




THE SHAPE OF HERITAGE: MAINTAINING SPATIAL CONTINUITY IN COMMERCIAL CORRIDORS IN BANDUNG, INDONESIA

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ABSTRACT: Braga Street is a commercial area and a popular tourist destination in the centre of Bandung. Known as “*De Meest Europeesche Winkelstraat Van Indie*” (the most European business street in the Dutch East Indies), it features a continuous row of colonial-era shop buildings with pedestrian pathways and distinctive architecture that is over 100 years old. Despite ongoing urban development and the commercialization of tourism, this corridor has managed to retain much of its spatial and visual character. This study aims to examine how the historical corridor of Braga Street maintains its distinctive morphological and visual identity amid contemporary urban transformations. It specifically addresses the question of how spatial and visual factors contribute to the corridor’s ability to preserve its heritage values while accommodating modern functions. Using a qualitative method with a morphological approach involving historical overlay maps, figure-ground analysis, and enclosure evaluation across different time periods, the research identifies spatial and visual factors that support the corridor’s endurance. The findings reveal a persistent spatial continuity reflected in consistent figure-ground and enclosure patterns, complemented by contextual architectural facades and supportive landscape elements that enhance pedestrian comfort. However, this continuity is not absolute, as adaptive reuse and new developments introduce partial ruptures in the urban fabric. The study’s contribution lies in demonstrating how quantitative morphological indicators can inform strategies that balance conservation with contemporary urban needs.

KEYWORDS: Braga street, Bandung, Urban corridor, Figure-ground, Spatial enclosure.

INTRODUCTION

Cities can be viewed as architectural masterpieces that continuously evolve. Beyond their physical structures, they embody layered histories that connect memories with contemporary life. Examining this historical depth provides valuable insight into the complexity of urban space [1]. A city is a spatial system, with its layout and development axes reflecting unique characteristics that illustrate its historical trajectory.

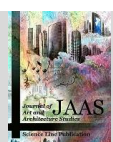
Braga Street is situated in the centre of Bandung City, West Java, directly north of Asia-Afrika Street (formerly known as the Great Post Road during the Dutch colonial era), where the city’s zero-kilometre point is located. In the Bandung City Spatial and Regional Plan (RTRW) for 2022-2042, the Braga corridor is designated as a strategic urban area for cultural heritage preservation and tourism development. However, population growth and urban expansion have increased demand for buildings and land in the city centre, creating

development pressure along the Braga Street corridor.

Over time, the Braga Corridor has experienced both continuity and change. Many colonial-era buildings have deteriorated due to age, natural disasters, pollution, and inadequate maintenance [2]. In response, new constructions have emerged, some designed contextually, others diverging significantly from the corridor’s architectural character. Despite these pressures, the Braga Corridor has largely retained its spatial structure and identity.

This study examines how the spatial and visual continuity of the Braga corridor has been maintained for over a century and identifies the factors that sustain this consistency. The findings are significant for preserving the identity of Braga Street as a historic commercial corridor and tourist destination. The Braga area of Bandung is a popular research site due to its distinctive colonial architecture and commercial character. Previous studies have examined various aspects, from regional-scale urban settlements to micro-scale

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architectural details. These works have primarily focused on architectural elements and functional adaptations that sustain Braga's role as a commercial and tourist hub. Several works have discussed contextual façade preservation [3], place meaning and functional continuity [4], and adaptive reuse as a strategy to balance commercial and heritage functions [5]. Other studies have focused on the typological continuity of building façades [6], thermal and visual comfort [7], and the colonial atmosphere's appeal for tourism and photography [8]. Recent research has also explored the interaction between nearby residential areas and tourist activities [9], revealing both potential and challenges in the government's tourist village initiative. However, few studies have examined how morphological changes and spatial proportions shape users' spatial experiences and contribute to the perception of comfort and continuity within the historic corridor. This perspective is crucial, as the concept of spatial enclosure connects physical form with experiential and heritage values. By investigating the historical development of Braga's morphological structure and its relationship with spatial enclosure, this study aims to contribute to broader debates on urban heritage preservation and sustainable urban identity in post-colonial contexts. It extends previous architectural analyses by situating Braga not only as a local tourism icon but also as a case that reflects global challenges in maintaining continuity within transforming historic urban landscapes.

