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Rethinking of Culture for Self-Sustainable Regeneration

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Abstract

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This study aims to investigate the potential of culture-led urban mobility in the port hinterland of the historic city of İzmir to create a self-sustainable regenerative city. It draws attention to how the natural movement, movement economy and cultural significance value guide sustainable urban regeneration strategies. A range of analytical methodologies were employed, including space syntax, field survey, principal component analysis and Pearson correlation methods. The findings show that cultural heritage assets intersect with the natural movement envisaged by connectivity and integration. A positive relationship was found between the morphological indicators of space, intelligibility and synergy, and the cultural significance value. This is a significant finding for enhancing the movement economy through adaptive reuse of heritage. The study's comprehensive approach to understanding culture-led urban mobility through analyses of human perception and space syntax, with a focus on rethinking cultural heritage, is a significant contribution to the urban regeneration literature.

Keywords: Cultural Heritage; Urban Mobility; Urban Regeneration; Space Syntax; Movement Economy.

1. Introduction

According to Lefebvre (1991), space is a social product, and the production of space bears spatial codes, characteristics of societies, innovations, modes of production, causal factors in history and implications. The process of urban generation-development-regeneration is driven by a complex interplay of social, economic and spatial dynamics based on the dialectic relationship between society and space (Aziz Amen 2017; Aziz Amen and Ahmad NIA 2021; Aziz Amen and Nia 2018). Especially, the urban regeneration process of historic cities is critical because they have rich historical, cultural, social and economic background that shapes spatial character and functional identity. In the literature, Gravagnuolo, Bosone and Fusco Girard (2025) highlight heritage value based urban regeneration approaches in historic urban landscapes, and focuses on regenerative capacity, which is defined as the ability of a system to undergo self-regeneration through the utilisation of resources. Culture is a resource which fosters social interaction, the sharing of values, community engagement, creativity and cultural economy (Della Spina, 2019). When culture-oriented urban regeneration studies are analysed, the studies of Landry and Bianchini (1995) and Landry and Hyams (2012) are notable. In the words of Landry and Hyams (2012), urban areas can be considered living organisms. The viability of such cities is dependent upon creativity, a quality that fosters self-sufficiency, sustainability, adaptability, capacity for change, self-renewal, safety, flexibility, resilience and adaptive capacity. Creative cities are defined by a dynamism derived from their cultural and artistic heritage, a distinct identity, and a unique spatial energy. However, when existing literature focuses on culture-led urban regeneration, the spatial form, spatial organization and its directed urban mobility, which reflects social relations in space, is ignored. Despite the existence of research examining the correlation between urban mobility and urban regeneration (Pellicelli et al., 2022; Spadaro et al., 2023), there remains a paucity of integrated approaches that encompass the intertwined domains of urban mobility, culture, and urban regeneration (Lyu et al., 2023, Chakraborty and Ji, 2024).

This study seeks to the relationship between urban mobility, culture, and urban regeneration addressing to the research gaps. The objective of the study is to investigate the potential of culture-led urban mobility in the port hinterland of the historic city of İzmir to create a self-sustainable regenerative city. In accordance with this objective, the study hypothesised that the spatial configuration and its directed natural movement flows can identify potential areas or areas of intervention. Additionally, it was hypothesised that cultural heritage and its value can create a movement economy that enhances spatial quality, vibrancy, inclusivity, and attractiveness. Accordingly, the study principally measures spatial quality through spatial configuration and predicts movement flows to determine intervention areas. Moreover,

the study conducts an analysis of the spatial and value-based relationship between cultural heritage and movement flows, with a view to proposing strategies for the movement economy.

This study proposes a comprehensive approach to urban regeneration, integrating urban morphology and urban planning the post-port area of the historic port city of İzmir. The space syntax method is employed to analyse the spatial configuration, which reflects spatial culture and social relationships. This approach facilitates the interpretation of urban mobility patterns and spatial organisation tendencies. This evidence-based approach to urban regeneration is predicated on the determination of segregated areas and discontinuous streets, areas exhibiting low levels of human movement, and areas exhibiting unfavourable characteristics in the selection of land use locations. Furthermore, the spatial character and functional identity of space are influenced by its historical and cultural background, with heritage assets also playing a significant role in shaping the existing spatial structure. The urban regeneration of historic cities is especially important in terms of preserving existing cultural heritage, which serves as a reference point and a source of continuity. The significance value of heritage assets has been demonstrated to be a sustainable tool for determining priorities. The present study employs the concept of cultural significance value to comprehend human perception. The perception of street users was obtained through the implementation of 268 field surveys, which were subsequently weighted through the application of principal component analysis.

