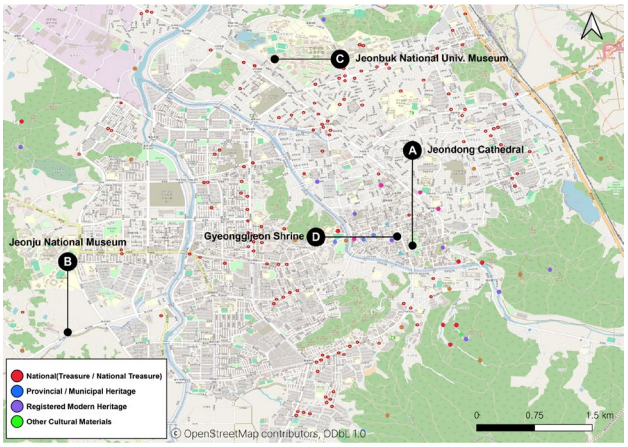

Figure 1b. Enlarged view of the cultural heritage cluster in the old downtown area of Jeonju

Figure 1b is an enlarged map of the cultural heritage-rich area in the old downtown of Jeonju (see Figure 1a). The symbols of four key cultural heritage sites—Jeondong Cathedral (A), Jeonju National Museum (B), Jeonbuk National University Museum (C), and Gyeonggijeon Shrine (D)—have been enlarged and their names added to emphasize them visually. These sites encompass the political and religious centers of the Joseon Dynasty (Gyeonggijeon Shrine and Jeondong Cathedral), as well as the historic and modern centers for records and exhibitions (Jeonju National Museum and Jeonbuk National University Museum). They represent key points within the city center that exhibit functional and temporal diversity.

This enlarged map allows for a more precise understanding of the density, symbolism, and spatial continuity of cultural heritage sites in the city center, providing important basic information for the design of educational content and the planning of tourist interpretation routes.

Figures 1a and 1b show that the cultural heritage sites in the Jeonju-Wanju area are spatially stratified by era, function, and designation grade. The downtown area of Jeonju is particularly notable as a central space where symbolic heritage from the Joseon Dynasty is concentrated, while the Wanju region comprises a multi-nuclear peripheral space where religious and industrial heritage coexist. This visualization of the dual structure goes beyond a simple interpretation of distribution and suggests practical applications for cultural heritage education programs, participatory map production, and regional tourism content design.

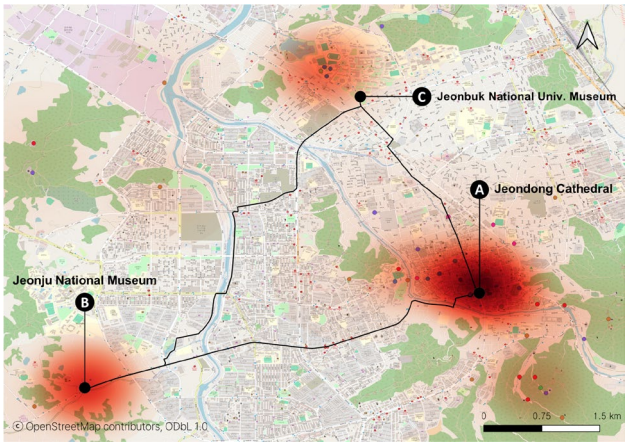

Figure 2. Kernel Density of Heritage Sites in Jeonju City Center with Urban Triangle Route Overlay

Figure 2 shows the results of a kernel density analysis conducted using QGIS on cultural heritage sites distributed throughout the downtown area of Jeonju. The kernel radius was set to 1,000 meters, and red tones (Viridis style) were applied according to the density values to indicate areas of higher concentration. The results of the analysis were visualized by overlaying an “Urban Triangle Route,” proposed by the authors: a triangular tour route connecting Jeondong Cathedral (A), Jeonju National Museum (B), and Jeonbuk National University Museum (C). The Urban Triangle Route not only connects functionally diverse heritage sites but also optimizes public transport access within the urban core. Each node lies within 4–7 kilometers of the others, forming a compact educational circuit which is easily accessible for both students and tourists.

The concentration of religious and civic heritage during the Joseon Period is reflected in this density pattern, as explained in Section 3.1. This reflects the city’s historical importance and the central functions of the Joseon Dynasty, as identified in Tables 1 and 2. Jeondong Cathedral (A) is the first Western-style brick building to have been constructed in Jeonju in 1908, representing modern religious heritage. Jeonju National Museum (B) is an exhibition hub for Jeollabuk-do, showcasing traditional and modern artefacts and the exhibition-based cultural heritage of the city’s outskirts. Jeonbuk National University Museum (C) focuses on documentary heritage and modern and contemporary materials, with a concentration of university museum collections and materials related to modern education.

This Urban Triangle Route connects the traditional Hanok Village area with modern museums and heritage spaces. These are on the outskirts of the city. The route is presented in chronological order. Starting at Jeondong Cathedral, symbol of the city’s modernization, the route moves on to the Jeonbuk National University Museum, which represents institutional cultural heritage centered on modern education and recorded heritage. The route eventually leads back to Gyeonggijeon Shrine, where the past and present come together within the city landscape.

