Paper 50

The Production of Publicness in Museums: Semantic, Syntactic, and Cognitive Analyses through the Sense of Inclusion

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Abstract

Post-museum studies emphasize a shift from the neutral and closed 'white cube' exhibition model toward spatial typologies that enhance interaction with visitors and strengthen publicness, where museums function as active producers of public space designed to support communal participation. This study examines the museum's quality as a public space through the experience of spatial inclusion across semantic, syntactic, and cognitive dimensions, treating 'inclusion' as a publicness experience established through collective urban culture, context, and spatial characteristics. Focusing on five museums opened or renovated in Istanbul within the last fifteen years—ArtİstanbulFeshane, the Naval Museum, Arter, the Museum of Painting and Sculpture, and Istanbul Modern—the research hypothesizes that these hubs produce publicness not only through interiors but also via overflowing atmospheres and environmental interaction. The central research question investigates how these museums establish publicness through their interfaces as an 'ecological' system and how these interface configurations influence urban inclusion or exclusion dynamics. To address this, a three-layered methodological framework is employed: semantic analysis involves content analysis of Google Maps reviews using MAXQDA; syntactic analysis utilizes depthmapX to evaluate urban configurational metrics (integration, choice) alongside Syntax 2D for ground-floor visibility; and cognitive analysis assesses user behaviors through on-site observations within the framework of thigmotaxis.

Keywords

Museum, Interfaces, Inclusion, Space Syntax

1. Introduction

Architectural spatial interfaces relate inherently to their surroundings, serving as essential tools of communication. While typically addressed through their semiotic representations, examining them as action-based thresholds—where meaning intensifies within the building's interior–exterior relationship—remains relatively underexplored. These interfaces facilitate interaction between buildings and the city; beyond mere separation, they function as social interfaces between visitors and space (Hanson, 1998). In architectural theory, these liminal spaces act as critical interfaces that both divide and connect. Positioned between oppositions such as private–public and solid–void, they manifest and even produce spatial tensions. Ultimately, interfaces transform these tensions into readable, accessible transitions, serving as thresholds where circulation, visual relations, and meaning are constantly negotiated.

Urban studies have examined the interface concept through various theoretical approaches, defining it across a spectrum from macro to micro scales. While the macro scale involves broad urban transitions, the micro scale reveals interfaces through ground-floor façades experienced in everyday life. Specifically, macro-scale interfaces appear as rural–urban threshold zones where the settlement fabric transforms. At

the city scale, the interface manifests through the building–street relationship and the definition of public space via façades.

Key urban thinkers such as Jane Jacobs (1971), Gordon Cullen (1961), and William H. Whyte (1980) emphasized the importance of experiencing streets at the human scale from an eye-level, human-centered perspective. At the individual scale, the ground floor constitutes the critical eye-level zone. Jan Gehl (2006) argues that ground floors should be designed to bridge the gap between massive buildings and pedestrian-scale activity; they should be inviting, lively, and focused on close contact. Ground floors are powerful experiential areas where publicness is produced and where diverse social and economic everyday relations are staged. Especially with post-2000 urbanism, a return to the human scale has taken place (van der Werf et al., 2016). With this development, within the idea of reclaiming public space in cities, city centers have turned into places where time is spent, encounters are produced, and experiences are offered. Developments that prioritize people and the human scale at street level are increasingly being adopted. Consequently, New Urbanism approaches utilize spatial interfaces to catalyze street publicness and socio-economic vitality.

The interface concept, frequently discussed in urban studies, is considered important to be examined individually, together with its context, across various building types that enrich urban publicness. In this respect, studies on, for example, museums, libraries, and consumption spaces tend to approach architecture as an interface oriented toward the public realm (Koch, 2013). This research develops an approach to examine the evolving publicness of museums in Istanbul through their ground-floor interfaces. It hypothesizes that museum interior spatial configurations, coupled with their urban configurational properties, offer action-based and atmospheric affordances extending from inside to outside. Furthermore, it explores whether these interfaces relate to the building's experiential relationship with its visitors. To facilitate this investigation, a multi-scalar methodological variation is employed, integrating urban-scale configurational analysis—specifically integration and choice—alongside architectural-scale visibility measures.

The study adopts syntactic, semantic, and cognitive frameworks. Syntactically, it employs Space Syntax theory, extending beyond localized isovist analysis by integrating urban-scale configurational measures. Utilizing multi-scalar parameters—such as connectivity, integration, and choice via depthmapX—enables treating buildings as integrated ecological entities within their surroundings. The research tradition of space syntax studies is mostly generalized to urban space and building interiors. Building interfaces, especially in space syntax research, are mostly treated as a homogeneous exterior space. How the configurational properties of the building's ground floor and its interface character open to the exterior space, and how movement in the exterior space is included into the interior, are mostly overlooked. In this study, it is argued that examining interior–exterior transitions through the lively interaction that space establishes with its context and environmental organism can make it possible to obtain data that deepens thinking on urban publicness. This study addresses how ground-floor configurational properties facilitate movement between interior and exterior spaces. By integrating street network-based measures with semantic and cognitive analysis, the research argues that a museum's publicness arises from its multi-scalar embedding within the urban movement structure. This approach demonstrates how the synergy between spatial configuration, meaning, and movement patterns defines the interface as a dynamic 'ecological' entity. In the study argues that the experiential possibilities communicated by space, from inside to outside and from outside to inside, differ. By employing a methodological variation, it seeks to interpret these multi-directional tensions at the interface as a cohesive whole.

This study opens a discussion on how museums affect urban dwellers' levels of inclusion in the city, how this relates to the building's interface properties, and whether it can be explained through cognitive behavior observations. Defining the relationship between the sense of being included in space that museums offer in the visitor experience and the spatial interface characteristics of the setting constitutes the main focus of the research.

2. Theory

2.1. Museums and the Shifting Visitor Paradigm

This study examines urban residents' engagement with the city through museums, focusing on the relationship between visitors' experiential narratives and their behavior within the museum's urban interface spaces. The research question is shaped by the shifting paradigms adopted by museum institutions and spaces throughout history. In particular, the transition from object-oriented displays to human-centered post-museum approaches—which support visitor participation at various levels—increases the significance of visitor-oriented research. The core focus of this study is how this approach transcends internal spatial dynamics and extends into the city through spatial interfaces.

Museums construct their institutional identities with the intention of generating public benefit by prioritizing the common good. However, the nature of this public benefit, the degrees of publicness, the extent to which museums realize this concept, and the ways in which they engage with visitors remain critical areas for investigation.

As repositories of a society's cultural memory, museums serve as vital spaces for interaction that enable individuals to establish meaningful connections with both the past and the present. Today, museums function not merely as exhibition venues but as cultural hubs that foster social dialogue and encourage visitor participation through educational programs, interactive activities, and technological innovations. According to the International Council of Museums (ICOM), a museum is a non-profit, permanent institution in the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage.