This study presents a multifaceted perspective on the subject of urban regeneration. The present study makes a contribution to the existing urban regeneration literature by exploring culture-led urban mobility as a sustainable tool. This proposal is based on cultural heritage, its perceived value, and directed urban mobility. This culture-led urban mobility approach is also novel due to the fact that space syntax studies are generally associated with trade. Furthermore, the cultural significance value provides a robust foundation by offering the opportunity to compare syntactic and semantic results. It should be noted that this study is based on a master's thesis and its scope is limited to the first component with the highest explanatory rate among the components of cultural significance, and pedestrian mobility at the local level and the relationship between these two indicators. The present study comprises five chapters. The first chapter of this study introduces the subject and its significance and provides an overview of the related background. The second chapter presents the data and the methodologies employed. The third chapter displays the results obtained in a statistical and visual format. The fourth chapter of the study provides a comprehensive overview of the paper's primary contributions. The last chapter offers a conclusion with some recommendations to the overall research.

1.1. Urban Regeneration

Significant changes in economic activities, decline in the quality of public spaces and services, loss of urban vitality, inadequacy of urban protection policies, deterioration of buildings and streets, inadequacy of urban infrastructure and urban green spaces, and limited accessibility constitute the reasons for urban regeneration (Yu, Tang, Wu, Wang and Wu, 2019). The objective of urban regeneration is twofold: firstly, to facilitate the recovery of the functionality of space, and secondly, to redistribute opportunities with a view to improving the quality of life (UN-Habitat, n.d.). According to Nachmany and Hananel (2023), the urban regeneration provides the enhancement of urban areas and human activities within a circular economy/city perspective, achieved through the following strategies: infrastructure enhancement, the design of inclusive public spaces, and the reorganization of urban functions. In the nexus of urban form, spatial dynamics, and the imperative for urban regeneration, the incorporation of culture as a catalyst and accelerant for urban planning and urban morphology policies promoting inclusive and sustainable development is pivotal (UNESCO, 2023) since empty, abandoned, or defunct cultural assets in urban environments possess a collective consciousness and an urban memory. It is emphasized that these spaces have the potential for self-sustainability through regeneration, inspired by their 'essence' (Gravagnuolo, Angrisano and Fusco Girard, 2019).

1.2. Urban Morphology and Space Syntax Theory

Urban morphology is the scientific discipline that analyses changes and transformations in the urban fabric, the factors that cause them and the related laws. The field of urban morphology is concerned with the interrelationship between urban form, urban fabric and its compositional elements. The dynamic urban form reveals the link between the structure and the society (Görgülü and Görgülü, 2022; Güner, 2016; Moudon, 1994). Urban form, defined as the arrangement of buildings, streets and public spaces, serves as a reflection of the values, needs and practices of society. At the same time, it functions as an indicator of how people move through, interact with and experience the city. As Şikoğlu and Arslan (2015) state, space syntax, a theory developed by Hillier and Hanson in the 1970s, provides an analytical perspective on the dialectic relationship between space and its users from the perspective of urban morphology. Özer (2014) posits that space is inherently intertwined with social life, and vice versa. The space syntax method establishes a correlation between material and non-material aspects of spatial culture (Vardopoulos, Papoui-Evangelou, Nosova and Salvati, 2023). As Yamu, van Nes and Garau (2021) summarise, the concepts of movement and land use, as well as cognition and behaviour, are considered holistically. The configuration of urban form and urban fabric is influenced by the cultural and historical background of the cities in question, in accordance with these spatial dynamics. The dialectic relationship between the spatial configuration and social phenomena is referred to as the "theory of cities as self-organising systems". The foundation of this theory is rooted in the principles of natural movement and movement economy. The spatial configuration, defined by Hillier, Penn, Hanson, Grajewski, and Xu (1993) as the "cultural product outcome", influences human movement patterns and directs natural movement. Conversely, the movement economy delineates the manner in which movement patterns influence land utilisation and their spatial configuration, in addition to their feedback and multiplier effects on human movement. The proposed culture-led mobility in this paper provides a comprehensive perspective on urban regeneration in historic cities by facilitating a balance between conservation and intervention.

2. Material and Methods

This chapter describes the study area, the data and the methods applied in the paper.

2.1. Study Area

The study area is located in the port hinterland of Konak district, Izmir province. The focal area of this study encompasses the neighbourhoods of Alsancak, Umurbey, Ege, Kültür, Mimar Sinan, Kahramanlar, Akdeniz and İsmet Kaptan (Figure 1). These neighbourhoods represent one of the most established settlements in Izmir, and thus constitute both the old and new city centre of Izmir. The study area exhibits a variety of morphological characteristics, attributable to its functional character, its connection to the sea, and its role as a hub for diverse social and cultural groups. These characteristics are reflected in the area's distinct spatial culture.



Figure 1. Location of the Study Area.

