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JOURNAL OF SUSTAINABLE BUILT ENVIRONMENT

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J S B E

Research article

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Spatial Imprinting and Heritage Publicness: A Dramaturgical Analysis of the Ruins of St. Paul's–Mount Fortress Highground in Macao

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Abstract: This article examines the Ruins of St. Paul's–Mount Fortress highground in Macao as a continuous heritage assemblage rather than as two isolated monuments. It focuses on spatial inscription, understood as the process through which historical meanings are embedded in public experience through topography, walking rhythm, visual framing, stopping points, and repeated spatial practice. Methodologically, the study combines repeated pedestrian transect surveys, topographic section analysis, field observation, photographic documentation, and dramaturgical interpretation. The analysis identifies a five-part spatial sequence consisting of the forecourt, stone steps, façade platform, ramp corridor, and Mount Fortress terrace. This sequence organizes a rhythm of ascent, pause, concealment, panoramic release, and retrospective viewing. Interpreted through the concepts of threshold, scene, backstage, and retrospective viewing, the highground transforms religious and military remains into a public theatre of urban memory. The findings suggest that sustainable heritage interpretation in dense historic cities should move beyond the preservation of architectural objects alone and attend to spatial relations, embodied movement, visual corridors, and public practices.

Keywords: Spatial Inscription; Ruins of St. Paul's; Mount Fortress; Dramaturgical Space; Historic Built Environment

Introduction

The Ruins of St. Paul's, officially listed as the Ruins of St. Paul's College (Former Mater Dei Church, forecourt and staircase), are commonly regarded as the most recognizable heritage symbol of Macao. As the surviving façade of the former Church of Mater Dei attached to St. Paul's College, the monument has long been interpreted through multiple frameworks: Jesuit missionary history, colonial encounter, cross-cultural iconography, architectural heritage, and urban tourism. Yet an interpretation that isolates the façade as a singular architectural object risks overlooking the more complex spatial mechanism through which the site is experienced. The façade does not operate alone. It is connected to the forecourt, the stone steps, the rear slope, the ramp corridor, and the terrace of Mount Fortress. Together, these elements form a continuous highground assemblage in which bodily movement, topographic ascent, visual compression, theatrical pause, concealment, panoramic release, and retrospective viewing are organized into a coherent heritage experience (**Figure 1**).

This article argues that the heritage significance of the Ruins of St. Paul's–Mount Fortress highground lies not only in its material remains or symbolic images, but also in the spatial sequence through which visitors repeatedly encounter, traverse, and reinterpret the site. From the forecourt, visitors ascend the stone steps toward the façade, pause at the platform under an intensified upward gaze, turn away from the façade into a ramp corridor, and finally arrive at Mount Fortress, where the city is opened to panoramic viewing and the façade can be retrospectively framed from above. This sequence is not a neutral circulation route. It constitutes a spatial narrative that transforms

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Figure 1 | Study area of the Ruins of St. Paul's–Mount Fortress highground

religious and military remains into a public theatre of urban memory.

The case is especially significant because it brings together several layers of historical meaning within a compact urban topography. The façade of the Ruins of St. Paul's carries the memory of Jesuit education, Catholic visual instruction, and cross-cultural translation. Mount Fortress represents the military and defensive dimension of early modern Macao. The slope, steps, and ramp between them mediate these two symbolic poles through bodily movement and visual transition. If the façade may be understood as a visible field of doctrine, the fortress terrace represents a position of surveillance, command, and retrospective viewing. Between them, the highground path functions as a ritualized and public route through which history becomes spatially performable.

Existing scholarship has made important contributions to the study of the Ruins of St. Paul's and Mount Fortress. Historical studies have examined St. Paul's College, Jesuit presence in Macao, and the transformation of the site after the nineteenth-century fire (Li, 2001; Wu et al., 2009a, 2009b). Iconographic research has analyzed the façade's sculptural programme, Christian symbols, and cross-cultural visual elements (Chen, 2022; Gu, 2015; Guillén-Nuñez, 2009; Kwan, 2015; Wagner & Lin, 2017; Xing, 2006). Architectural and urban studies have discussed the relationship between religious and military structures and the spatial organization of the highground (Garrett, 2010; Kwan, 2018; Shen, 2023; Tang & Cai, 2017), while heritage studies have considered the site's contemporary role as a tourist landmark and public cultural symbol (Wieczorek, 2019, 2020). However, these approaches tend to examine history, image, military function, and tourism as relatively separate domains. What remains insufficiently examined is how the highground works as a continuous spatial mechanism: how topography, walking rhythm, visual sequence, and public practice together produce heritage publicness.

To address this gap, the article introduces spatial inscription as its core analytical concept. Liu (2026) proposed the inscription mechanism as a model for understanding how heritage spaces mediate the transformation from spatial production to memory production. That model identifies temporal, spatial, visual, and practical inscription as interrelated dimensions through which collective memory is stabilized, activated, and circulated. The present article narrows the focus to spatial inscription. It asks how a specific heritage highground produces memory through topographic ascent, bodily rhythm, visual framing, stopping points, and dramaturgical organization. In this sense, spatial inscription does not refer merely to marks left on physical surfaces. It refers to a process through which historical meanings become embedded in repeatable spatial experience.

The article is guided by three research questions. How does the Ruins of St. Paul's–Mount Fortress highground organize bodily movement through its topographic and architectural sequence? How does the visitor's visual experience

shift across threshold, scene, backstage, and retrospective viewing? In what sense does this spatial sequence transform religious and military remains into a public heritage theatre? By answering these questions, the article aims to contribute to three fields of inquiry: heritage studies, by showing how publicness is generated through embodied spatial practice; built environment research, by demonstrating the importance of slope, path, view corridor, and stopping point in heritage interpretation; and memory studies, by specifying how spatial inscription operates as a mechanism of collective memory production.

The article proceeds as follows. The next section reviews the theoretical background of spatial inscription, heritage publicness, and dramaturgical space. The third section explains the materials and methods, including repeated pedestrian transect surveys and topographic analysis. The fourth section analyzes the highground as a five-part spatial sequence. The fifth section interprets the route through the dramaturgical concepts of threshold, scene, backstage, and retrospective viewing. The sixth section discusses the implications of spatial inscription for sustainable heritage interpretation in dense historic cities. The conclusion summarizes the article's contributions and limitations.

Literature Review and Analytical Framework

From spatial production to spatial inscription

The theoretical premise of this article is that heritage space should not be treated as a passive container of historical meaning. Since Lefebvre's formulation of the production of space, space has increasingly been understood as a socially produced, relational, and historically mediated structure. Lefebvre (1991) argues that space is not simply a physical background for social life, but a product of social relations, symbolic representations, and everyday practices. This insight shifts attention from the material object alone to the processes through which space is organized, perceived, and lived. Soja's (1996) notion of Thirdspace further emphasizes space as a lived and performative field in which material, imagined, and social dimensions are intertwined.

Within heritage studies, this spatial turn has important implications. Heritage sites are not merely preserved objects; they are environments in which meanings are produced through movement, representation, regulation, and public use. A monument may be materially stable, but its meaning is continually reactivated through the ways people approach it, view it, photograph it, explain it, and incorporate it into everyday or touristic practice. Therefore, to understand heritage as a built environment, it is necessary to analyze not only architectural form, but also routes, thresholds, pauses, visual fields, and social performances.

In memory studies, collective memory is commonly understood as socially framed, culturally mediated, and anchored in material or symbolic sites (Assmann, 2011; Halbwachs, 1992; Nora, 1989). The concept of inscription provides a way to connect spatial production with memory production. In Ricoeur's (2004) account, inscription refers to the exteriorization of memory into durable forms that can circulate beyond immediate lived experience. When extended beyond textual or archival contexts, inscription can also describe how memory becomes stabilized through spatial arrangements, images, monuments, rituals, and embodied practice. Liu (2026) develops this insight into a four-dimensional inscription mechanism, arguing that heritage spaces operate as memory-producing systems through temporal, spatial, visual, and practical inscription. This article builds on that framework but focuses specifically on spatial inscription.

Spatial inscription is defined here as the process through which historical meanings are written into public experience by topography, path structure, bodily movement, visual framing, and stopping points. Unlike a purely symbolic interpretation of architecture, spatial inscription emphasizes the experiential and sequential character of memory production. Historical meaning is not only read from a façade or extracted from an archive. It is also produced when the body ascends a stair, pauses before a monumental surface, loses sight of a target, reaches a viewing terrace, or turns back to reinterpret the path already taken. In this sense, the Ruins of St. Paul's–Mount Fortress highground offers a particularly productive case, because its heritage significance is generated through a compact but complex sequence of ascent, pause, concealment, release, and retrospective viewing.