Briefly addressing the historical transformation of museology is essential for understanding the contemporary efforts to enhance publicness and the paradigms currently adopted. In this context, it is well known that public access to museum collections began only in the late 18th century (Giebelhausen, 2006), while the integration of these collections into dedicated museum spaces emerged during the 18th and 19th centuries. During these years, influenced by Enlightenment ideals, museology was characterized by grand narratives, symbolizing state power through a direct, authoritative, and prescriptive discourse (Searing, 1982). While 19th-century museum architecture produced a symbolic language in harmony with the collections, a strong bond was established between the structure and its contents. Simultaneously, parallel to developments in Europe and as an indicator of Westernization efforts, museological activities began to institutionalize in the Ottoman Empire. The Istanbul Archaeology Museum, opened in 1891, was the first structure specifically designed for museum functions in this period. Although contemporary museology debates—which began in the West during the 1930s 40s and became widespread in the 1960s—emerged in Turkey during a similar timeframe (Özkasım and Ögel, 2005), Turkish museums could not progress simultaneously with the West in implementing requirements such as collection diversity, innovative exhibition methods, and social engagement.

By the 20th century, approaches that viewed museum buildings as silent backgrounds for the displayed collections had become widespread, with MoMA (Museum of Modern Art, New York) serving as a prominent example (Grunenberg, 1994). MoMA pioneered the 'white cube' aesthetic (O'Doherty, 1999), creating neutral exhibition spaces that focused all attention on the objects. This paradigm became the dominant approach to interior design in the second half of the 20th century (O'Doherty, 1999). However, during the 1960s and 70s, the inward-looking white-cube aesthetic came under criticism as artists preferred spaces that embraced the contextual features of their works rather than neutral environments (Reiss, 1999). By the late 1980s, perspectives emphasizing that museums hold meanings far beyond traditional object display gained prominence. The publication of *The New Museology*, edited by Peter Vergo in 1989, signaled a radical transformation in museological thought as a reaction to the classical paradigm. The new museology approach argued that, alongside their responsibility to preserve and exhibit objects, museums should be visitor-oriented, participatory, and educational institutions in terms of public benefit. Consequently, museums adopted a more inclusive perspective, aiming to reach diverse social groups and transforming the audience from passive recipients into active participants. Similarly, Nicolas Bourriaud’s

concept of 'relational aesthetics,' formulated in 1998, asserted that art should be evaluated through its ability to create models of interaction and encounter among people rather than through form and object. This transition signifies a shift from a passive to an active role for the audience. More advanced critical perspectives emerging in the wake of New Museology are described as post-museum approaches. The concept of the 'post-museum' has been notably employed in the literature by Eilean Hooper-Greenhill and adopted by various museum institutions in the 2000s. This approach has opened a perspective that, rather than a monophonic narrative, incorporates diverse viewpoints, prioritizes visitor participation, and aims for visitors to construct their own meanings. By dismantling the hierarchical relationship between the museum and the audience, post-museum approaches transform the visitor into a co-producer of curatorial knowledge. This target entails a polyphonic and participatory experience where visitors move beyond being passive recipients to become active agents in processes of learning and meaning-making (Watermeyer, 2012). The museum definition updated by the International Council of Museums (ICOM) in 2022 officially recognized this shifting paradigm by placing core principles such as accessibility, inclusivity, and community participation at the center of museological thought. This transformation, rather than positioning museums as representatives of a dominant high culture in the eyes of urban dwellers, strengthens the foundation for experiencing the museum as a public and accessible space for diverse user groups. Establishing this closeness appears to depend on both the museum’s management stance and the encompassing spatial qualities of the venue.

While studies on museum participation levels are increasing, research into how museum spaces facilitate civic engagement and foster a sense of urban inclusion remains limited. Yet, understanding the spatial contribution is critical when discussing urban publicness, participation, and inclusivity. According to Habermas (1989), the public quality of modern urban spaces is gradually weakening, with public spheres increasingly treated as passive surfaces of spectacle to be watched and consumed. When considered as public spaces, museums function to construct a shared cultural identity fed by diversity and to form public memory. These functions transform museums from closed repositories of artifacts into public platforms where social dialogue is established and negotiation and interaction between different groups are encouraged (Redaelli et al., 2025). As public spaces, museums hold significant potential for integrating urban dwellers into the city and strengthening individual and collective self-confidence. Achieving this inclusivity requires the museum space to possess an inviting, accessible morphological structure that works in tandem with curatorial knowledge. Spatial alignment with the curatorial program alone is insufficient to produce a participatory and inclusive experience. Therefore, to grasp the reciprocal relationship between the museum's morphology and the visitor's mode of spatial inclusion, it is critical to gain a deep understanding of the cognitive layers of experience.

3. Datasets and Methods

3.1. Case Studies: Spatial Characteristics of the Museums

To investigate the spatial characteristics of museum interfaces, this study focuses on five institutions established or renovated in Istanbul over the last fifteen years: ArtIstanbul Feshane, the Naval Museum, Arter, the Istanbul Museum of Painting and Sculpture, and Istanbul Modern (Figure 1). The research employs a multi-layered approach—integrating syntactic, cognitive, and semantic dimensions—to structure the data collection and analysis processes.



Figure 1. Locations of the selected museums in Istanbul

Artİstanbul Feshane, located in Eyüpsultan/Defterdar, is an industrial heritage site that reopened in 2023 following a restoration and adaptive reuse process. Operated by the Istanbul Metropolitan Municipality (İBB), the facility primarily hosts temporary thematic exhibitions accompanied by educational programs such as tours and workshops. The Istanbul Naval Museum is situated on the Bosphorus coast in Beşiktaş/Sinanpaşa; founded in 1897, its renovated museum building opened in 2013. The institution focuses on Ottoman and Turkish maritime history, with the Historical Galley and Sultanate Boats collection forming the core of its exhibits. Arter, located in Beyoğlu/Dolapdere, was founded in 2010 and moved to its current building in September 2019. Designed by Grimshaw Architects, the structure offers a multifunctional program, including performance and learning spaces, as well as exhibition galleries. The institution is an affiliate of the Vehbi Koç Foundation and focuses on contemporary art. The Istanbul Museum of Painting and Sculpture is situated along the Galataport coastline in Karaköy/Tophane. Originally founded in 1937, it officially opened at its new location on October 9, 2022. The building is a conversion of Sedad Hakkı Eldem's 1958 "Antrepo No: 5" by Emre Arolat Architecture. Its collection spans a panorama of Turkish art from the late 19th-century Ottoman period to the late 20th century. Istanbul Modern is positioned near the confluence of the Bosphorus and the Golden Horn on the Karaköy/Tophane waterfront. Established in 2004, its new building, designed by Renzo Piano Building Workshop, opened to visitors on May 4, 2023, and continues to host exhibitions and programs centered on modern and contemporary art.

Focusing on the eye-level interface as the primary site of interior–exterior interaction, the ground-floor configurations—serving as the functional thresholds—are as follows: Artİstanbul Feshane features exhibition and multi-purpose halls; the Naval Museum houses the entrance foyer and an exhibition hall; Arter utilizes its ground level for exhibition space; the Museum of Painting and Sculpture accommodates the reception, restoration unit, and a café; and Istanbul Modern hosts workshops, a café, a library, and a shop.