This chronological structure lends itself well to thematic storytelling in educational and tourist contexts alike. It provides an integrated experience of cultural heritage organized by period and function in the city center that can be used for educational purposes. The Route is ideal for participatory

cultural heritage interpretation projects. These include digital storytelling apps, augmented reality tours, and citizen-created guide content. This is due to its clarity and historical continuity.

This Urban Triangle Route makes it possible to integrate the stories of local communities into urban cultural education. The structure of the Route particularly reflects the spatial density and functional diversity of cultural heritage, making this analysis scalable as a participatory heritage utilization model for the downtown area of Jeonju City.

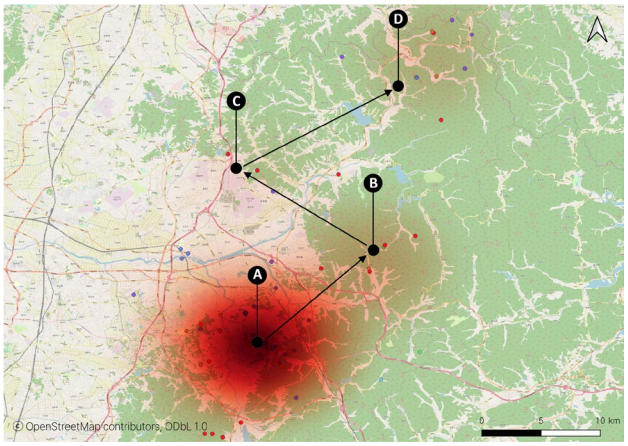

Figure 3. Cultural heritage density and connected routes in the Jeonju–Wanju area

Figure 3 shows the results of expanding the analysis area from the center of Jeonju to cover the whole of Wanju. This has been visualized using a kernel density heat map with a kernel radius of 10,000 meters and a cell size of 50 pixels. The major heritage sites are connected to form a “Regional Route.” This Route comprises the following locations in order: Jeondong Cathedral (A) – Songgwangsa Temple (B) – Samnye Culture and Arts Village (C) – Hwaamsa Temple (D). Each location is labelled with an alphabetical letter on the map.

The heat map analysis shows that, in addition to the old downtown area of Jeonju, the areas around Songgwangsa Temple and Hwaamsa Temple are clearly high-density areas. This suggests that these areas were centers of Buddhism from the Unified Silla period to the Joseon Dynasty, and that there are many multi-layered religious heritage sites, such as Daeungjeon Hall, the 500 Arhats Statues, and Geumgangmun Gate. In contrast, the Samnye area has low visual density but is a living and industrial heritage zone with a concentration of modern and contemporary registered cultural properties (Samnye Yanggok Warehouse, Old Mangyeonggang Bridge). The former Samnye pumping station is currently being used as a cultural village, playing a meaningful role as a “node” of functional transformation.

In this context, it is important to design spatial routes that reflect the temporal continuity and functional transformation observed in the regional heritage. The Regional Route connects the city’s religious heritage, as represented by Jeondong Cathedral, with traditional temple complexes such as Songgwangsa and Hwaamsa temples. It also introduces modern hubs where living heritage and art spaces coexist, such as Samnye. The Route demonstrates both temporal continuity and functional diversity, with each point being situated along national and provincial arterial roads, ensuring high accessibility.

The hierarchical distribution of heritage types reflects the historical transformation of urban functions and symbolic spaces, with each heritage type having a different function and representing a different symbolic space. The spatial concentration of religious and administrative heritage sites in the old city center of Jeonju indicates the deliberate consolidation of authority and ritual under Joseon rule. Meanwhile, the dispersal of modern heritage sites in Wanju can be seen as a reflection of industrial decentralization and regional development policies.

3.3. From Spatial Analysis to Heritage Itineraries: Two Routes in Jeonju and Wanju

Based on the analysis of these spatial patterns, this study designed two representative routes that can effectively explore the cultural heritage of Jeonju and Wanju and used them as educational content.

The first is the Urban Triangle Route starting and ending at Jeondong Cathedral, passing through Gyeonggijeon Shrine, Jeonju National Museum, and Jeonbuk National University Museum. Jeondong Cathedral is an appropriate starting point as it reflects the actual movement of tourists and symbolizes both tradition and modernity as a representative heritage site, being located at the entrance to the Jeonju Hanok Village. Visitors can travel this Route by public transport. It is designed to educate them about the continuity of cultural heritage and the functional diversity of urban spaces, showcasing the coexistence of Joseon Dynasty religious and political centers with modern-day record and exhibition-based heritage. The Route is particularly well-suited to on-site cultural heritage education programs for students and the general public.

The second route is the Regional Route that connects Jeonju and Wanju. Starting at Jeondong Cathedral, it continues to Songgwangsa Temple, the Samnye Cultural and Arts Village, and Hwaamsa Temple. This course’s diversity is a characteristic feature, including historical and cultural sites and masterpieces of art and architecture. Designed for vehicular travel, the Route offers potential as a cultural tourism attraction that extends beyond mere educational use.