2.2. Data

This study are used both primary and secondary data. The primary data reflects human perception for cultural significance value, which were obtained through field survey. The secondary data includes street network and cultural heritage assets. The data of street network were obtained from Konak Municipality Plan Project Directorate; the data of cultural heritage was obtained in .kml format from the İzmir Cultural Heritage Platform, the website of Our City İzmir Association, OpenStreetMap (OSM) and the relevant website of the Ministry of Environment, Urbanisation and Climate Change. The data obtained were transferred to geographical information systems and converted into the .shp format, and they are added and used to analysis maps. The study area encompasses six protected areas, including one third-degree archaeological protected area, one second-degree natural protected area, two urban protected areas, and two historical protected areas. Additionally, it includes 384 examples of civil architecture and 36 monumental buildings (İzmir Cultural Heritage Platform, n.d.). The following categories of cultural heritage are recognised: civil architecture examples and monumental buildings serving the cultural industry, trade and tourism sectors; museums, historical places with collective memory, squares, galleries and works of art (OpenStreetMap (OSM)); churches and mosques considered monumental buildings; protected areas; monumental trees considered living cultural treasures (Ministry of Environment, Urbanisation and Climate Change); parks; industrial heritage sites; sculptures; historical fountains.

2.3. Methods

In this study, space syntax, field survey, principal component analysis, Pearson correlation analysis was employed to measure spatial quality of space, predict potential human movement (Figure 2). Space syntax analysis was applied in geographic information systems (GIS) through ArcMap 10.4 software. The space syntax analysis provides attribute table including syntactic measurements. Obtained local integration values from the table were visualized. Intelligibility and synergy values are calculated through connectivity, local integration and global integration values with scatter plots. Field survey was conducted with 268 participants, who are street users. Field survey consists of 34 positive statements in accordance with Likert scale. These statements, which refer to the cultural significance value, were prepared based on Burra Charter (ICOMOS, 2013). According to Burra Charter, cultural significance value consists of five values; aesthetic, historical, scientific, social, and spiritual. Applied principal component analyses in SPSS (Statistical Package for Social Sciences) package program facilitated the evaluating the result by variable reduction. In addition, principal component analysis presents factor scores that are indicative of the relationship that exists between components and

observations. It is therefore evident that components obtained through the factor scores can be visualised. Lastly, Pearson correlation analysis was done to compare results from space syntax and principal component analysis.

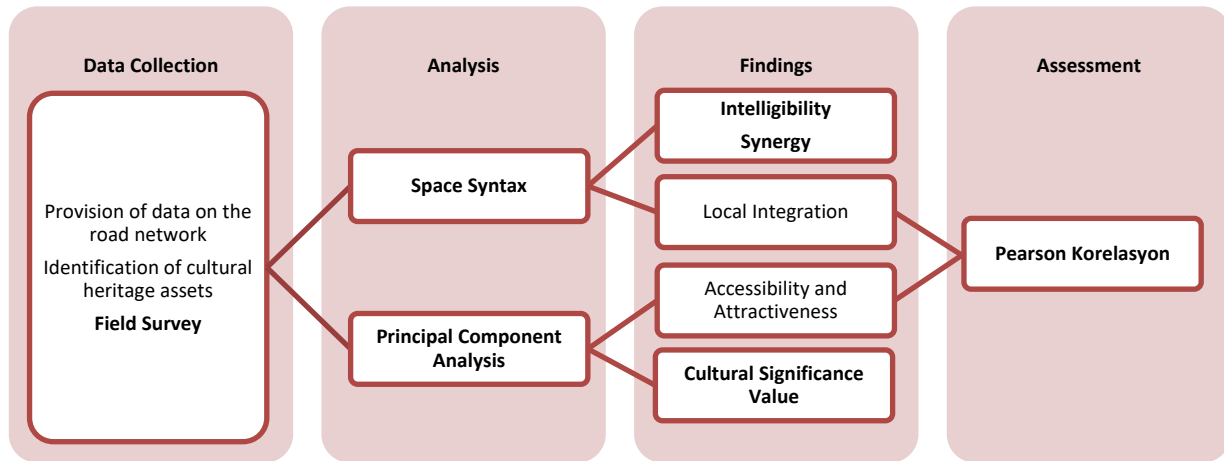


Figure 2. Method Flow.

3. Results

Space syntax analysis presented social logic of space quantitatively through attribute table in GIS. Firstly, the relationship between connectivity and global integration; and the relationship between global integration and synergy were investigated through scatter plots to measure relatively intelligibility and synergy of space. According to the correlation coefficients (R^2) obtained from scatter plots both intelligibility and synergy of space are found to be value of 0.24 and 0.49 respectively. These syntactic measures reflect cognitive map, perceptual accessibility, and part-whole relationship of space. The prediction of natural movement is reliant upon the intelligibility of space. Intelligibility and synergy have been identified as key indicators of environmental quality. These factors reflect the ease with which space can be navigated and the significant level of spatial interaction that occurs between local and global spaces. Intelligibility and synergy value of space highlights the need for urban regeneration of space due to poor spatial quality. In the scope of this study, local integration and the most explanatory component of cultural significance value were investigated detailedly because local integration is a significant measurement of the relationship between pedestrian movement and urban morphology (Çetin, Çelik and Beyhan, 2020; Teklenburg et al., 1993). Local integration, which provides the most predictable distance for pedestrian trips, is utilised to estimate pedestrian movement (Faneek, 1997). The local integration value indicates the accessibility of an axis from axes three steps away. Besides to prediction of potential pedestrian movement, the objective of local integration is to reflect social interaction, socio-spatial relations, functionality of space, and spatial dynamics through the level of accessibility based on the depth of the system. Integration at the local scale has been demonstrated to highlight the potential for a variety of local centres, which are indicative of the level of attractiveness of the area. It therefore contributes to reducing the edge effect of global integration.