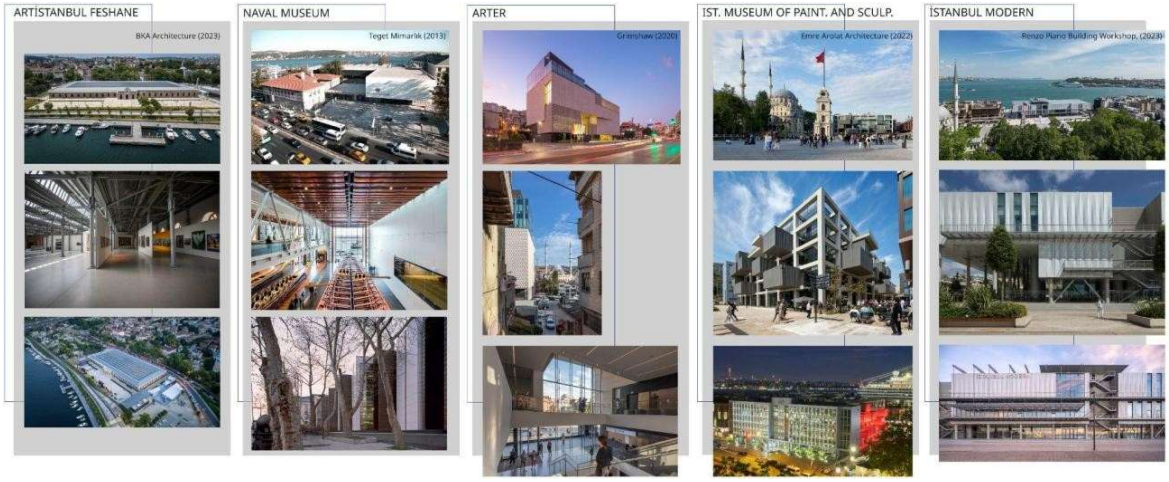


Figure 2. General views of museums

3.2. Research Methodology

Within this conceptual framework, the study examines the relationship between these five museums—acting as urban interfaces—and the public, investigating how they produce publicness. The study aims to uncover how these selected Istanbul museums generate the experience of 'urban inclusion' and how this experience articulates into the city's publicness. Consequently, to assess the levels of urban inclusion the museum experience is analyzed through a holistic approach that synthesizes syntactic (morphological), semantic (discursive), and cognitive (embodied experience) dimensions.

The research examines visitor inclusion through a semantic analysis of Google Maps reviews, while syntactic and morphological analyses—integrated at both urban and immediate scales—evaluate the museums' urban participation. Additionally, the study analyzes the embodiment of inclusion at the museum-city interface through cognitive/bodily observations (thigmotaxis).

The methodological approach examines the degree to which visitors feel included within the space and the museum narrative. Within the scope of cognitive analysis, inclusion is not treated merely as an interior experience; rather, it is addressed as a relational quality produced throughout the structure, extending beyond its boundaries through interfaces. In this context, the building is conceptualized as an ecosystem, and how its interfaces establish and manifest the experience of inclusion within this ecosystem is discussed through the lens of thigmotaxis. The study hypothesizes that a primary cognitive indicator of this inclusion is the close physical and psychological relationship established with the building's interfaces. As defined by Sussman and Hollander (2021) in the "Edges Matter: Thigmotaxis (the Wall-hugging trait)" section of Cognitive Architecture, thigmotaxis is an evolutionary behavioral pattern explaining the tendency of organisms to remain near edges. Transposed from biology to architecture, this approach describes individuals' tendency to move toward the boundaries of a space in search of security and comfort. In spatial research, wall- or edge-oriented movement is evaluated alongside patterns such as center-avoidance and safety-seeking behaviors (Kallai et al., 2007; Walz et al., 2016; Karakaş et al., 2023). By utilizing the wall/edge-oriented routes observed at these interfaces, the study poses the following question: Does the museum's atmosphere of inclusion expand outward from the interior, or is it established as an urban attractor that draws visitors inward from the city?

The data collection phase of the research was conducted as follows: Under cognitive analysis, a thigmotaxis-based systematic behavioral observation protocol and coding scheme (e.g., wall-following routes, visual engagement with the facade) were developed. For syntactic analysis, architectural ground-floor plans of the five museums were obtained. For semantic analysis, Google Maps visitor reviews for the five museums were compiled via web scraping (Apify). All personal data was excluded, and the dataset was anonymized for analysis. Only reviews posted after May 2023 were included in the evaluation.

In the operational phase, behavioral observations were conducted during peak hours (14:00–15:00) on Sundays in November 2026. These observations were based on William H. Whyte's (1980) naturalistic observation approach, utilizing 10-minute video recordings. Through iterative viewing of these recordings, visitor behaviors and approximate demographic characteristics (group size, presence of children, and interface interactions) were coded. Syntactic data collection utilized a multi-scalar framework. To measure the relationship between the museums and the city, analysis areas with a 2km radius centered on each museum entrance were established, and the relevant street network data were retrieved via qGIS. To mitigate the "edge effect"—a methodological bias where boundary-line values are artificially distorted—this buffer zone approach recommended in the literature was adopted (Gil, 2016). The obtained data were transferred to depthmapX software, and Angular Segment Analysis (ASA) was performed. The urban embedding levels of the museums were calculated based on Integration and Choice values. Syntax2D analyzed Isovist Area (General Visibility) analysis on ground-floor surroundings for interior–exterior relationships. Regarding the semantic analysis, Google Maps reviews were thematically coded using MAXQDA to identify prominent codes and sub-codes organized along the axes of "inclusion" and "exclusion."

4. Findings and Data Analysis

Syntactic Analyses:

To investigate the levels of museums' inclusion within the city, syntactic analyses were conducted at multiple scales. The first level examined the relationship between the museums and their 2km urban surroundings centered on each entrance to explain how these structures are embedded within broader urban movement structures. Within this scope, the urban-scale space syntax analysis—conducted via depthmapX angular segment analysis—focused on configurational metrics, specifically integration and choice, to generate numerical values providing a multi-scalar understanding of the relationship between each museum and the city within Istanbul's street network hierarchy (Table 1).

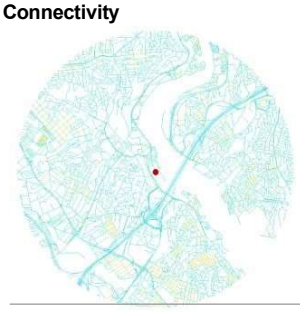
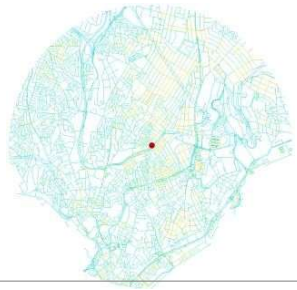
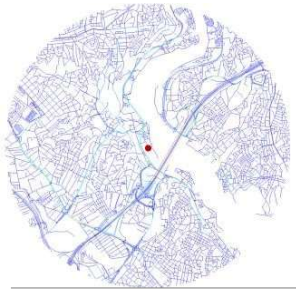
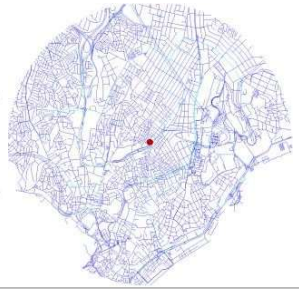
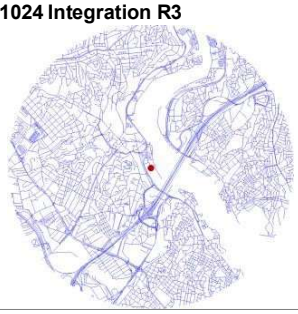
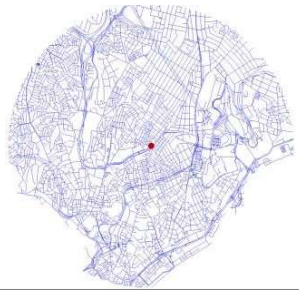
Table 1. Configurative Metrics of Museum Entrances via Angular Segment Analysis