Heritage publicness and sustainable built environments

Heritage publicness refers to the process through which heritage becomes accessible, shareable, and socially meaningful beyond its original institutional, religious, or political function. A religious site may become a public heritage space not simply because it is legally protected or opened to tourists, but because it is repeatedly used, viewed, narrated, photographed, and reinterpreted by diverse publics. This understanding is consistent with heritage studies that emphasize the social construction of heritage value, the politics of cultural inheritance, and the relationship between heritage, power, and public meaning (Graham et al., 2000; Lowenthal, 1985; Smith, 2006). Smith's (2006) critique of authorized heritage discourse is relevant here, because it reminds us that heritage value is not inherent in objects alone, but is constructed through cultural processes, institutional narratives, and public practices. Harrison (2013, 2015) similarly emphasizes heritage as an active and contemporary process rather than a fixed residue of the past.

For historic built environments, publicness is inseparable from spatial access and embodied experience. A heritage site may be physically preserved but experientially fragmented if its routes, view corridors, thresholds, and gathering spaces are disrupted. Conversely, a site may remain socially active when its spatial structure continues to support movement, stopping, viewing, and collective participation. This is particularly important in dense historic cities such as

Macao, where heritage sites are embedded in living urban fabrics rather than isolated in museum-like settings. In such contexts, sustainable heritage interpretation must address how historical spaces remain publicly legible and experientially meaningful under conditions of tourism, urban density, and changing cultural practice.

The Ruins of St. Paul's–Mount Fortress highground is not only a protected heritage site; it is also a heavily used public space. Visitors arrive from commercial streets, gather in the forecourt, climb the steps, pause for photographs, enter the ramp corridor, and view the city from Mount Fortress. These activities do not merely occur after heritage preservation; they are part of the continuing production of heritage meaning. The site's publicness is therefore not a secondary effect of tourism, but a central dimension of its contemporary heritage life.

Dramaturgical space: Threshold, scene, backstage

To analyze this public spatial sequence, the article adopts a dramaturgical framework. Dramaturgical theory has long used theatrical metaphors to understand social action, spatial organization, and performance. Van Gennep's (1960) theory of rites of passage identifies threshold or liminality as a transitional phase between separation and incorporation. Turner (1969) further develops liminality as a condition of ambiguity, transformation, and potential reordering. Although these theories were originally developed in anthropology, they offer useful tools for interpreting the passage from ordinary urban space into a symbolically intensified heritage environment.

Goffman's (1959) dramaturgical model distinguishes between front stage and backstage. The front stage is the visible arena in which performances are organized before an audience, while the backstage is a space of transition, preparation, withdrawal, or reconfiguration. In heritage environments, these categories should not be applied mechanically. Rather, they can help identify how spatial settings organize the relationship between objects, viewers, and public performance. A platform before a façade can operate as a front stage or scene, while a ramp beside and beyond the monument can function as a backstage corridor in which the previous visual order is suspended and reconfigured.

Fischer-Lichte's (2008) theory of performance as an event further clarifies the interactive dimension of heritage space. A scene is not merely a static image presented to passive viewers. It is generated through the co-presence of spatial setting, visual object, bodily orientation, and public participation. In the case of the Ruins of St. Paul's, the façade platform becomes a scene not only because the façade is monumental, but because visitors gather, stop, photograph, look upward, and participate in a shared visual event. At night, light projection further intensifies this theatricality by transforming the stone façade into a dynamic screen.

Based on these theoretical resources, the article interprets the highground path through four linked categories: threshold, scene, backstage, and retrospective viewing. Threshold refers to the transition from the surrounding urban fabric into the directed ascent toward the façade. Scene refers to the platform where the façade dominates the visual field and organizes public viewing. Backstage refers to the ramp corridor where the façade withdraws from view and the visitor is led through a transitional spatial order. Retrospective viewing refers to the reversal at Mount Fortress, where the visitor looks back at the façade and recognizes the previous route as a spatial performance. Together, these categories provide the analytical framework for understanding spatial inscription at the highground.

Materials and Methods

This study adopts a qualitative case study approach combining repeated pedestrian transect surveys, topographic section analysis, visual-spatial analysis, and theoretical interpretation. The case study area is limited to the Ruins of St. Paul's–Mount Fortress highground in Macao, including the forecourt of the Ruins of St. Paul's, the stone steps, the façade platform, the rear slope and ramp corridor, and the Mount Fortress terrace. This spatial boundary was selected because it covers the main visitor route through which the façade and the fortress are experienced as a continuous highground assemblage rather than as separate heritage points.

The most important field method was repeated pedestrian transect survey. The author conducted more than forty on-site walks along the main route from the forecourt to Mount Fortress. During these walks, the author recorded elevation changes, bodily effort, stopping points, visual transitions, route turns, and spatial perception at key nodes. The repeated walking process was not intended to replace professional geodetic surveying. Rather, it functioned as an experiential field method designed to verify the relationship between topographic change and embodied spatial rhythm. Through repeated walks, the study identified stable experiential patterns: gathering in the forecourt, intensified ascent on the stone steps, pause and upward gaze on the façade platform, delayed movement through the ramp corridor, and panoramic release at the fortress terrace.

The field records were cross-checked with several spatial data sources. These included Google Earth Pro path sampling, JAXA ALOS 12.5 m DEM data, base maps from the Cartography and Cadastre Bureau of Macao, and identifiable structural anchors visible on site, such as stair segments, platform edges, ramp turns, retaining walls, and the Mount Fortress terrace. The elevation profile and slope diagrams were produced through a process of comparison between field observation and digital sampling. Because the historic urban fabric is compact and the DEM resolution is not sufficient to capture all street-scale variations, the resulting elevation values should be understood as approximate analytical evidence rather than high-precision engineering measurements. Their purpose is to clarify spatial rhythm, relative slope variation, and the relationship between bodily load and stopping points.

Table 1 | Data sources and analytical functions

Data type	Source	Analytical function
Repeated pedestrian transect records	More than forty on-site walks along the main route	To verify bodily rhythm, stopping points, perceived effort, and visual transitions
Elevation records	Field walking records at key nodes	To compare experiential rhythm with elevation change
Path sampling	Google Earth Pro	To construct the preliminary route profile
DEM data	JAXA ALOS 12.5 m DEM	To provide a basic topographic reference
Base map	Cartography and Cadastre Bureau of Macao	To map the route, spatial nodes, and study boundary
Field photographs	Author's documentation	To analyze threshold, scene, backstage, and retrospective viewing

The main data sources and their analytical functions are summarized in Table 1. These sources were not used as isolated datasets, but were cross-checked to construct an approximate and experiential spatial profile of the route.

The visual-spatial analysis was based on field photography, route observation, and diagrammatic reconstruction. Photographs were taken at key points, including the street entrance, the forecourt, the stone steps, the façade platform, the ramp entrance, and the Mount Fortress terrace. These images were not treated as illustrations only, but as visual evidence for analyzing how the façade appears, disappears, enlarges, or recedes within the visitor's field of vision. Particular attention was paid to visual compression, frontal confrontation, lateral withdrawal, concealment, panoramic opening, and retrospective framing.

The analytical process consisted of three steps. First, the route was divided into five spatial segments: forecourt, stone steps, façade platform, ramp corridor, and Mount Fortress terrace. Each segment was analyzed in terms of length, elevation change, slope, bodily rhythm, and stopping function. Second, the visual sequence was interpreted through the dramaturgical categories of threshold, scene, backstage, and retrospective viewing. This step examined how each segment changes the relationship between viewer, façade, fortress, and city. Third, the spatial and visual findings were synthesized through the concept of spatial inscription, showing how the highground path transforms historical remains into a repeatable public heritage experience.

The study has methodological limitations. The elevation data are approximate and should not be used as technical survey data. The walking records are based on the author's repeated field experience and therefore cannot fully represent all visitor groups, especially elderly visitors, children, disabled visitors, or residents using alternative routes. Nevertheless, the combination of repeated field walking, topographic sampling, visual documentation, and theoretical interpretation provides a robust basis for examining how spatial experience operates as a mechanism of heritage publicness.

The Highground as a Spatial Sequence

The forecourt: Gathering and orientation

The spatial sequence begins at the forecourt of the Ruins of St. Paul's. Although commonly experienced today as an open public space, the forecourt is not simply an empty plaza before a monument. It functions as the first threshold in the highground sequence. Located at a relatively lower elevation than the façade platform and Mount Fortress, it gathers visitors from surrounding streets and directs them toward the stone steps and the façade. Its spatial role is therefore not primarily one of vertical ascent, but of gathering, orientation, and visual preparation (Figure 2).

In the dense urban fabric of Macao, the approach to the forecourt is shaped by commercial streets, narrow passages, and crowded pedestrian movement. As visitors enter the forecourt, the visual field opens, and the façade begins to appear as a clear object of attention. This transition from street compression to plaza opening produces the first shift in spatial perception. The visitor is no longer moving through an ordinary commercial street, but is drawn into a directed visual field in which the façade and steps become the dominant target.

The forecourt can be understood as a low threshold. It does not impose strong physical effort, but it establishes the direction of the entire route. The visitor's body has not yet entered the most demanding part of the ascent, but the gaze has already begun to climb. The façade appears ahead, and the steps organize the movement toward it. This produces what may be called a visual ascent prior to bodily ascent. The heritage experience is initiated not by the arrival at the monument itself, but by the moment when the forecourt converts dispersed urban movement into a shared orientation toward the façade.