According to local integration map (Figure 3), Atatürk Avenue, Cumhuriyet Boulevard, Vasıf Çınar Boulevard, Gazi Boulevard, Şehitler Avenue and 1517. Street-1525. Street have very high local integration level. It can be posited that this configuration results in enhanced connectivity between the streets and their surrounding streets within the two-step system, thereby facilitating increased accessibility. Consequently, both the present and future rates of movement in relation to spatial configuration are high. Moreover, a high level of urban mobility is expected to be observed in the area around Atatürk Street and Cumhuriyet Boulevard since these locations facilitate connectivity between Gündoğdu Square and Cumhuriyet Square. In addition, main streets, such as Şair Eşref Boulevard, Dr. Refik Saydam Boulevard, Ziya Gökalp Boulevard, Ali Çetinkaya Boulevard, and Liman Avenue have high level of accessibility for pedestrians. The potential for enhanced interaccessibility between cultural heritage assets is presented by these accessible streets, given the concentration of numerous cultural heritage assets within these streets and the surrounding area. On the other hand, streets with very low levels of local integration are seen generally in the east side of the study area. This stems from the discontinuity of the streets at that location due to the ongoing urban transformation. Therefore, the potential pedestrian accessibility and human flows are less in these streets.

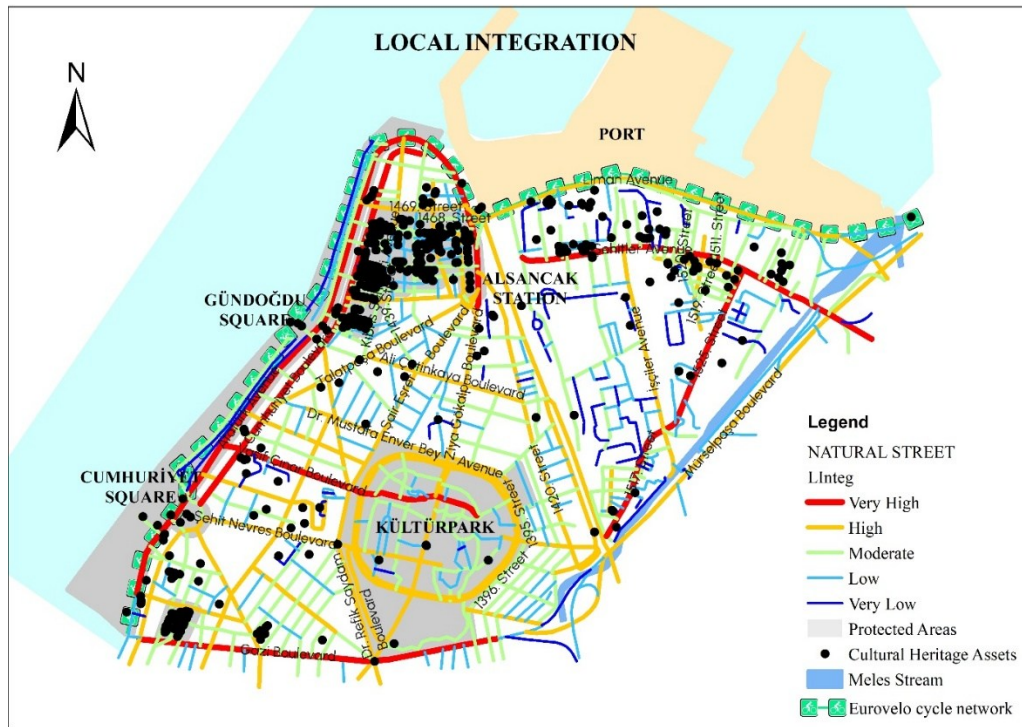


Figure 3. Local Integration Map and Distribution of Cultural Heritage.

In principal component analysis, varimax rotation was used to facilitate the interpretation of variables. As a result of principal component analysis, seven components including 21 variables were obtained and the explanatory value of these components was 64.44% (Table 1). The first component has the highest explanatory value with 13.77%.