	Angular Segment Analysis	ARTİSTANBUL FESHANE	THE NAVAL MUSEUM	ARTER	MUSEUM OF PAINTING AND SCULPTURE	İSTANBUL MODERN
depthmapx	**Connectivity**	1	2	5	3	5
	T1024 Choice (Global)	0	4158	2.791410	1.83059	31453
	T1024Choice R3 step (Local)	0	8	41	16	40
	T1024 Integration (Global)	1635.49	1264.32	2089.58	1834.93	1486.25
	T1024 Integration R3 step (Local)	4	10.1414	19.5187	29.327	25.135

The color ranges: Connectivity: (0–9); Choice (Global): (0.00–42,519,256.00); Choice R3 step (Local): (0.00–188.00); Integration (Global): (7.32–2,330.65); Integration R3 step (Local): (3.07–6,400.00)

The results of the angular segment analysis clearly demonstrate the configurational roles and spatial shallowness levels of the museum entrances within the urban foreground network (Table 1;2). Arter (2089.58), which has the highest global integration value, stands out as the most accessible node of the urban skeleton by connecting to the entire system with minimum angular deviation and topological depth. On the other hand, the high global choice value of İstanbul Modern (31453) proves that this entrance is located on a major artery forming the city's primary movement backbone. At the local scale (R3), the Museum of Painting and Sculpture (29.32) and İstanbul Modern (25.13) exhibit the highest integration capacity in their immediate surroundings, creating strong pedestrian nodes and shallow micro-systems at the neighborhood level. Conversely, the low global and local values of Artİstanbul Feshane confirm that this entrance presents a more segregated and deep 'threshold' character, detached from the urban whole.

Table 2. Visual Distribution of Syntactic Values across Museum Interfaces

	ARTİSTANBUL FESHANE	THE NAVAL MUSEUM	ARTER	MUSEUM OF PAINTING AND SCULPTURE İSTANBUL MODERN
Connectivity				
T1024 Choice				
T1024 Choice R3				
T1024 Integration				
T1024 Integration R3				



The ground-floor interface (facade line), defined as the building–city contact surface, was segmented by character. This classification adapted and updated Mavros et al.'s (2022) methodology, tailoring their high-rise mixed-use interface framework to the museum context. Accordingly, facade characters were coded under the following categories: Permeable/Public Access (main entrances for direct pedestrian entry); Permeable/Utility Access (secondary access points such as fire exits or service doors); Transparent/Indirect (glazed surfaces with fragmented interior views); Transparent/Direct (uninterrupted visual access to interior activities); Opaque/Blank Wall (surfaces with no interior-exterior relationship); and Opaque/Utility (surfaces concealing technical volumes). To generate comparable data on visual permeability, the percentage distribution of each category within the total building perimeter was calculated and is presented as a donut diagram in Figure 3.

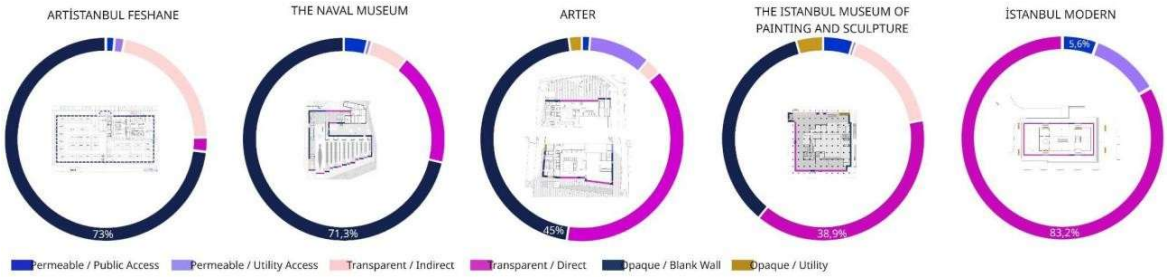


Figure 3. Interface Characteristics of the Museums

Analysis of façade segmentations reveals that Istanbul Modern exhibits the highest proportion of Transparent/Direct characteristics (83.2%), whereas ArtIstanbul Feshane shows the lowest at 2.3%. Conversely, Opaque/Blank Wall levels peak at ArtIstanbul Feshane (73%) and reach their minimum at Istanbul Modern. The data indicates a chronological trend following structural interventions, where the prevalence of Opaque/Blank Walls decreases in favor of increased Transparent/Direct segments. This configurational transition suggests that heightened interior-exterior permeability facilitates deeper engagement with public space, aligning with the evolving visitor-oriented paradigms in contemporary museum design. However, across all analyzed cases, the Permeable/Public Access ratio remains relatively stable, indicating that traditional inward-looking and security-oriented systems continue to persist within these urban interfaces.

Syntax2D was utilized to evaluate visual continuity between the structures and the city by analyzing ground-floor plans from an eye-level perspective. In this modeling process, each building was treated as an ecological element within a defined circular boundary of its immediate surroundings. Crucially, façade segments classified as Transparent/Direct were not treated as visual barriers; instead, the model lines were adjusted to represent the specific contribution of transparent surfaces to urban visual continuity. The resulting isovist area outputs for the five selected museums are presented comparatively in Figure 4.

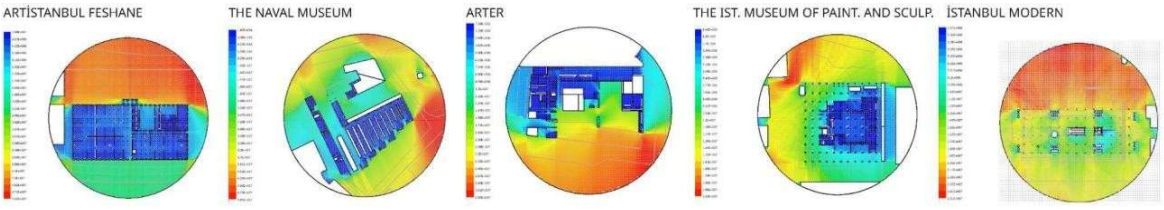


Figure 4. Isovist Area (General Visibility) Analysis of the Ground Floors and Immediate Surroundings of All Museums (Syntax2D).