The stone steps: Rhythmic ascent and bodily intensification

The second segment is the stone steps leading from the forecourt to the façade platform. This segment gives the highground sequence its most recognizable bodily rhythm. Historical studies note that the steps were constructed in the seventeenth century and originally consisted of a segmented structure associated with the approach to the

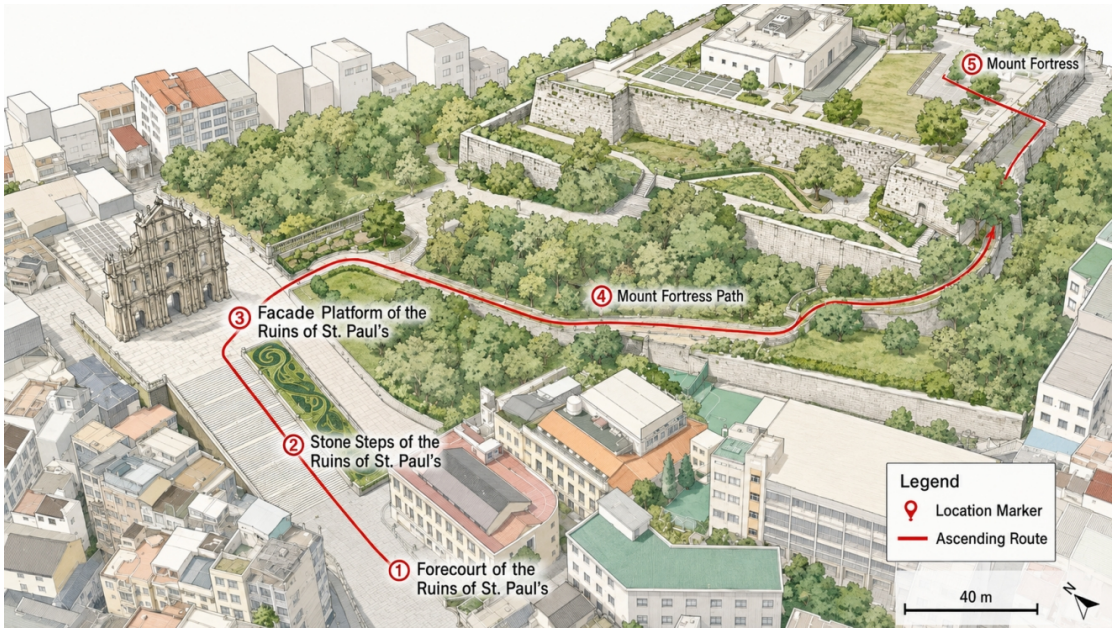

Figure 2 | Ascending route of the Ruins of St. Paul's–Mount Fortress highground

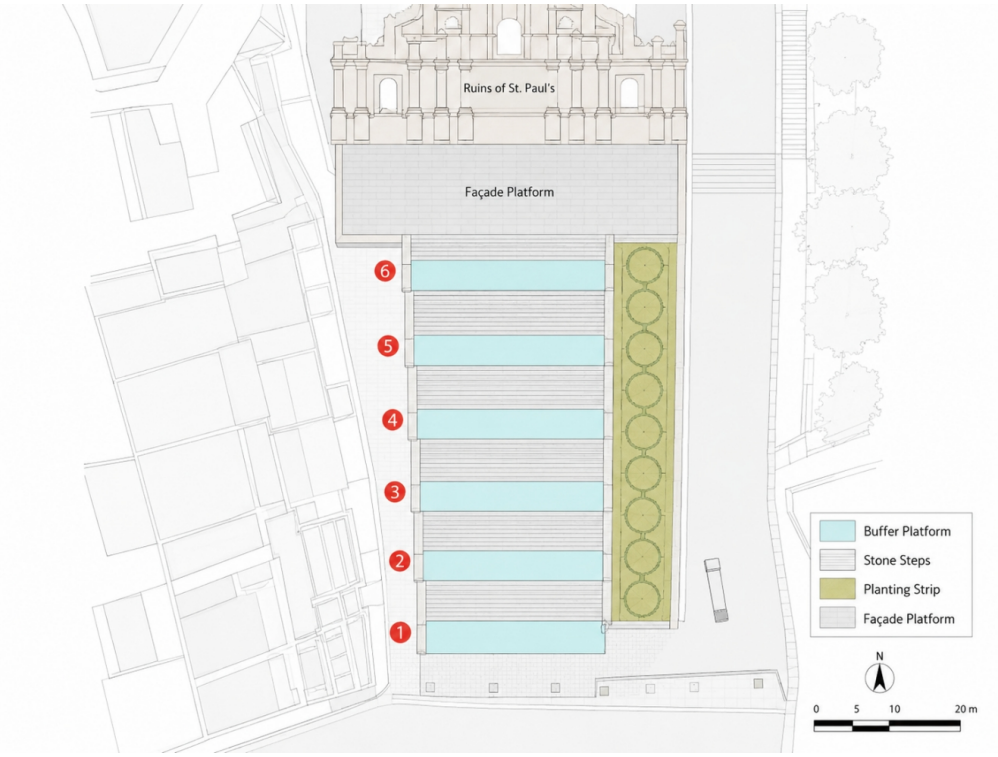

Figure 3 | Buffer platforms of the existing stone steps in front of the Ruins of St. Paul's

church. After the nineteenth-century fire and later spatial adjustments, the present number of steps differs from the earlier configuration, but the rhythm of segmented ascent remains legible (Figure 3).

The steps transform horizontal urban movement into vertical bodily effort. Visitors shorten their stride, adjust their pace, and repeatedly pause or slow down as they approach the façade. The experience is not one of extreme difficulty, but of controlled intensification. The ascent is sufficiently demanding to make visitors aware of bodily movement, yet not so difficult as to prevent ordinary public use. This balance between accessibility and symbolic ascent is important. It allows the route to function simultaneously as

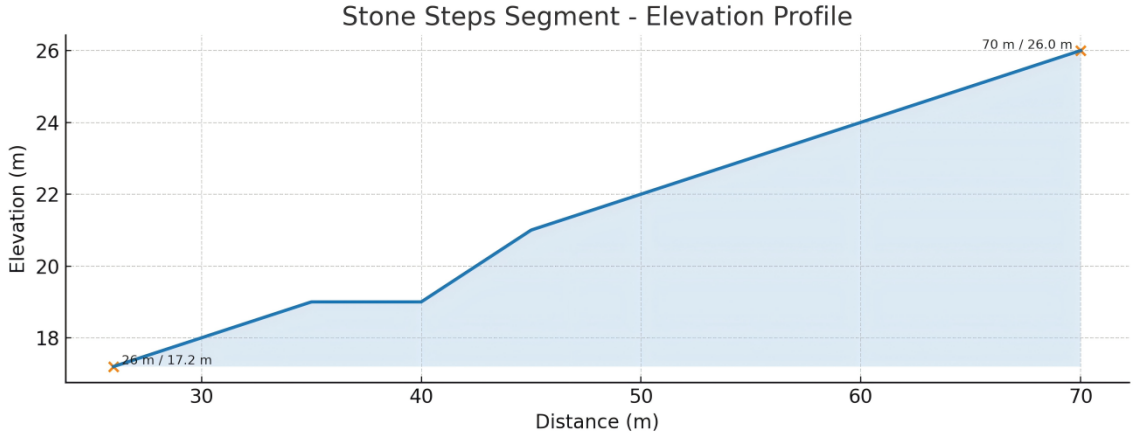

Figure 4 | Elevation section of the stone-step segment

Table 2 | Proportion and viewing-angle effect of the façade platform

Indicator	Value	Calculation	Spatial implication
Height-depth ratio	1.417	Façade height 25.5 m/platform depth 18 m	Indicates the visual dominance of the façade over the platform space
Viewing angle	54.8°	θ = arctan(25.5/18)	A viewing angle above 50° intensifies upward gaze and visual pressure

a practical passage, a touristic approach, and a residual form of ritualized movement.

Topographically, the steps produce a marked increase in slope compared with the forecourt and the façade platform. The ascent from the lower forecourt to the platform creates a clear bodily contrast between gathering below and pausing above. In spatial terms, this segment acts as the first major inscriptional device. It writes historical meaning into the body by making the visitor climb toward the façade. The movement recalls older religious logics of ascent, but in the contemporary context it is also rewritten by tourism, photography, and collective circulation. The steps are therefore not only a historical remnant; they are a mechanism through which visitors continue to experience the site as an elevated and symbolically intensified space (Figure 4).

The visual experience changes during the ascent. From the lower steps, the façade is still partially framed by the width of the staircase and the surrounding urban edge. As the visitor climbs, the façade expands and gradually occupies more of the field of vision. Bodily effort and visual enlargement proceed together. This coordination between walking and seeing is central to spatial inscription. The route does not simply lead to the façade; it gradually produces the façade as a visual and bodily event.