Table 1. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,656	22,170	22,170	4,656	22,170	22,170	2,893	13,774	13,774
2	2,669	12,710	34,881	2,669	12,710	34,881	2,303	10,968	24,742
3	1,514	7,209	42,090	1,514	7,209	42,090	2,168	10,322	35,064
4	1,317	6,269	48,359	1,317	6,269	48,359	1,702	8,106	43,170
5	1,235	5,883	54,242	1,235	5,883	54,242	1,540	7,333	50,503
6	1,102	5,249	59,491	1,102	5,249	59,491	1,488	7,085	57,588
7	1,040	4,951	64,442	1,040	4,951	64,442	1,439	6,854	64,442
8	,845	4,023	68,465						
9	,748	3,561	72,026						
10	,694	3,307	75,333						
11	,668	3,183	78,516						
12	,611	2,907	81,423						
13	,573	2,727	84,150						
14	,537	2,558	86,709						
15	,516	2,457	89,165						
16	,471	2,242	91,407						
17	,463	2,207	93,614						
18	,416	1,983	95,598						
19	,352	1,676	97,273						
20	,326	1,550	98,823						
21	,247	1,177	100,000						

Extraction Method: Principal Component Analysis.

The component that demonstrates the highest explanatory rate is 'Accessibility and Attractiveness'. The component comprises five variables pertaining to the accessibility of historical and cultural assets, regarding their locations and public transportation options. Additionally, it encompasses the visual and functional attractiveness and descriptiveness of historic buildings. It is clear that these variables reflect the human perception of street users in terms of technical and aesthetic values that constitute the value of cultural significance (Table 2). Decisions pertaining to transportation and location selection, which are interrelated to spatial configuration and organisation, are regarded as technical value. These decisions are the purview of urban planners, developers, experts and policy makers. The concept of aesthetic value encompasses spatial quality, functionality, and the distinctive and unique characteristics of an urban landscape.

Table 2. Variables And Values of the Component

Accessibility and Attractiveness	
Values	Variables
Technical	The location of historical buildings provides an opportunity for a diverse range of individuals to benefit from their presence. Historical buildings are readily accessible from various public transportation options.
Aesthetic	The visual and functional attractiveness of the historic buildings that characterise this street are a significant factor in my preference for it. I use historical buildings to describe this street. Historical buildings enhance the aesthetic quality of their surrounding environment.

The below map (Figure 4) demonstrates that coastal line at the north of the Gündoğdu Square; 1468. Street, 1469. Street, 1454. Street, and 1439. Street at the northwest; Şair Eşref Boulevard, Dr. Mustafa Enver Bey Avenue, 1395. Street, 1396. Street, Işıl Saygın Street, 1401. Street, 1404. Street, 1411. Street, 1427. Street at the centre of the study area; and 1519. Street and 1520. Street at the northeast show very high level accessibility and attractiveness according to evaluation of users. The streets in the northwest, which are located in the urban conservation area and contain numerous examples of civil architecture, are generally found to be moderately accessible and attractive. It is evident that the accessibility and attractiveness of streets such as Ziya Gökalp Boulevard, Atatürk Street and Şehit Nevres Boulevard is crucial in establishing connections to the primary cultural and functional areas, including the notable sites of Kültürpark, Alsancak Station, İzmir Historical Havagazı Factory, İzmir Culture and Art Factory, Lozan Square, Gündoğdu Square and Cumhuriyet Square. In addition, Atatürk Avenue with high accessibility and Cumhuriyet Boulevard with moderate accessibility received lower values by users compared to the syntactic result. This result can be attributed to the location of historic buildings, which are predominantly situated on the east sides of the streets in analysis. Another significant discrepancy between human perception and syntactic analysis is evident in Şehitler Avenue, İşçiler Avenue, 1517. Street-1525. Street and Gazi Boulevard. It has been demonstrated that these streets are perceived by street users as streets with lower levels of accessibility and attractiveness. It should be noted that Gazi Boulevard is characterized by a relatively high degree of cultural heritage, a factor which contributes to its moderate level of attractiveness. On the other hand, Şehitler Avenue is found to be low accessible and attractive although it has diverse cultural assets, and tram route. It is clear that the civil architecture samples and monumental buildings, which are located on this street, are not accessible in terms of location, different transportation option, and they are not attractive in terms of aesthetic and functional. Moreover, the accessibility and attractiveness of İşçiler Street are also low since the industrial heritage located on it is derelict, poorly maintained and dysfunctional. Furthermore, 1517. Street-1525. Street are perceived to be poorly accessible and attractive. The streets are generally characterised by a lack of human activity and the buildings are in a state of deterioration or disuse. It was asserted by participants that cultural heritage was not effectively protected, and that cultural assets were either dysfunctional or their new functions were not aligned with the needs of all users. Furthermore, the survey respondents indicated that they were experiencing economic hardship and that the ongoing urban regeneration process had led to a decline in their motivation to enhance the built environment.