Figure 4 illustrates a chronological evolution (from left to right) in the interior–exterior visibility relationship, transitioning toward configurations more integrated with the urban surroundings. For Arter and the Istanbul Museum of Painting and Sculpture, ground-floor public programs—including entrance, circulation, and exhibition areas—maintain robust visual contact with the urban environment. Conversely, visibility values remain significantly lower in segments containing service or technical areas closed to the public. As a historical structure, Artİstanbul Feshane exhibits a more introverted spatial organization, remaining largely

disconnected from its immediate surroundings due to its original construction period and existing structural framework. In the Naval Museum, while the visual relationship between the main exhibition space and the entrance establishes an intense connection with the environment, other visitor-restricted areas are distributed with more controlled visibility. Ultimately, the high visibility levels across Istanbul Modern's entire ground floor signify a configuration that is visually and physically integrated with its surroundings at the street level.

Cognitive Analyses: Within this framework, individual and group movements were tracked on-site and manually plotted onto ground floor plans to generate route diagrams. These diagrams map movements recorded in five-minute intervals from observation videos, with line thickness and density adjusted to represent the volume of individuals moving together. Based on recurring interaction patterns, behavioral data were classified into two primary categories: basic behaviors and behaviors regarding visual interest established with the museum interface. This descriptive dataset was then evaluated based on general frequencies and aggregate values to formulate the study's findings (Figure 5).

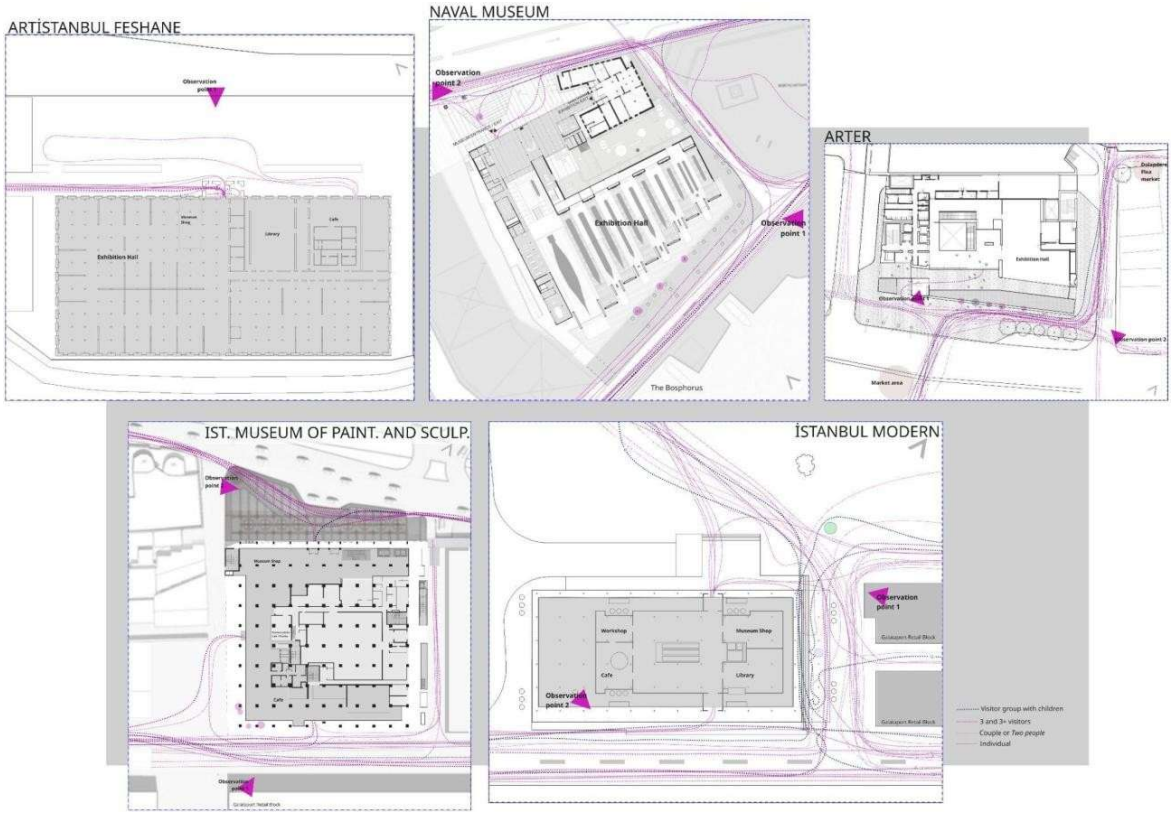


Figure 5. Diagram of visitor behavioral routes

In the counts conducted at the interfaces of the selected museums, the number of individuals passing through was recorded as follows: ArtIstanbul Feshane, n=38; the Naval Museum, n=283; Arter, n=126; the Istanbul Museum of Painting and Sculpture, n=187; and Istanbul Modern, n=269.

The movements of 269 individuals at Istanbul Modern are mapped in Figure 5. Visitor flow is primarily directed from the site entrance toward the building and the Bosphorus coastline. Despite the structure's pervasive visual permeability, not all interfaces trigger equal interaction; some facilitate passage while limiting proximity. Affordance peaks at the building's northeast interface, functioning as a threshold intersecting Galataport restaurants and the Bosphorus-museum axis, alongside the presence of artworks. Structural setbacks on the ground and upper floors expand public circulation, creating a distinct transition under the eaves/canopy. Quantitative data identify families with children as the most intensive user group in this sheltered area. While individuals or pairs move more evenly, groups with children exhibit pronounced boundary-oriented movements and establish a closer relationship with the interface. These patterns support the study's thigmotaxis hypothesis—the subconscious tendency to move along edges for

protection. Consequently, child safety concerns may enhance parental protective instincts, strengthening canopy- and boundary-oriented movements.

Regarding Arter, the movements of 126 individuals were observed. The building interfaces exhibit an exclusionary character driven by security measures and restrictive threshold configurations. Users primarily engage in short-term pauses at seating units bordering the garden wall—often during daily routines like returning from the market—yet the tendency to approach the building's actual façade line remains limited. The main pedestrian flow follows the axis extending from Dolapdere toward the local neighborhood and flea markets. Along this route, users typically proceed toward their targets without deviating or approaching the building walls. Consequently, only 4 individuals entered the building during the observation periods, while 122 individuals continued their routes by passing alongside the structure. Particularly at interfaces lacking spatial affordances that draw people toward the space, users did not approach the façade .Conversely, the seating unit on the front façade, bordering the garden wall, serves as the primary element that successfully attracts and sustains user presence.

At the Naval Museum, interface affordances generally exhibit an exclusionary character. The water feature on the rear façade physically restricts building access, reducing the frequency of approach along the coastal strip. Furthermore, the presence of specific user groups (individuals under the influence of alcohol or substances) in waterfront seating areas shifts the movement of families with children toward a Bosphorus-oriented flow, maintaining a relationship along the coastline rather than approaching the façade. Consequently, pedestrian flow remains largely independent of the façade, with building engagement established primarily through visual gaze. The strongest behavioral attractions are the externally displayed artifacts, which draw users for photography and serve as play-initiating spaces for children. Paradoxically, despite its identity as a 'Naval Museum', the relationship between the building and the public at the seaside interface remains significantly restricted and fragmented.