Both Routes have been designed with time continuity and spatial concentration in mind and may be developed into participatory cultural heritage experiences and educational content, as well as regional cultural tourism itineraries.

ROUTE	A	B	C	D
URBAN TRIANGLE ROUTE	Jeondong Cathedral	Jeonju National Museum	Jeonbuk National University Museum	
REGIONAL ROUTE	Jeondong Cathedral	Songgwangsa Temple	Samnye Culture and Arts Village	Hwaamsa Temple

Table 2. Summary table of major heritage sites along each tour Route.

3.4. Comparison and Application of Urban and Regional Heritage Tour Routes

The two tour Routes presented above both start at Jeondong Cathedral and cover different areas of Jeonju and the Jeonju-Wanju metropolitan area. The two Routes differ in terms of their spatial and temporal ranges, types of cultural heritage, and intended use. In this section, we will compare and analyze the structure and function of each Route and the possibility of linking them with cultural heritage content development.

Firstly, in terms of spatial structure, the Urban Triangle Route (Figure 2) is a public transport-oriented, closed loop route that starts from Jeondong Cathedral, passes through Jeonju National Museum and Jeonbuk National University Museum, and then returns to Jeondong Cathedral. It connects cultural heritage sites. These are located within a radius of about 7 kilometers. This makes it an efficient way to explore the dense historical space of the city center.

On the other hand, the Regional Route (Figure 3) starts from the same point, Jeondong Cathedral, and continues in a straight line to Songgwangsa Temple, Samnye Culture and Arts Village, and Hwaamsa Temple, covering a distance of approximately 30 km by car. This Route enables visitors to experience the historical continuity and spatial expansion of the Unified Silla, Goryeo, Joseon, and Modern Periods.

In terms of functional use, the two Routes also show distinct differences. The Urban Triangle Route connects the administrative and religious heritage of the Joseon Dynasty with the record and exhibition-centered heritage of the Modern Period, making it suitable for educational programs such as field trips, guided tours, and citizen lectures. In contrast, the Regional Route combines temples, industrial heritage, and artistic creation spaces, making it ideal for creative experience programs and complex content planning.

The two Routes also differ in their narrative structure. The Urban Triangle Route has a “compressed narrative.” This means that there are overlapping layers of time. This provides an intense experience of the historic center. In contrast, the Regional Route creates a “broader story” that extends from the city center to the suburbs. This reflects the gradual change in the age and function of the historic site, offering a distinct experience. This difference in narrative can contribute to varying learning objectives. This can be beneficial for students. It can also influence teaching methods and interpretive strategies. These are important considerations when planning educational content.

In terms of practical applicability, the two Routes are also complementary. The Urban Triangle Route is suitable for public transportation commentary apps, student guidebooks, and citizen-participatory commentary collection platforms linked to primary and secondary education (Kalay et al., 2008), while the Regional Route can be utilized for the development of long-distance experiential content such as interregional cultural heritage networks, tourist bus routes, and XR-based commentary content. Spaces such as the Samnye Cultural Arts Village, in particular, have the potential to serve as hubs for the development of region-specific composite content that blends traditional heritage with modern cultural content.

In summary, the two Routes start from the same point but are designed to allow visitors to explore the cultural heritage of Jeonju and Wanju in a three-dimensional manner through different spatial scales and functional purposes. In the city, visitors can experience a condensed history, while in the wider region, they can witness the continuous transitions of time and function. In the future, these two Routes can be integrated to develop customized experience programs and region-based content models.

4. Conclusion

This study conducted spatial analysis using public geographic information and open-source GIS tools on 135 designated cultural properties distributed in Jeonju and Wanju, South Korea. Each heritage site was classified by era, function, and designation grade, and kernel density analysis and distribution visualization were used to visually derive the spatial density and centrality structure of the cultural heritage sites. As a result, the downtown area of Jeonju was found to be a core area with a high concentration of religious and administrative heritage sites from the Joseon Dynasty, while the Wanju area showed a multi-nuclear landscape structure with modern and contemporary living and industrial heritage sites distributed widely.

Above all, this study empirically demonstrated that public data and open-source tools alone can be used to derive an interpretive and participatory cultural heritage utilization model that goes beyond static distribution interpretation. When linked to community-centered digital storytelling, school curricula and citizen-led commentary material production, for example, cultural heritage can function as a medium for learning and interpretation, transforming into a new type of public cultural platform.

Future research should build on this trajectory to develop an integrated cultural heritage interpretation platform that combines multilingual interpretation, user-customized experiences, and generative AI-based automatic interpretation systems. Concurrent development of community mapping, mobile AR content, and region-based digital interfaces can reimagine cultural heritage not merely as an object of preservation but as a living medium for sharing and reinterpreting collective memory. Furthermore, the spatial analysis techniques based on QGIS that we used in this study are powerful tools for comprehensively understanding the functional structure and historical layers of cultural heritage.

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