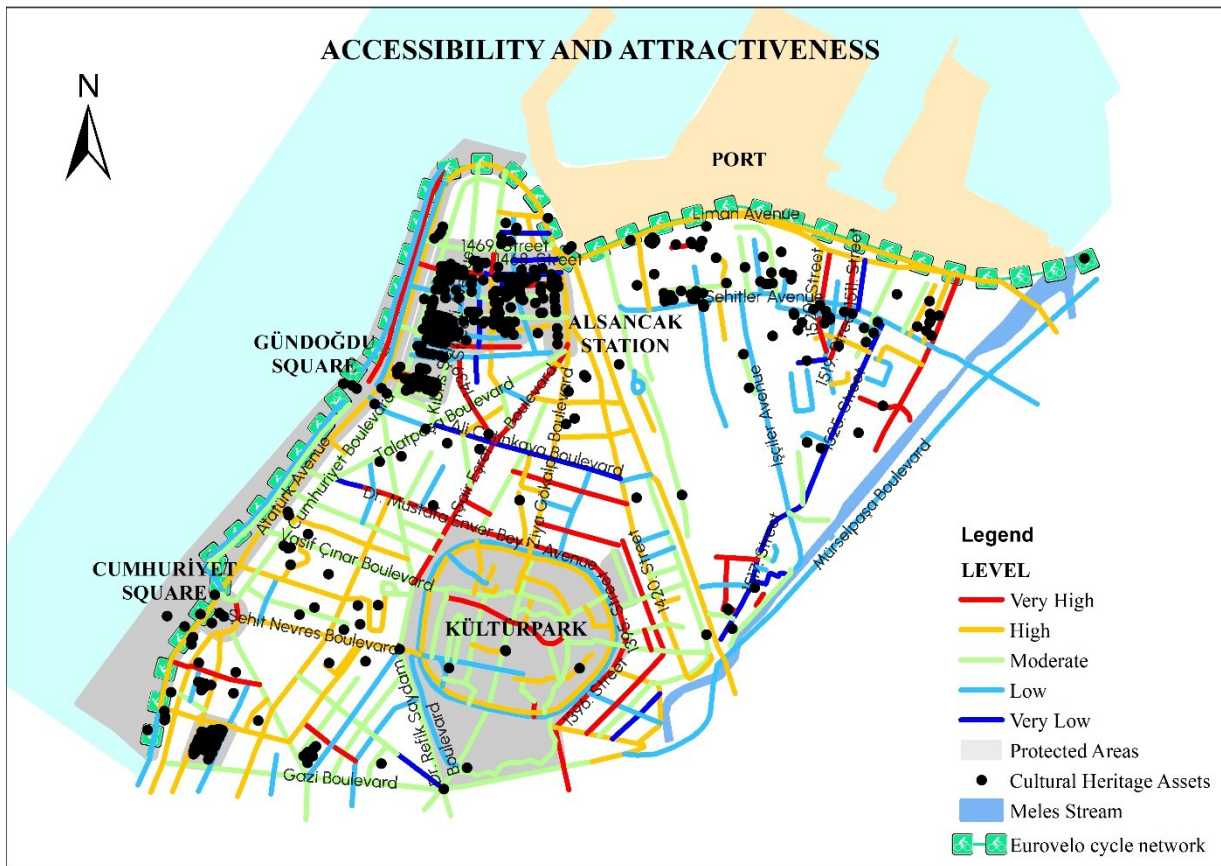


Figure 4. The Most Explanatory Component and Distribution of Cultural Heritage.

The findings indicate that human perception of accessibility and attractiveness of space, and local integration, which is reflected in pedestrian accessibility, does not demonstrate statistical significance with a correlation value of 0.02 (Table 3). The findings of this study demonstrate that spatial attributes and human perception are not consistent with each other. Nevertheless, the utilisation of an integrated approach in the investigation of the aforementioned elements has been demonstrated to facilitate the enhancement of comprehensive urban regeneration strategies for the designated area.

Table 3. Pearson Correlation Analysis of Syntactic and Semantic Results

Space Syntax Parameters and First Components of Cultural Significance Value	Connectivity	Global Integration	Local Integration	Accessibility and Attractiveness
Connectivity	1			
Global Integration	0,53	1		
Local Integration	0,81	0,72	1	
Accessibility and Attractiveness	0,02	0,1	0,02	1