At the Museum of Painting and Sculpture, the entrance level remains below the surrounding grade, limiting interface engagement primarily to users intending to enter the building. This elevation difference and below-street-level positioning weaken daily street-plane relationships and diminish the effectiveness of inviting thresholds designed for continuous interaction. Nevertheless, a significant increase in usage density occurs at the façade housing the café facing Galataport/Mall; this specific interface generates a stronger attraction than any other interfaces of the building.

To provide a comprehensive understanding of the relationship between spatial design and user experience, the study examined various behavioral interactions established along the museum interfaces. Among these, observing the structure emerged as the most frequent form of engagement. To identify this relationship, gaze patterns toward the interfaces were analyzed from recordings and mapped into heat maps (Figure 6). The highest gaze densities were recorded at Istanbul Modern (74.7% of passersby) and the Naval Museum, respectively, while Arter and ArtIstanbul Feshane exhibited lower densities. Analysis reveals that gaze intensity peaks at the point where the building first enters an individual's field of vision; consequently, corner views trigger heightened visual interest. At the Naval Museum, users moving along the blank façade shift their gaze toward the internal garden at sudden visual ruptures created by openings, suggesting that visual attention is drawn to the unexpected one (a sense of mystery). At Istanbul Modern, a sculpture in the public space serves as a powerful focal point, noticeably intensifying gazes and triggering orientation pauses along the interface. Furthermore, visual interest gravitates toward points of movement; thus, museum entrances and areas with active human presence attract the highest level of engagement.

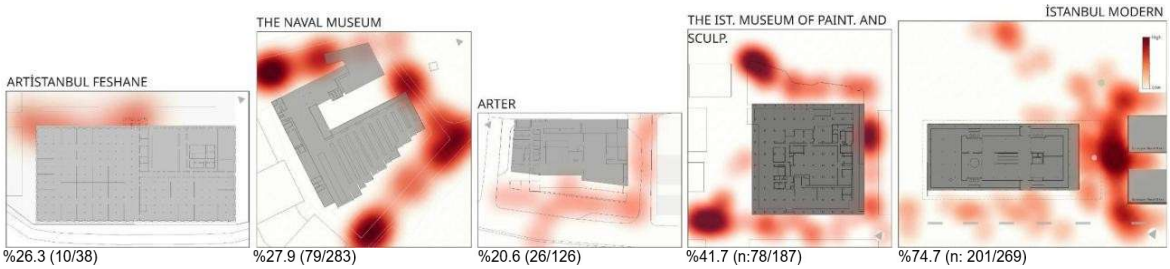


Figure 6. Heatmap of visitor viewpoints toward museums

Semantic Analyses: To evaluate visitor perceptions across all examined museums, Google Maps reviews were utilized as a primary qualitative source and analyzed via MAXQDA. A coding system based on semantic patterns yielded two themes: Inclusion and Exclusion. Sub-codes were established according to prominent experiential dimensions; while insufficient reviews were excluded, others received multiple codes to reflect their complexity. Inclusion sub-codes include Experience/Atmosphere, Spatial Appreciation, Activity/Function, Curatorial, Identity, and Context. Exclusion comprises Museum Function, Curatorial, Identity, Spatial/Contextual Criticism, and Inequality. Within this framework, the Context sub-code was prioritized due to its direct alignment with the research focus (Table 3). Detailed code distributions for all museums—ordered chronologically from left to right—are presented at the end of this section.

Table 3. Codes Distribution

	ARTISTANBUL FESHANE		NAVAL MUSEUM		ARTER		MUSEUM OF PAINTING AND SCULPTURE		İSTANBUL MODERN	
codes	n	%	n	%	n	%	n	%	n	%
1. Inclusion	601	37,6%	581	41,5%	379	30,4%	215	33,9%	1421	30,0%
1.1. Context	46	2,9%	26	1,9%	11	0,9%	9	1,4%	440	10,2%
2. Exclusion	62	3,9%	86	5,0%	109	8,7%	36	5,7%	411	9,5%
2.1. Context	13	0,8%	13	0,9%	85	6,8%	9	1,4%	83	1,9%
Σ (Total Comment, with stars)	1930		2133		1077		385		2750	

The qualitative content analysis of Google reviews provides insights into the inside-out relationship within the museum experience. According to the data, emphasis on context was most prominent in the visitor narratives for Istanbul Modern and Arter. Specifically, Istanbul Modern stands out significantly regarding evaluations of the museum's urban context and its relationship with the surrounding environment. Visitors predominantly define the museum's location on the Karaköy waterfront and its proximity to contemporary urban attractions (e.g., Galataport Mall) within a positive-experience framework.

Visitor reviews particularly appreciate Istanbul Modern's visual and spatial relationship with its surroundings, facilitated by architectural voids integrated into the ground-floor interfaces and terraces. This emphasis demonstrates that the narrative of the museum experience is not limited to the exhibited content; rather, the spatial experience and the context itself are integral to the narrative. Although the curatorial arrangement remains the primary component of the museum experience, narratives regarding the context (the relationship with the surroundings) appear in the reviews with an intensity nearly matching that of curatorial appreciation (Curatorial appreciation: (n=578, 13.4%).

In the reviews of Arter, the relationship with the context is significantly more visible than in other museums (n=85; 6.8%). Visual contact with the surroundings through façade openings and visual thresholds—maintaining continuity across both ground and upper levels—strengthens the contextual connection in visitor narratives. However, a distinct social tension emerges in the reviews due to the contrast between the neighborhood's socio-economic vulnerability (characterized by a dense immigrant population, low-income groups, and a disadvantaged user profile) and the visitor demographic, which consists primarily of outsiders. These reviews reveal that the entrance space of Arter functions as a tension interface. Narratives highlighting that this tension is exacerbated by interface conditions (entrance configuration, thresholds, sense of security, and levels of permeability/surveillance) are particularly prominent. In some visitor statements, a sense of insecurity is expressed prior to entering the building; once inside, a mode of relationship is described in which the neighborhood is essentially transformed into an "object of gaze" and the surroundings are framed as a watched landscape through the façade openings.

The Naval Museum is situated at a highly frequented urban hub on the Bosphorus coastline. Despite the museum's physical proximity to the shore, the theme of Contextual relationship features minimally in visitor narratives (n=13; 0.9%). Instead, evaluations are primarily shaped by the curatorial framework, exhibition practices, and content experience. It can be stated that the experience creates a more introverted atmosphere, with a predominant focus on the exhibited artifacts.

In the case of the Museum of Painting and Sculpture, the theme of relationship with the context is also expressed relatively limitedly in visitor narratives. Although the museum is located in close proximity to Istanbul Modern, the experience narratives are shaped not through the environmental context but primarily through the interior-oriented exhibition experience. This stems from the ground floor's limited integration into the visitor narrative as the museum transitions toward more enclosed and introverted exhibition spaces on the upper levels. In other words, in the exhibition spaces on the upper floors, the visitor experience departs from continuity with the surroundings; attention and orientation increasingly focus on the exhibited objects and the curatorial arrangement. And the ground floor functions primarily as a café unit.

In reviews of ArtIstanbul Feshane, the historical atmosphere and municipal services are highlighted, whereas the library and organized events generally receive positive feedback. Conversely, there is criticism of the venue's low spatial legibility; nostalgia for pre-restoration events is also expressed. Although the space is considered suitable for those seeking a quiet, secluded environment, visitors emphasize that it was previously used more intensively by the public.