The façade platform: Pause, upward gaze, and visual occupation

At the top of the steps, visitors arrive at the façade platform. This is the most important stopping point in the sequence. After the intensified ascent, the ground becomes relatively flat, and visitors naturally slow down, pause, turn, photograph, or look upward. The platform transforms the bodily effort of climbing into a frontal visual encounter with the façade.

The geometry of the platform intensifies this encounter. Because the platform depth is limited in relation to the height of the façade, visitors standing on the platform experience a high viewing angle. This visual concentration can be further explained by the geometric relation between the façade height and the platform depth. As shown in Table 2, the façade height of approximately 25.5 m and the platform depth of approximately 18 m produce a height-depth ratio of 1.417 and a calculated viewing angle of 54.8°. This value is beyond ordinary horizontal architectural viewing and helps explain why the platform functions as an apparatus of upward gaze rather than as a neutral resting space.

The façade occupies a large portion of the visual field, and the gaze is directed upward. This creates a condition of visually compelled attention. Visitors do not merely choose to look at the façade as one object among others; the spatial arrangement makes the façade difficult to avoid. The platform therefore operates as an apparatus of visual concentration (Figure 5).

This visual concentration has several effects. First, it transforms the façade from an architectural surface into a theatrical backdrop. The stone elevation, niches, sculptural figures, and openings become part of a frontal visual scene. Second, it transforms visitors from moving pedestrians into temporary viewers. The act of stopping becomes a public and collective gesture. Third, it reorganizes the relationship between religious image and contemporary public use. The façade's iconographic programme retains its historical and religious layers, but the platform reactivates it through con-

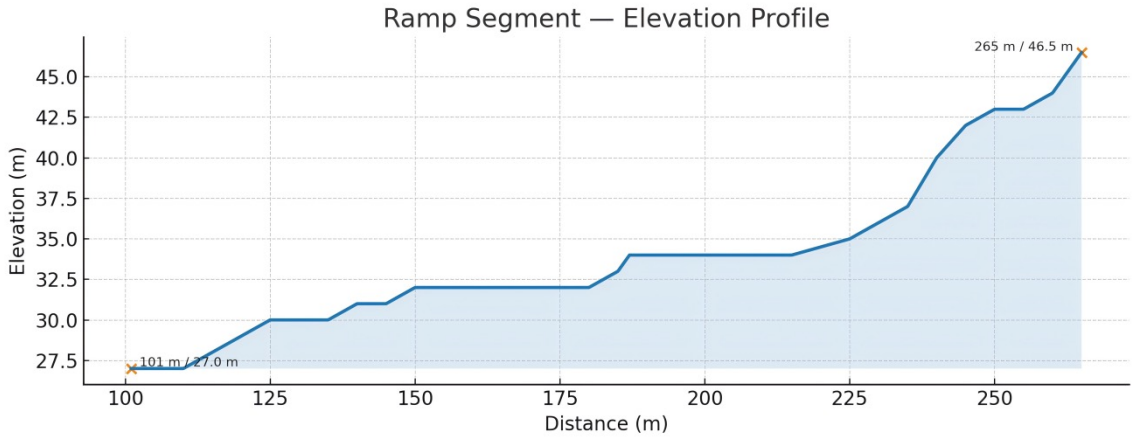

Figure 6 | Elevation section of the ramp corridor

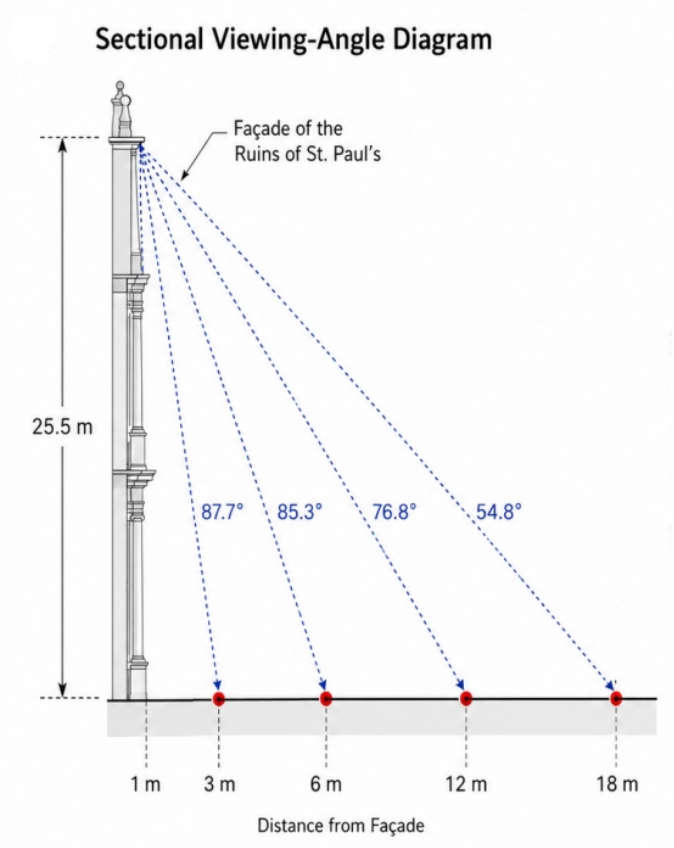

Figure 5 | Viewing-angle effect at the façade platform

temporary practices of looking, photographing, and gathering.

The platform is thus both a physical pause and a symbolic pivot. It absorbs the rhythm of the steps and converts ascent into gaze. In the older religious logic of the site, the platform may be associated with preparation before the church threshold. In the contemporary heritage context, it becomes a public viewing stage. The visitor's body is no longer primarily climbing; it is positioned, oriented, and visually captured. This is the first major transformation from route to scene.

The ramp corridor: Withdrawal, concealment, and delayed arrival

After the façade platform, the main route does not pass through the façade. Instead, visitors move toward the side and enter the ramp corridor leading to Mount Fortress. This segment changes the logic of the experience. The frontal dominance of the façade recedes, and the visitor is drawn into a more enclosed, lateral, and transitional route. The ramp is neither a mere service path nor a neutral connector. It is the spatial hinge between the religious façade and the military terrace.

The ramp corridor is characterized by turning, partial concealment, and gradual ascent. Unlike a straight path, the ramp delays the arrival at Mount Fortress. The destination is not continuously visible. Walls, slope, path turns, and changing ground levels interrupt the line of sight. This produces a rhythm of expectation: the visitor moves upward without immediately seeing the final viewing position. The façade, which previously dominated the field of vision, gradually withdraws. In its place, retaining walls, vegetation, masonry, and the logic of the terrain become more prominent (Figure 6).

In topographic terms, the ramp is one of the main climbing segments of the route. Its length distributes the elevation gain across a more gradual and walkable path. If the ascent were direct, the bodily load would be much greater. The turning route functions as a spatial regulator: it moderates physical effort while prolonging anticipation. This combination of bodily manageability and visual delay is crucial. It allows the route to maintain experiential intensity without becoming physically excessive (Figure 7).

The ramp also marks a semantic transition. The visitor leaves the frontal visual field of the façade and moves toward the defensive space of Mount Fortress. The dominant meaning shifts from religious image to terrain and military position. This does not erase the memory of the façade;