4. Discussion

From a theoretical perspective, the reductionism of urban morphology and spatial configuration has been criticised (Lee, Ostwald and Zhou, 2023; Netto, 2016; Pafka et al., 2020; Ratti, 2004) because the space syntax method, which reflects human behaviour in terms of movement and accessibility, is not sufficient to explore socio-spatial relationships. As Van Nes and Yamu (2021) have demonstrated, the measurement of the spirit of place, place identity and spatial perception involves subjective elements, and space syntax is limited in ability to predict them. This study proposes a multifaceted methodology for comprehending the interplay between subjective and objective components, with the objective of providing a framework to inform urban regeneration strategies. The evaluation of both syntactic and semantic results was conducted through the visualization of mathematical outputs and the Pearson correlation analysis. The findings are not statistically significant; however, this can be viewed as a potential enhancement to value-based movement economy, attributable to spatial configuration. Similarly, Rui's (2023) study makes a significant contribution to the field of space syntax literature by employing an integrated methodological approach. The study focuses on the perceptibility of space quality, comparing semantic and syntactic measurement to determine urban regeneration priorities. This paper contributes to limited space syntax literature which is based on cultural assets by focusing cultural heritage assets and determining cultural significance value through principal component analysis. As Arbara, van Nes and Roders (2023) argue, the historical configuration of space affects the spatial organization of cultural heritage considered to be attractive and drives culture-oriented mobility. This approach is consistent with the hypothesis of this study and is supported by

the overlap between the pedestrian mobility offered by local integration and the distribution of cultural heritage assets. This overlapping at the eastern side of the study area is not consistent with human perception especially on Şehitler Avenue, İççiler Avenue, 1517. Street and 1525. Street. This situation can be associated with the ongoing urban transformation process, dysfunctional buildings and different social topography. This finding indicates that, despite the influence of natural movement on the location selection of cultural heritage assets, as directed by spatial configuration, the movement economy is not effectively revealed due to the deterioration of historical buildings and the perceptual accessibility of their locations, as perceived by users. In fact, the poor intelligibility and synergy value of the study area support this result, but specific streets have movement economy potential due to potential human movement and the existence of cultural heritage.

5. Conclusion

This study shows how an existing accessible street network can be an asset for urban regeneration using indicators of urban quality, pedestrian mobility, accessibility and attractiveness. Syntactic and semantic results are not statistically significant, but Atatürk Avenue, Şair Eşref Boulevard, Dr. Mustafa Enver Bey Avenue, Ziya Gökalp Boulevard, Liman Avenue, Şehit Nevres Boulevard and 1420. Street are assessed as very high or high level of accessible, both syntactically and semantically, despite their different scales. This street network has diverse cultural assets and provides strong connections between the heritage sites and enhances the interaccessibility between them. On the other hand, the hinterland of the port on the eastern side of the study area was found to be relatively segregated with low human movement capacity. This study proposes culture-led movement economy for self-sustainable regeneration, inspired by existing cultural heritage and historical background of the study area. It is envisaged that adaptive reuse of cultural heritage assets can provide spatial, cultural and economic sustainability by attracting people and other supportive land uses. Rethinking of culture and its integration with the existing spatial culture and potential movement is conducive to the development of literature on self-sustainable regeneration from a circular perspective. The study's principal limitation concerns the number of field surveys conducted at each street, which was determined by the population of the neighbourhoods within the study area. Future studies may consider increasing the number of field surveys conducted in the intervention areas identified by the findings, focusing on specific streets within these areas. It can thus be concluded that planning decisions will reflect human perception more accurately and that the results will become more objective or adaptable.

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Conflict of Interests

The Author(s) declare(s) that there is no conflict of interest.

References

- Arbara, S., van Nes, A., & Roders, A. P. (2023). Cultural heritage attractors: does spatial configuration matter? applications of macro-and micro-spatial configurative analysis in the historic urban area of Rome. *Urban Morphology*, 27(2), 121-142. <https://doi.org/10.51347/UM27.0012>
- Çetin, A., Çelik, E., & Beyhan, Ş. G. (2020). Kentsel ızgara formunun kullanıcı hareketlerine etkisinin mekân dizim yöntemi ile incelenmesi Isparta Kafeler Caddesi Örneği. *İDEALKENT*, 11(31), 2034-2053. <https://doi.org/10.31198/idealkent.713447>
- Chakraborty, S., Ji, S. A. (2024) Review of integrating space syntax analysis into heritage impact assessment: a comprehensive framework for sustainable historic urban development. *International Journal of Urban Sciences*, 29 (1), 123–150. <https://doi.org/10.1080/12265934.2024.2438190>
- Della Spina, L. (2019). Multidimensional assessment for “culture-led” and “community-driven” urban regeneration as driver for trigger economic vitality in urban historic centers. *Sustainability*, 11(24), 7237. <https://doi.org/10.3390/su11247237>
- Fanek, M. F. (1997). *The use of space syntax methodology in predicting the distribution of crime in urban environments*. Ph.D. Thesis, Texas Tech University. <http://www.lib.umi.com/dissertations/fullcit/9736893>
- Görgülü, L., Görgülü, Ç. (2022). Kentsel dönüşüm projelerinin tipolojik sürekliliğe etkisi: bursa doğanbey kentsel dönüşüm projesi. *Kent Akademisi*, 15(4), 2049-2087. <https://doi.org/10.35674/kent.976714>
- Gravagnuolo, A., Angrisano, M., & Fusco Girard L. (2019). Circular economy strategies in eight historic port cities: criteria and indicators towards a circular city assessment framework. *Sustainability*, 11(13):3512. <https://doi.org/10.3390/su11133512>
- Gravagnuolo, A., Bosone, M., & Fusco Girard, L. (2025). The CLIC Multidimensional Impacts Assessment Framework: Criteria and Indicators for Circular “Human-Centred” Adaptive Reuse of Cultural Heritage. In: Fusco Girard, L., Gravagnuolo, A. (eds) Adaptive Reuse of Cultural Heritage. *Springer*, Cham. https://doi.org/10.1007/978-3-031-67628-4_8
- Hillier, B., Penn, A., Hanson, J., Grajewski, T., & Xu, J. (1993). Natural movement: or, configuration and attraction in urban pedestrian movement. *Environment and Planning B: planning and design*, 20(1), 29-66. <https://doi.org/10.1068/b200029>
- ICOMOS, A. (2013). *The Burra Charter: The Australia ICOMOS Charter For Places of Cultural Significance 2013*. Australia ICOMOS Incorporated.