For ArtIstanbul Feshane, the codes for Spatial Appreciation and Curatorial Appreciation are most prominent. Reviews emphasize the institution's historical atmosphere and municipal services. At the Naval Museum, spatial experience narratives under the "inclusion" code are most frequently defined by an atmosphere of identity and pride. References to Atatürk, the Cyprus Operation, and Ottoman naval history generate a strong sense of historical belonging among domestic visitors, while foreign visitors often evaluate the museum by comparing it to their own historical frameworks. At Arter, the curatorial appreciation code stands out significantly in experience narratives, with exhibitions and exhibition layouts being the most frequently emphasized themes. Visitors to Arter exhibit a high level of artistic expectation and sophisticated commentary. Conversely, the building's relationship with its surroundings is frequently criticized, described as producing a tense perception. On the other hand, satisfaction regarding management and organization remains high. At the Istanbul Museum of Painting and Sculpture, the most dominant code in the exhibition experience is curatorial appreciation. Visitors express witnessing the development of art in Turkey through a strong sense of belonging within the modernization–identity–Atatürk axis, indicating a more focused visitation pattern. However, the density of artworks is considered excessive by some, leading to calls for a more refined display; while the lack of crowds and enclosed exhibition sections increase focus on the works, the structure is occasionally perceived as cold or repelling. At Istanbul Modern, the codes for spatial, curatorial, and contextual appreciation carry similar weight. However, security checks, economic accessibility, and overcrowding—particularly on public days—weaken the experience and increase fast-visiting practices. Consequently, a temporal emphasis emerges in the narratives. The museum's reputation as a popular stop along the surrounding consumption route suggests an atmosphere conducive to brief glances and image production rather than deep, focused engagement.

4.1. DISCUSSION

This study examines the relationship museums establish with their visitors through the experience of spatial inclusion, focusing on interfaces and their immediate urban surroundings. Findings from this methodological triangulation deepen the discourse on spatial inclusion, expanding the subject through diverse relationalities.

The increasing permeability of the ground-floor programs and interface configurations of the analyzed museums confirms a shift toward more direct integration with urban space, in parallel with evolving paradigms of publicness. This spatial transformation reflects the museum's tendency to transition from a closed box to an urban interface that ensures the continuity of public space. Qualitative analysis of Google Maps user reviews reveals that the ground floor is no longer defined merely as an entrance-threshold but as a public inter-layer equipped with functions such as cafés, libraries, workshops, and shops. Parallel to this public intensification in ground-floor programs, it is observed that the façade/interface character has evolved toward a morphology based on transparency and openness. When this syntactic transformation is read alongside visitor experiences, it becomes clear that the layers of publicity within the museum have undergone a qualitative shift. In the context of a metropolis like Istanbul, museum interfaces produce a

form of publicity shaped by practices of strolling, photography, and consumption, rather than by a classical public sphere in which free public discourse is generated.

The increase in façade openings, as a reflection of the configurative transformation in museums, causes visitors to reconstruct their interior experience through contextual references. This phenomenon has led the architectural interface to become a component as dominant as the museum's curatorial narrative. In the cases of Istanbul Modern and Arter in particular, it is observed that semantic evaluations are shaped through an emphasis on context. However, the analysis shows that while Arter has a higher global integration value (2089.58), this urban-scale centrality is insufficient for local engagement. Conversely, Istanbul Modern's high local integration (25.13) combined with its 83.2% façade transparency directly supports the 'Natural Movement' (Hillier, et. al., 1993) patterns inherent in the grid on human movement. This demonstrates that local spatial shallowness and interface permeability are critical for individual inclusion. In the case of Arter, the socio-cultural tension between the building and the neighborhood (the high culture-low culture dichotomy) is embodied within the building interfaces. Visual interest (heatmap) analyses indicate that Arter exhibits low values at the street level, showing that no outward-to-inward visual engagement is established along the routes used by local residents. Conversely, the gaze directed from the interior to the exterior describes a mode of relationship where the neighborhood is essentially transformed into an object of gaze and the surroundings are framed as a watched landscape. The transition from a sense of insecurity before entering the building—as expressed in some visitor narratives—to a spectatorial comfort once inside reveals the potential of interface openings to both exacerbate and filter urban tension. It is understood that the relationship between spatial interface configurations and exhibition spaces directly influences the museum experience.

When the movement routes and visual interaction patterns at museum interfaces are examined, a high relation is found between Syntax2D Isovist (General Visibility) analyses and gaze density (heatmap) data. It was determined that the focal points of highest visual interest are primarily the corners of the buildings. This situation indicates that the relationship the building establishes with its surroundings develops, in the first stage, through the perception of the structure itself as a watched object. The findings reveal that user perspectives toward the building begin at the first point where visual access is provided; however, the continuity of this contact is shaped by spatial qualities. Visual interest in the building manifests as a search for behavioral and sensory engagement, triggered by "configurational catalysts" such as unexpected openings, externally displayed artworks, and dynamic entrance-exit areas. The fact that this visual interest is short-term and concentrated on specific focal points suggests that the process is guided by subconscious cognitive mechanisms. These results support the studies of Lavdas et al. (2021) and Rosas et al. (2023), which utilize eye-tracking methods; the study determined that visual interest evolves from blank surfaces toward detailed surfaces (artworks) and from static forms toward mobile/dynamic elements. This interest aligns with the Isovist area analyses.

Finally, research findings indicate that individual cultural background and the connection established with the spatial narrative are decisive factors in the museum experience. As observed particularly in the cases of the Naval Museum and the Museum of Painting and Sculpture, the visitor's identification with the narrative offered by the museum enhances the impact of the spatial atmosphere and strengthens engagement with the spatial experience. This narrative bond provides a basis for the individual to construct self-confidence through their own culture, while simultaneously reinforcing a sense of pride regarding their cultural identity. Consequently, the museum experience is not merely an object-oriented observation, but a dynamic process that the individual discovers through their own cultural identity.

5. Conclusions

In this research, five recently opened museums in Istanbul have been examined as a group of structures intrinsic to their surroundings through their interfaces. The study explores how these museums integrate urban dwellers into the city and the museum experience via their interfaces. A primary conclusion of the research is that shifting paradigms of publicness are directly reflected in museum interface configurations, characterized by an increasing trend toward façade transparency. The findings demonstrate that the configurative characteristics of the interface significantly influence museum experience narratives,

providing a basis for visitors to articulate their experiences in a more context-oriented manner. Consequently, visitor reviews reveal that cognitive representations of museums transcend structural boundaries, integrating closely with their immediate surroundings and transforming museums from introverted entities into holistic spatial narratives deeply embedded within the urban fabric. Accordingly, the study concludes that museum configuration plays a role in user experience as decisive as the museum's curatorial narrative. It has been observed that museum interfaces shape the experience from the outside in.

Observations of the "outside-in" reading of museum interfaces indicate that users' relationships are shaped by the interplay among ground-floor programming, attractive elements such as artworks, and subconscious responses to spatial configuration. To further investigate the relationship between museum interfaces and urban users, future research could evaluate repeated field observations across different periods and exhibition/event cycles, thereby clarifying interface usage patterns.