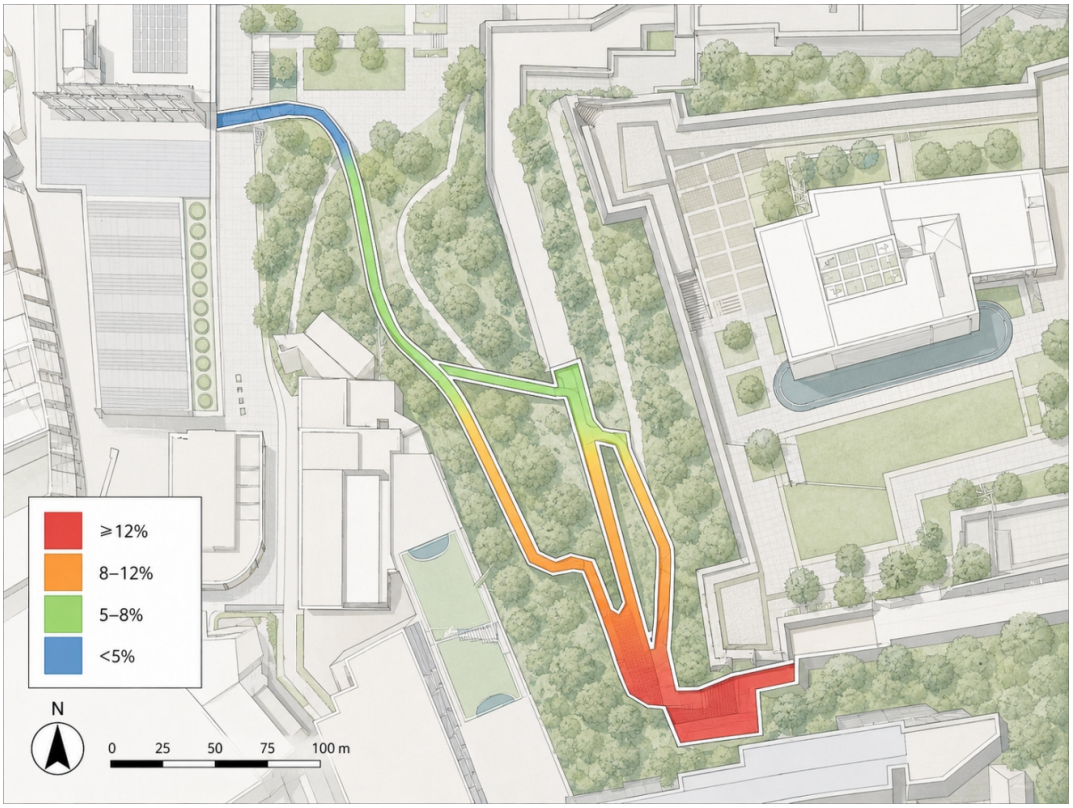

Figure 7 | Slope heat map of the ramp corridor and turning segments

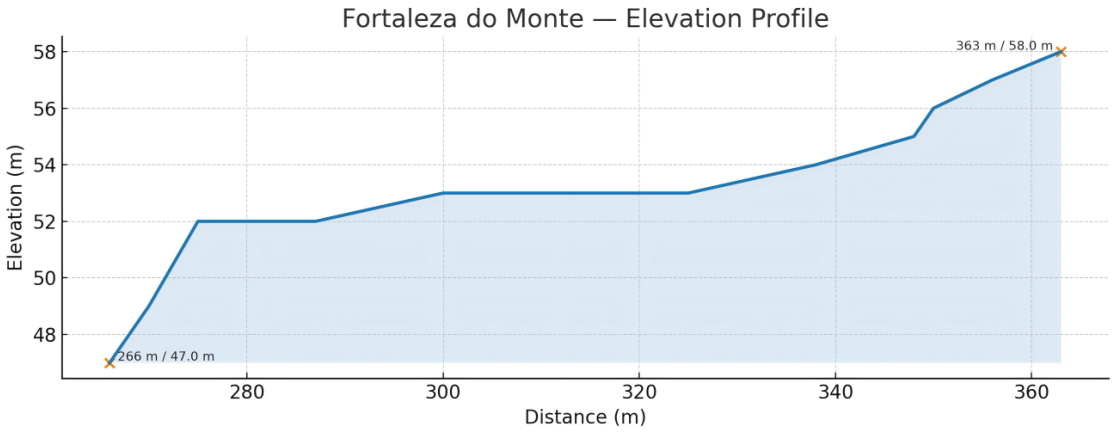

Figure 8 | Elevation section of the Mount Fortress segment

rather, it carries that memory into a new spatial register. The ramp corridor is therefore a transitional inscriptional segment. It links two symbolic orders while preventing their relationship from becoming immediate or simplistic. Through withdrawal and concealment, the route prepares the visitor for a different mode of viewing.

Mount Fortress: Panoramic release and retrospective framing

The final segment is the Mount Fortress terrace. After the delayed ascent through the ramp corridor, the visitor arrives at an open high point where the visual field expands. The experience here differs sharply from the façade platform. At the platform, the visitor is positioned before a vertical surface and compelled into upward viewing. At Mount Fortress, the visitor gains a panoramic position from which the surrounding city can be surveyed. The gaze is no longer cap-

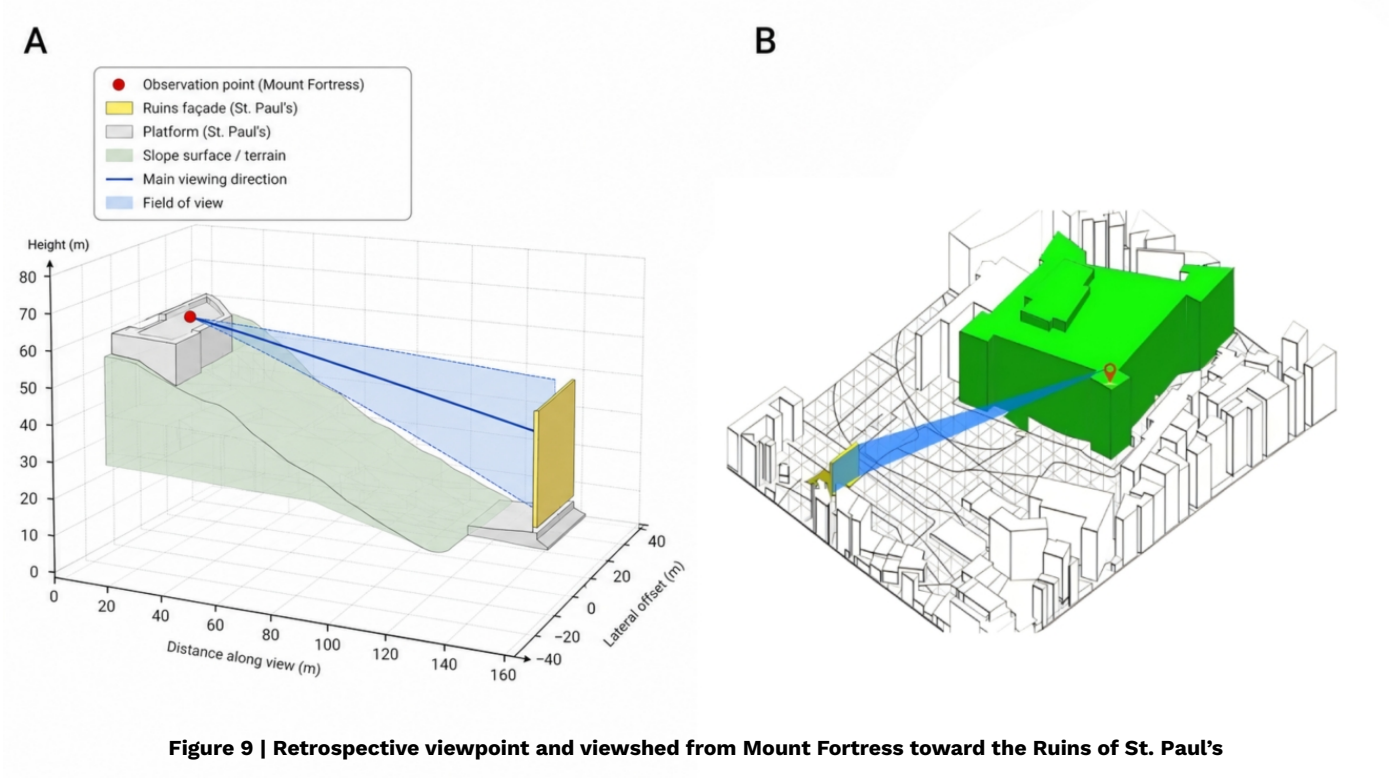

Figure 9 | Retrospective viewpoint and viewshed from Mount Fortress toward the Ruins of St. Paul's

Table 3 | Key indicators of the segmented elevation profile

Segment	Distance range (m)	Length (m)	Start/end elevation (m)	Elevation gain (m)	Average slope (%)	Spatial function
Forecourt	0–26	26	14.0 / 17.2*	3.2*	—	Low-threshold approach
Stone steps	26–71	45	17.2 / 26.0	8.8	19.6	Intensified ascent
Façade platform	71–101	30	26.0 / 27.0	1.0	3.3	Main pause
Ramp corridor	101–266	165	27.0 / 47.0	20.0	12.1	Main climbing segment
Mount Fortress	266–363	97	47.0 / 58.0	11.0	11.3	Final arrival

Note: The elevation values for the forecourt indicate the corrected elevation nodes of the initial route segment and should not be interpreted as the continuous perceived slope of the plaza surface. Repeated field walking suggests that the forecourt functions as a low-slope threshold, while noticeable bodily load begins at the stone-step segment. The base terrain reference was derived from JAXA ALOS 12.5 m DEM data and cross-checked with Google Earth Pro path sampling, repeated pedestrian transect records, and identifiable structural anchors including stair segments, platform edges, ramp turns, and the Mount Fortress terrace. Because DEM resolution is limited at the street scale, the elevation profile was adjusted through linear interpolation and monotonic constraints. The estimated vertical error is approximately ±2 m. For short segments such as the forecourt, this error may significantly affect computed gradients; therefore, the table is intended for spatial-experiential interpretation rather than engineering measurement.

tured by a single façade; it is released across the urban landscape (Figure 8).

Historically, this elevated position is associated with military defense and surveillance. In contemporary experience, the original defensive function is transformed into a heritage viewing position. Although changes in the urban environment have altered historical sightlines, the basic spatial logic of elevated observation remains. The terrace produces a sense of command, openness, and retrospective understanding. It allows the visitor to reinterpret the route already taken.