Theoretical framework

Urban morphology: Urban development patterns are shaped by both planned design and historical evolution. The physical form of a city reflects its adaptation to natural surroundings and the social and economic changes that occur over time. Therefore, understanding urban morphology involves examining how historical, structural, and functional transformations interact within the city's spatial framework [10, 11]. Urban morphology refers to the configuration and organization of urban form and can be analysed structurally, functionally, and visually [12]. This study applies three theoretical approaches to interpret the spatial characteristics of the case area. Figure-ground theory reveals the relationship between solid and void spaces, highlighting the density and spatial continuity of the urban fabric. Linkage theory explains the connective elements, such as movement flows, axes, and building edges, that unify different components into

a coherent spatial system. Place theory helps interpret the cultural and experiential dimensions of space, showing how social behaviour and collective memory shape urban form [13, 14]. A historical approach supports this morphological analysis by identifying how different spatial layers evolve. Traces of earlier developments, such as remaining building masses, extensions, and new infills, illustrate the transformation and continuity of urban form. Through this approach, linkage patterns and spatial layers are examined to understand how the area maintains its physical and visual coherence within a changing urban context [15].

Urban enclosure: The morphological structure of urban areas can be objectively identified through their physical attributes, which define spatial organization and visual orientation. Within the linkage system of urban morphology, spatial composition typically presents itself in three forms: boundary, enclosure, and domain. Boundaries mark the limits of space, either lateral, vertical, or overhead, and may be defined by building facades or vegetation [16]. The combination of these elements creates spatial enclosure, which determines how urban spaces are visually perceived.

In spatial enclosures, proportion and scale play crucial roles in shaping both subjective and objective experiences of space. Subjectively, enclosure ratios influence user emotional responses and sense of comfort, while objectively they are determined by the relationship between building height (H) and the distance between facades (D) [17]. Comfort in an urban environment is often experienced when the spatial scale aligns with human proportions, supported by symmetrical layouts and rhythmic repetition of architectural elements.

Scholars have proposed various interpretations of this relationship. Blumenfeld links the human scale as a reference in viewing urban scale and explains that spatial definitions weaken when the dimensions of mass and height of buildings decrease, while Ashihara uses the ratio of distance (D) and building height (H) to determine the proportion of road landscapes with spatial quality. McClauskey emphasizes the degree of sense of enclosure, where a narrow ratio indicates cramped space and a wide ratio emphasizes a lack of sense of enclosure [18]. Spatially, the ratio not only indicates the degree of enclosure but also reflects the height and width of urban space, where the sense of spatial comfort ranges from 1:1 to 1:2 [17]. A study by the Greater London Council [19] also suggested that

enclosure and comfort are determined by scale and proportion, with a minimum ratio of 1:1 and a maximum ratio of 1:2.5. However, more recent studies have refined this understanding, showing that the perception of comfort and enclosure varies depending on the context. Optimal ratios range between 1:1 and 1:3, or even beyond, and are influenced by lighting, visibility, and façade composition [20, 21].

METHODOLOGY

This study employs a qualitative method using a case study approach to highlight the phenomenon of continuity in historic commercial corridors. To provide context for the developments over time, a historical method is utilized. The base map was obtained from colonial archive maps downloaded from the KITLV digital collection website (1900s–1940s) and the Bandung Smart Map online spatial database. Street widths and building heights were obtained from field measurements and visual estimates based on façade proportions.

The analysis is conducted using a periodization approach, which systematically divides the time span, and an abductive framework, where observations from figure-ground and enclosure analyses were interpreted to generate plausible explanations about the persistence of morphological

continuity. Rather than testing hypotheses deductively, the analysis seeks to infer the most likely causes of spatial consistency by iteratively comparing empirical patterns with existing morphological theories (see Figure 1).