The findings from the cognitive and semantic evaluations in this study demonstrate that inclusion in the museum experience can be discussed within a spatial cognition framework, particularly through processes such as the allocation and distribution of attention, focus, and cognitive load. In future research, it is considered essential to generate space syntax parameters that enhance the interior-exterior relationship of museums and to conduct analyses by integrating these with qualitative data.

The analysis of shifting post-museum approaches and the outward-extending atmosphere of publicness from the interior to the exterior concludes that a new museology can be developed through curatorial and spatial narratives where individuals feel a sense of inclusion, thereby generating urban richness that connects visitors more closely to the city.

Reference

Al Mushayat, N.S., Dal Cin, F. and Barreiros Proença, S. (2021) 'New lens to reveal the street interface: A morphological-visual perception methodological contribution for decoding the public/private edge of arterial streets', *Sustainability*, 13(20), 11442.

Bauman, Z. (2010) *Küreselleşme: Toplumsal sonuçları*. İstanbul: Ayrıntı Yayınları.

BKA Architecture (2023). Artİstanbul Feshane. Arkitera. [Online] Available at: https://www.arkitera.com/proje/artistanbul-feshane/ [Accessed 25 Jan. 2026].

Cullen, G. (1961) *The Concise Townscape*. London: Architectural Press.

Cullen, G. (1971) *The Concise Townscape* (Rev. ed.). London: Architectural Press.

Emre Arolat Architecture (2022). Istanbul Painting and Sculpture Museum / EAA - Emre Arolat Architecture. ArchDaily. [Online] Available at: https://www.archdaily.com/984316/istanbul-painting-and-sculpture-museum-eaa-emre-arolat-architecture [Accessed 25 Jan. 2026].

Gehl, J., Kaefer, L.J. and Reigstad, S. (2006) 'Close encounters with buildings', *Urban Design International*, 11(1), pp. 29–47.

Giebelhausen, M. (2006) 'Museum architecture: A brief history', in Macdonald, S. (ed.) A Companion to Museum Studies. Oxford: Blackwell, pp. 223–244.

Gil, J. (2017). Street network analysis "edge effects": Examining the sensitivity of centrality measures to boundary conditions. *Environment and Planning B: Urban Analytics and City Science*, *44*(5), 819-836.

Grimshaw (2020). Arter Museum / Grimshaw. ArchDaily. [Online] Available at: https://www.archdaily.com/943460/arter-museum-grimshaw [Accessed 25 Jan. 2026].

Grunenberg, C. (1994) The Politics of Presentation: Museums, Galleries and Exhibitions in New York, 1929–1947. PhD thesis. London: Courtauld Institute of Art, University of London.

Habermas, J. (2005). Kamusallığın Yapısal Dönüşümü [The Structural Transformation of the Public Sphere]. Translated by T. Bora and M. Sancar. 6th edn. Istanbul: İletişim Yayınları.

Hanson, J. (1998) Decoding Homes and Houses. Cambridge: Cambridge University Press.

Hillier, B., Penn, A., Hanson, J., Grajewski, T., Xu, J., (1993), 'Natural movement: or, coniguration and attraction in urban pedestrian movement.' Environment and Planning B: Planning and Design, Volume 20, p. 29-66

Jacobs, J. (1961) *The Death and Life of Great American Cities*. New York: Random House.

Kallai, J., Makany, T., Csatho, A., Karadi, K., Horvath, D., Kovacs-Labadi, B., Jarai, R., Nadel, L. and Jacobs, W.J. (2007) 'Cognitive and affective aspects of thigmotaxis strategy in humans', Behavioral Neuroscience, 121(1), pp. 21–30.

Karakaş, T., Dumlu, B.N. and Yıldız Özkan, D. (2023) 'Minding the city: A case study on the new conceptualizations of human experience in the built environment', A|Z ITU Journal of the Faculty of Architecture, 20(1), pp. 163–179.

Koch, D. (2013) 'The architectural interface inside-out: Interior–exterior relations, spatial models, and configurational mirroring', in Proceedings of the 9th International Space Syntax Symposium. Seoul: Sejong University Press, paper 67.1.

Lavdas, A.A., Salingaros, N.A. and Sussman, A. (2021). Visual attention software: A new tool for understanding the "subliminal" experience of the built environment. Applied Sciences, 11(13), p. 6197.

Mavros, P., Zhong, Y. and Hölscher, C. (2022) 'Spatial characteristics of mixed-use typologies in a tropical metropolis: Understanding how retail podia relate with the urban realm', in Proceedings of the 13th Space Syntax Symposium. Bergen: Western Norway University of Applied Sciences.

O'Doherty, B. (1999) Inside the White Cube: The Ideology of the Gallery Space. Berkeley, CA: University of California Press.

Özkasım, H. and Ögel, S., 2011. Türkiye'de müzeciliğin gelişimi. *İTÜDERGİSİ/b*, *2*(1).

Redaelli, E., Hansen, L.E. and Djupdræt, M.B. (2025) 'Museums as public spaces in the city: Insights from Aarhus, Denmark', Cities, 159, Article 105778.

Reiss, J.H. (2001) From Margin to Center: The Spaces of Installation Art. Cambridge, MA: MIT Press.

Renzo Piano Building Workshop (2023). Istanbul Modern Museum / Renzo Piano Building Workshop + Arup. ArchDaily. [Online] Available at: https://www.archdaily.com/1002751/istanbul-modern-museum-renzo-piano-building-workshop-plus-arup [Accessed 4 Jan. 2026].

Rosas, H.J., Sussman, A., Sekely, A.C. and Lavdas, A.A. (2023). Using Eye Tracking to Reveal Responses to the Built Environment and Its Constituents. Applied Sciences, 13(1), p. 282.

Searing, H. (1982) New American Art Museums. Berkeley, CA: University of California Press.

Sussman, A. and Hollander, J.B. (2021) 'Edges Matter: Thigmotaxis (the "Wall-hugging" Trait)', in Cognitive Architecture: Designing for How We Respond to the Built Environment. 2nd edn. New York, NY and London: Routledge, pp. 9–47.

Teget Mimarlık (2013). İstanbul Deniz Müzesi. Arkitera. [Online] Available at: https://www.arkitera.com/proje/istanbul-deniz-muzesi/ [Accessed 25 Jan. 2026].

van der Werf, J., Zweerink, K. and van Teeffelen, J. (2016) 'History of the city, street and plinth', in Karssenberg, H., Laven, J., Glaser, M. and van 't Hoff, M. (eds.) *The City at Eye Level: Lessons for Street Plinths*. Second and extended version. Delft: Eburon Academic Publishers, pp. xx–xx. *(Sayfa aralığını PDF/kitaptan ekle.)*

Walz, N., Mühlberger, A. and Pauli, P. (2016) 'A human open field test reveals thigmotaxis related to agoraphobic fear', Biological Psychiatry, 80(5), pp. 390–397.

Watermeyer, R. (2012) 'A conceptualisation of the post-museum as pedagogical space', Journal of Science Communication, 11(1), A02.

Whyte, W.H. (1980) *The Social Life of Small Urban Spaces*. New York: Project for Public Spaces.