The most important visual reversal occurs when the visitor turns back toward the Ruins of St. Paul's. From this elevated position, the façade no longer appears as an overwhelming vertical surface. It becomes a framed urban symbol, situated among roofs, streets, trees, and crowds. The steps and platform can be understood as parts of a larger spatial order. Visitors standing before the façade may themselves appear as figures in a scene. In this moment, the viewer who was previously positioned as part of the audience becomes a retrospective observer of the entire heritage theatre (Figure 9).

This reversal gives the highground sequence its narrative closure. The route begins with gathering and directed approach, intensifies through ascent, pauses before the façade, withdraws into a transitional corridor, and ends in panoramic and retrospective viewing. Mount Fortress is therefore not merely the highest point of the route. It is the point at which the previous sequence becomes intelligible as a whole. The visitor sees not only the city, but also the earlier act of viewing. This double vision—viewing the city and

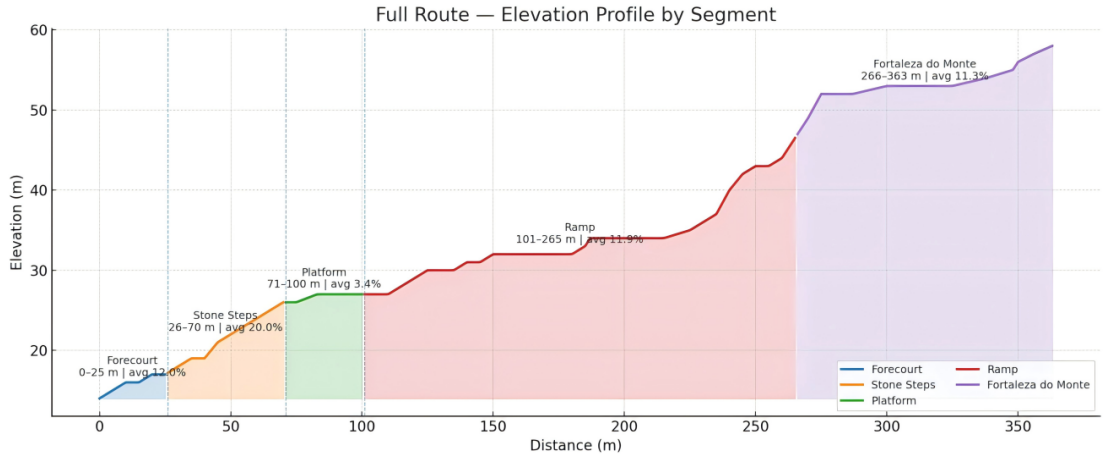

Figure 10 | Full elevation profile of the ascending route

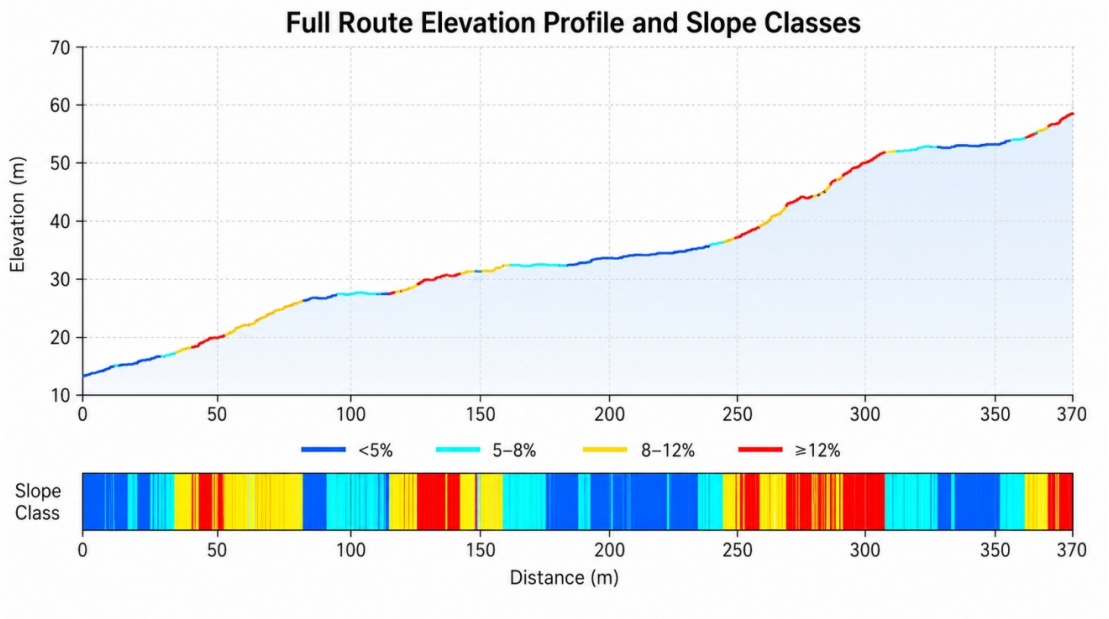

Figure 11 | Full-route elevation profile and slope classes

viewing the scene of viewing—transforms the highground into a public theatre of memory.

Overall rhythm: Ascent, pause, delay, release, return

The full route is not a homogeneous incline, but a segmented spatial sequence. The measured route length is approximately 363m; for graphical readability, the full-route profile is displayed on a rounded 0–370m distance axis. Table 3 summarizes the key indicators of the five route segments, including distance range, length, elevation change, elevation gain, average slope, and spatial function.

The segmented profile shows that bodily rhythm is materially structured by measurable variations in distance, elevation gain, slope, and stopping points. The forecourt begins the route as a low-threshold approach, while the stone-step segment produces the steepest average slope at 19.6%. The façade platform then sharply reduces the slope to 3.3%, creating the most evident pause in the sequence. The ramp corridor, extending for approximately 165 m, constitutes the main climbing segment, while the Mount Fortress segment completes the final arrival with an average slope of 11.3% (Figure 10).

When the entire route is considered as a topographic and experiential sequence, its rhythm can be summarized as ascent, pause, delay, release, and return. The forecourt gathers and orients the visitor. The steps intensify bodily effort. The platform produces pause and frontal gaze. The ramp delays visual completion through turning and concealment. The

Figure 12 | First visual emergence of the façade from the street entrance

Figure 13 | Framing of the façade as a visual target from the forecourt

Figure 14 | Visual approach toward the façade from the stone steps

Figure 15 | Frontal confrontation between the façade platform and the façade

fortress terrace releases the gaze into panoramic space and allows retrospective viewing (Figure 11).

Repeated walking confirmed that the route generates a stable experiential pattern. Visitors do not simply move from point A to point B. They pass through a sequence of spatial states: orientation, exertion, confrontation, withdrawal, arrival, and retrospective recognition. This sequence is the basis of spatial inscription. It writes the historical relation between façade, terrain, and fortress into the visitor's bodily and visual experience. The highground becomes memorable because it is not perceived all at once. It must be walked, paused, and re-seen.

Dramaturgical Mechanism: Threshold, Scene, Backstage, and Retrospective Viewing

Threshold: From urban street to ritualized ascent

The first dramaturgical mechanism is threshold. The approach to the Ruins of St. Paul's does not immediately reveal the monument in its full spatial intensity. Instead, the visitor moves from the surrounding urban fabric through a sequence of visual compression and release. Narrow commercial streets compress the field of vision, while the forecourt opens the view and establishes the façade as the main target. The steps then re-concentrate movement and direct the body upward.

This sequence (Figure 12, 13)corresponds to a threshold experience in an expanded spatial sense. It is not only a physical entrance, but a transition from ordinary urban circulation to an intensified heritage order. The visitor leaves the everyday rhythm of street movement and enters a route structured by ascent, visual focus, and symbolic expectation. In anthropological terms, the threshold marks a condition of transition. The visitor is no longer simply a pedestrian in the city, but not yet fully positioned before the monumental scene. The forecourt and steps mediate this in-between state.

The threshold is effective because it coordinates body and gaze. The body begins to ascend while the façade grows in the visual field. The stone steps narrow the range of possible movement and orient the visitor toward the platform. This process produces a collective directionality. Visitors arriving from different streets are gathered into a shared path and gradually transformed into an audience. The threshold therefore initiates heritage publicness by organizing dispersed individuals into a common spatial and visual orientation (Figure 14).

Scene: The façade platform as a public stage

The second dramaturgical mechanism is scene. The façade platform is the point where movement slows and visual confrontation becomes dominant. In Goffman's terms, it operates as a front stage: a visible arena in which the relationship between object, viewer, and public behavior becomes organized. The façade functions as a theatrical backdrop, while the platform functions as an audience area. Visitors stop, look upward, take photographs, pose, listen to guides, and participate in a shared act of viewing.

This scene (Figure 15) has a double structure. On one level, it continues the historical function of the façade as a visual field of religious instruction. The sculptural programme, niches, and architectural composition were designed to communicate theological and institutional meanings. On another level, the contemporary platform transforms the façade into a public cultural image. Visitors do not necessarily decode its iconography in detail. Instead, they recognize it as a symbol of Macao, a landmark of travel, and a background for personal and collective memory. The religious façade is thus reinscribed through public visual practice.