The figure-ground and spatial enclosure approaches were applied by depicting the layers of morphological structure development from the early stages of Jalan Braga (early 1900s to 1920s), the modern colonial era (1920s to 1940s), and the contemporary era (2025). Two of the three street segments, each with several representative street sections, were selected based on their unique morphological characteristics: colonial, transitional, and contemporary blocks.

The mass of buildings and morphological structures was depicted using the figure-ground approach, while the height and distance of building masses were presented using the enclosure approach. A comparison between morphology and enclosure can reveal the relationship between visual characteristics and existing comfort ratios. These ratios are then presented in a data matrix to compare areas corresponding to the comfort ratios found in the Braga corridor. The enclosed area ratio is calculated by dividing the average building height (H) by the distance between opposite building façades (D) on the selected street segment.

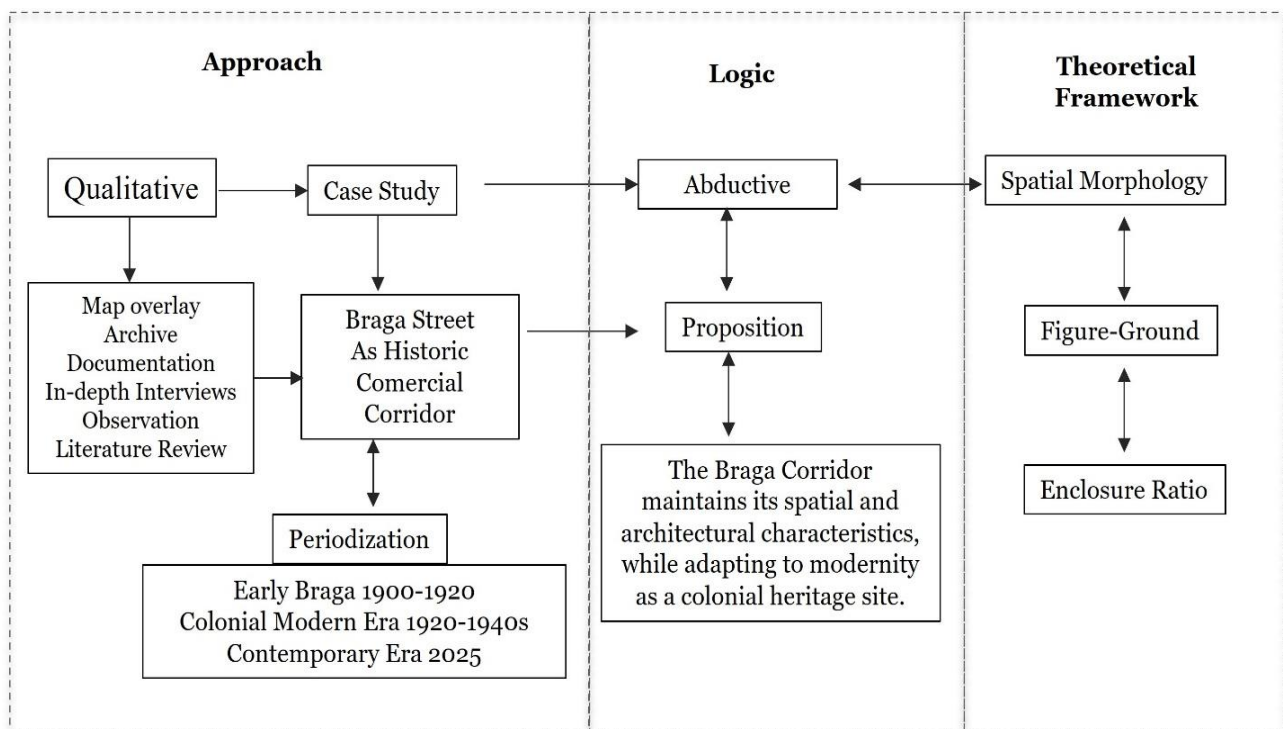


Figure 1. The connection between research methods and theoretical frameworks.