- İzmir Cultural Heritage Platform, n.d. “İzmir Immovable Cultural Assets Map”. <https://www.kulturelmiras.org/izmir-tasinmaz-kultur-varliklari-haritasi/>
- Konak Municipality Plan Project Directorate, “2019 Photogrammetry and Cadastral Maps”
- Landry, C., Bianchini, F. (1995). *The creative city* (Vol. 12). London: Demos.
- Landry, C., Hyams, J. (2012). *The creative city index: Measuring the pulse of the city*. Comedia.
- Lee, J. H., Ostwald, M. J., & Zhou, L. (2023). Socio-Spatial Experience in Space Syntax Research: A PRISMA-Compliant Review. *Buildings*, 13(3), 644. <https://doi.org/10.3390/buildings13030644>
- Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell. pp. 30-80.
- Lyu, Y., Abd Malek, M. I., Jaafar, N. H., Sima, Y., Han, Z., & Liu, Z. (2023). Unveiling the potential of space syntax approach for revitalizing historic urban areas: a case study of Yushan historic district, China. *Frontiers of Architectural Research*, 12(6), 1144–1156.
- Ministry of Environment, Urbanisation and Climate Change, <https://www.anitagaclar.gov.tr/>
- Nachmany, H., Hananel, R. (2023). The urban renewal matrix, *Land Use Policy*, Volume 131, 106744, <https://doi.org/10.1016/j.landusepol.2023.106744>
- OpenStreetMap (OSM). Data of historical places with collective memory, squares, galleries and works of art, parks and sculptures.
- Özer, Ö. (2014). *Pedestrian movement in urban space: effect of morphology and environmental perception*, Ph.D. Thesis, Istanbul Technical University, Institute of Science and Technology.
- Rui, J. (2023). Measuring streetscape perceptions from driveways and sidewalks to inform pedestrian-oriented street renewal in Düsseldorf, *Cities*, 141, 104472. DOI: <https://doi.org/10.1016/j.cities.2023.104472>
- Şikoğlu, E., Arslan, H. (2015). Mekân dizim analizi yöntemi ve bunun coğrafi çalışmalarda kullanılabilirliği. *Türk Coğrafya Dergisi* (65), 11-22. <https://doi.org/10.17211/tcd.36109>
- UNESCO, (2023). “UNESCO World Conference on Cultural Policies and Sustainable Development – MONDIACULT 2022” <https://www.unesco.org/en/articles/unesco-world-conference-cultural-policies-and-sustainable-development-mondiacult-2022>
- UN-Habitat, n.d. “Urban Regeneration”. <https://unhabitat.org/topic/urban-regeneration>
- van Nes, A., Yamu, C. (2021). Empirical data collection and analysis, and connecting data with space syntax. *Introduction to Space Syntax in Urban Studies*; Springer, Cham, pp 133–170. DOI: https://doi.org/10.1007/978-3-030-59140-3_5
- Vardopoulos, I., Papoui-Evangelou, M., Nosova, B., & Salvati, L. (2023). Smart ‘tourist cities’ revisited: culture-led urban sustainability and the global real estate market. *Sustainability*, 15(5), 4313. DOI: <https://doi.org/10.3390/su15054313>
- Yamu, C., van Nes, A., & Garau, C. (2021). Bill Hillier’s legacy: space syntax—a synopsis of basic concepts, measures, and empirical application. *Sustainability*, 13, 3394. DOI: <https://doi.org/10.3390/su13063394>
- Yu, T., Tang, Q., Wu, Y., Wang, Y., & Wu, Z. (2019). What determines the success of culture-led regeneration projects in China? *Sustainability*. 11(18):4847. <https://doi.org/10.3390/su11184847>