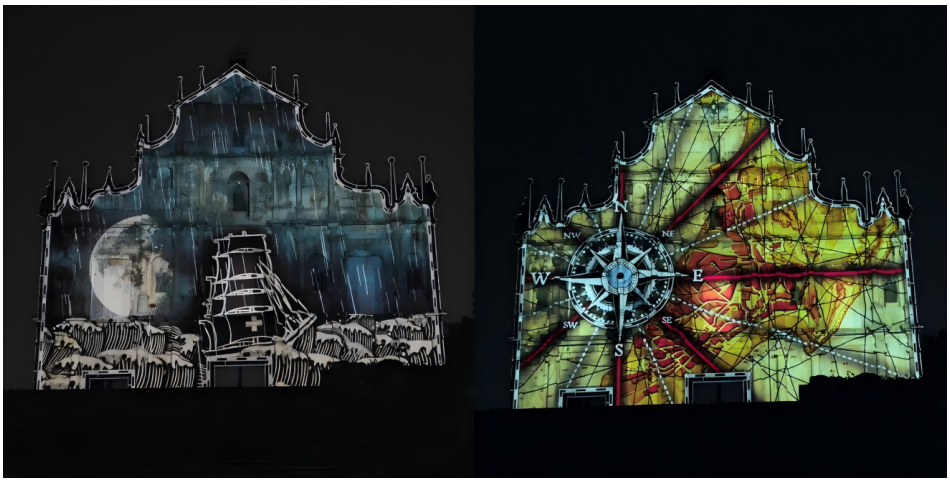

Figure 16 | Light projection on the Ruins of St. Paul's as a public scene

Figure 17 | Retrospective view toward the Ruins of St. Paul's from the ramp entrance

Figure 18 | Retrospective view of the Ruins of St. Paul's from Mount Fortress

The scene becomes even more explicit during light projection events and night-time performances. When light, color, and moving images are projected onto the stone façade, the monument is transformed into a dynamic screen. This does not simply modernize the site. It reveals a latent theatricality already present in the spatial arrangement: façade as surface, platform as gathering place, public as audience. The light show intensifies the relationship between heritage image and contemporary participation.

The scene therefore demonstrates that heritage publicness is not reducible to passive viewing. It is generated through the co-presence of architectural form, spatial position, visual concentration, and public behavior. The platform is not only a place from which the façade is seen; it is a place where the public performs its relationship to the heritage object. The act of looking becomes collective, repeatable, and socially visible (**Figure 16**).

Backstage: The ramp as transitional withdrawal

The third dramaturgical mechanism is backstage. After the visual intensity of the façade platform, the visitor moves into the side route and ramp corridor. The façade withdraws from view, and the visitor enters a transitional space where the previous frontal scene is suspended. This segment can be interpreted as a backstage passage, not because it lacks heritage value, but because it reorganizes the visitor's relation to the scene.

The ramp corridor performs several functions. It enables physical transition from the façade platform to Mount Fortress. It moderates the ascent through turns and extended length. It partially conceals the destination and interrupts direct visual continuity. It also shifts the semantic field from religious façade to terrain, wall, vegetation, and military highground. In dramaturgical terms, it moves the visitor out of the front stage and into a space of reorientation.

This backstage (**Figure 17**) condition is important because it prevents the heritage experience from ending at the façade. Without the ramp, the façade platform might remain a self-contained scene. The ramp extends the performance by delaying closure. It carries the visitor toward another viewing position while allowing the previous image to recede. The visitor's attention is no longer dominated by the façade, but the memory of the façade remains active. This creates a suspended state between the seen and the not-yet-seen.

Backstage should therefore not be understood as secondary or marginal. In the highground sequence, it is precisely the backstage corridor that makes retrospective viewing possible. By withdrawing the visitor from the front stage, it prepares the visual reversal at Mount Fortress. The ramp is the hinge that turns a façade encounter into a spatial narrative.

Retrospective viewing: Seeing the scene from above

The fourth mechanism is retrospective viewing. At Mount Fortress, the visitor's role changes. Previously, the visitor moved toward the façade and participated in the front-stage scene. From the fortress terrace, the visitor can look back and see the façade, the platform, the steps, and the crowd from a distance. The heritage scene becomes an object of observation. The viewer sees not only the monument, but also the public performance around it.

This reversal (**Figure 18**) is central to the dramaturgical structure of the highground. The façade that once appeared overwhelming becomes a framed urban symbol. The crowd that once included the visitor becomes part of the viewed scene. The steps and platform that previously structured bodily movement become visible as a spatial composition. The viewer is thus placed in a double position: both former participant and current observer. This double position enables a deeper form of memory production. The visitor remembers not only the historical object, but also the experience of approaching, stopping, leaving, and looking back.

Retrospective viewing also connects religious and military meanings. The façade represents the religious and educational history of St. Paul's College, while the fortress terrace recalls the defensive and governing logic of early modern Macao. From the terrace, these meanings are not simply juxtaposed; they are spatially related. The visitor can understand the façade and the fortress as part of a single highground system. This relation is not primarily conveyed by textual explanation. It is produced through position, view, and bodily sequence.

The public theatre of heritage

The entire route can therefore be understood as a public theatre of heritage. The threshold gathers visitors and prepares the transition from city to heritage space. The scene positions visitors before the façade and organizes collective viewing. The backstage ramp withdraws the visitor from the frontal scene and delays the next visual event. The fortress terrace produces retrospective viewing and allows the entire sequence to be reinterpreted from above.

This theatre (**Figure 19**) is not fictional. It is a real spatial mechanism through which heritage publicness is generated. Visitors enter, climb, pause, view, withdraw, arrive, and look back. Through these repeated actions, the highground becomes a memory-producing environment. The façade is no longer only a religious ruin. The fortress is no longer only a military remnant. Together, they form a spatial system in which historical meaning is activated through public movement and visual participation.

The dramaturgical interpretation also clarifies why the highground remains socially powerful. Its meaning does not depend solely on expert knowledge. Even visitors who know little about Jesuit history or military architecture can experience the sequence of ascent, visual confrontation, concealment, and release. The spatial structure makes heritage experience accessible through the body. This embodied accessibility is one of the foundations of heritage publicness.

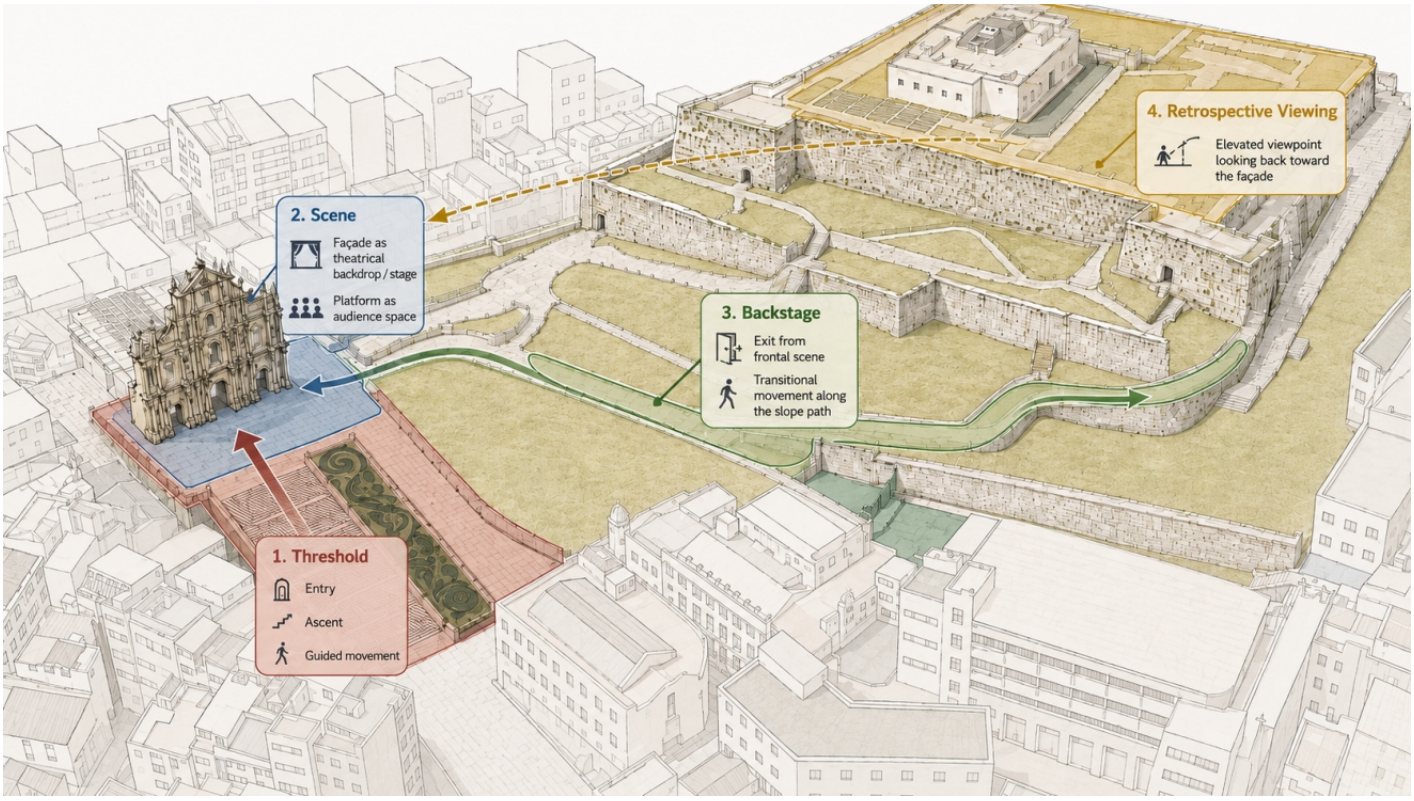

Figure 19 | Dramaturgical mechanism of the Ruins of St. Paul's–Mount Fortress highground

Discussion: Spatial Inscription and Sustainable Heritage Publicness

From heritage object to spatial relation

The analysis suggests that the Ruins of St. Paul's and Mount Fortress should not be understood as two separate heritage objects connected by incidental circulation. Their significance emerges from spatial relation. The forecourt, steps, platform, ramp, and terrace work together to produce an experiential whole. This has implications for heritage interpretation and conservation. Protecting the façade or the fortress as isolated monuments is not sufficient if the spatial sequence between them is ignored.

In dense historic cities, heritage value often lies in relational environments: approach routes, thresholds, view corridors, slopes, platforms, and gathering spaces. These elements may appear secondary compared with monumental architecture, but they determine how heritage is accessed and remembered. In the case of the Ruins of St. Paul's–Mount Fortress highground, the path itself is a heritage medium. It carries memory through bodily movement and visual order. Spatial inscription therefore shifts attention from object-centered preservation to sequence-centered interpretation.

This does not mean that architectural conservation is unimportant. Rather, it means that conservation should be integrated with spatial experience. The façade's material authenticity, the steps' accessibility, the platform's capacity for gathering, the ramp's continuity, and the terrace's view relations all contribute to the public meaning of the site. If any of these elements is disrupted, the inscriptional mechanism of the highground may be weakened.

Walking as memory production

The study also shows that walking is not merely a way of accessing the heritage site. Consistent with de Certeau's (1984) understanding of walking as spatial practice, it is a mode of memory production. Through repeated walking, visitors experience historical meaning as a sequence of bodily and visual states. The climb produces effort, the platform produces pause, the ramp produces delay, and the terrace produces retrospective interpretation. These bodily states become part of how the site is remembered.

This insight is important because heritage interpretation often relies heavily on textual panels, guided narration, museum display, or digital media. These tools are valuable, but they should not obscure the interpretive capacity of space itself. At the Ruins of St. Paul's–Mount Fortress highground, the path functions as an interpretive medium before any explanatory text is read. It teaches through movement, angle, delay, and view.

The segmented profile also demonstrates that heritage experience is not produced by symbolic interpretation alone. It is materially structured by measurable variations in distance, elevation gain, slope, and stopping points. Repeated pedestrian transect surveys confirmed that the spa-

tial rhythm is relatively stable, even though individual experiences differ. This stability gives the highground its mnemonic force. The route can be walked again and again by different publics, producing a recognizable sequence while allowing new interpretations. Spatial inscription is therefore both structured and open. It organizes experience without fixing meaning completely.

Heritage publicness beyond tourism consumption

Because the Ruins of St. Paul's are a major tourist landmark, public use is sometimes interpreted primarily as consumption. Photography, posing, crowding, and light projection may appear to weaken historical seriousness. However, the dramaturgical analysis suggests a more nuanced view. Public practices do not simply consume heritage meaning; they also reactivate it. Visitors who gather, photograph, listen, perform, and look back participate in the continuing publicization of the site.

This does not imply that all forms of public use are equally beneficial. Overcrowding, excessive commercialization, visual noise, and loss of interpretive depth remain real concerns. Yet the solution is not to oppose public participation to heritage authenticity. Instead, heritage management should recognize that public practice is one of the ways heritage remains socially alive. The challenge is to guide public use so that it supports rather than erases the spatial and historical logic of the site.

For the Ruins of St. Paul's–Mount Fortress highground, this means protecting not only the monument but also the conditions of meaningful public experience. The forecourt should remain capable of gathering and orientation. The steps should maintain their role as a legible ascent. The platform should support viewing without being reduced to chaotic congestion. The ramp should preserve its transitional and delayed character. The terrace should maintain opportunities for panoramic and retrospective viewing. These are not merely circulation issues; they are components of heritage publicness.

Sustainable interpretation in dense historic cities

The case contributes to broader discussions of sustainable built environments by emphasizing the experiential sustainability of heritage. Sustainability in historic urban contexts should not be limited to material conservation, environmental performance, or tourism management. It should also include the sustained capacity of heritage spaces to generate public memory, orientation, and shared cultural meaning.

Macao's historic center is a dense urban environment where heritage sites coexist with commerce, tourism, residential life, and contemporary development. In such contexts, heritage sustainability depends on maintaining the legibility of spatial relations. If the public can no longer understand how the façade, steps, slope, ramp, and fortress belong to one another, the site risks becoming a fragmented collection of photo spots. Conversely, if the spatial sequence is interpreted and managed as a continuous heritage route, the highground can continue to operate as a public memory system.

Spatial inscription offers a useful framework for such interpretation. It identifies the mechanisms through which space produces memory: topographic difference, path rhythm, visual framing, stopping points, concealment, and retrospective view. These mechanisms can inform heritage planning, visitor management, exhibition design, digital interpretation, and public education. For example, interpretive materials could emphasize not only the iconography of the façade, but also the experience of moving from the forecourt to Mount Fortress. Digital maps or site guides could present the route as a sequence of threshold, scene, backstage, and retrospective view. Such approaches would help visitors understand the highground as a spatial narrative rather than as separate attractions.

Conclusion

This article has examined the Ruins of St. Paul's–Mount Fortress highground in Macao as a spatial inscription system. Rather than treating the façade and the fortress as isolated heritage objects, the study has analyzed their connection through a continuous route composed of the forecourt, stone steps, façade platform, ramp corridor, and fortress terrace. Through repeated pedestrian transect surveys, topographic section analysis, visual-spatial interpretation, segmented elevation indicators, viewing-angle analysis, and dramaturgical theory, the article has shown how this highground organizes bodily movement, visual sequence, and public memory.

The findings can be summarized in three points. First, the highground operates through a differentiated spatial rhythm of gathering, ascent, pause, delay, release, and retrospective viewing. This rhythm is supported by topographic variation, slope change, stopping points, and visual transitions. Second, the route can be interpreted dramaturgically as a sequence of threshold, scene, backstage, and retrospective viewing. The forecourt and steps initiate the visitor into the heritage order; the façade platform produces a public scene of frontal viewing; the ramp corridor withdraws the visitor into a transitional backstage; and Mount Fortress enables the entire route to be re-seen from above. Third, this spatial sequence transforms religious and military remains into a public theatre of urban memory. Heritage publicness is produced not only through legal protection or symbolic recognition, but also through repeated walking, viewing, stopping, photographing, and looking back.

The article contributes to heritage and built environment studies by proposing spatial inscription as an analytical lens for understanding how historical meaning is embedded in embodied spatial experience. By combining repeated walking surveys with segmented elevation indicators and viewing-angle analysis, the study shows that spatial inscription operates through both measurable topographic structure and interpretive visual experience. It also suggests that sus-

tainable heritage interpretation should attend to routes, slopes, platforms, view corridors, and public practices, rather than focusing exclusively on architectural objects. In dense historic cities, where heritage sites are embedded within living urban fabrics, such relational and experiential approaches are especially important.

The study has limitations. Its elevation analysis is approximate and intended for spatial interpretation rather than engineering measurement. Its walking surveys are based on the author's field experience and should be complemented in future research by visitor interviews, behavioral mapping, GPS tracking, accessibility analysis, and comparative studies with other heritage highgrounds. Future research could also connect spatial inscription more closely with visual inscription and practical inscription, examining how façade iconography, social media images, festivals, guided tours, and light projections extend the highground's memory-producing function.

Despite these limitations, the case of the Ruins of St. Paul's–Mount Fortress highground demonstrates that heritage is not only preserved in material remains. It is also produced in the act of moving through space. The memory of the site is written into ascent, pause, concealment, view, and return. This is the central logic of spatial inscription: history becomes public not merely by being displayed, but by being repeatedly walked, seen, and reinterpreted.

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The journal particularly values interdisciplinary approaches that bridge architecture, urban planning, environmental science, engineering, public policy, and social sciences, providing holistic perspectives on sustainable development. Comparative research, case studies, and critical analyses offering global, regional, and local insights are strongly encouraged.

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