Figure 2. Braga street's location as a field of study

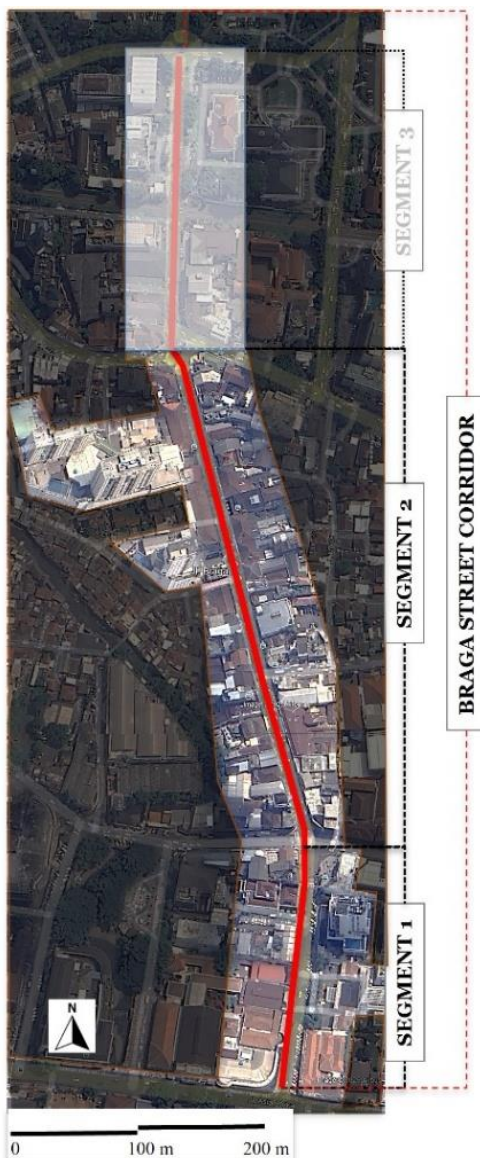


Figure 3. Street segments in the Braga corridor

Area of study

Braga Street, a cultural heritage area, exhibits the characteristics of a promenade. A promenade is a pedestrian-only zone where visitors can experience a unique spatial ambiance, with its own distinct theme, charm, and appeal [22]. The Braga Street corridor, located in the centre of Bandung (Figure 2), spans approximately 845 meters and is divided into three main segments. The northern segment stretches from Perintis Kemerdekaan Street to the junction of Suniaraja and Lembong Streets, the central segment extends to Naripan Street, and the southern segment reaches Asia-Afrika Street.

This study focuses on Segments 1 and 2, which correspond to the central and southern parts of the corridor. These areas represent the most historically intact sections of Braga Street, where the architectural and spatial continuity of the colonial-era promenade remains clearly visible. In contrast, the northern segment has experienced significant functional transformation and no longer reflects the original morphological character of Braga (Figure 3).

Background of the Braga street corridor

Bragaweg (in Dutch) is one of the earliest developed areas in Bandung, dating back to the early 1800s during the Dutch colonial period. According to Katam [23], the street initially functioned as a transport corridor for agricultural goods from the Coffee Warehouse in the north to *De Groote Postweg* (now Asia-Afrika Street) in the south, earning the name *Karrenweg* (in Dutch) or *Pedatiweg* (in the local language).

The opening of Priangan (the name before West Java Province) to European settlers in 1853, marking the era of economic liberalism in the Dutch East Indies, encouraged European plantation owners and traders to establish residences in [24]. According to Kustedja [25], since Bandung became the capital of the Priangan Residency in 1864, many Europeans settled around Alun-Alun (the local name for the city square), particularly north of *De Groote Postweg*, including the *Bragaweg* area. By the end of the 19th century, the corridor had developed from a residential to a mixed-use area, with small stalls and permanent European-style houses. The emergence of entertainment venues, notably *Societeit Braga* (later *Societeit Concordia*), at the southern end of the street fostered Braga's transformation into a social and cultural centre for Europeans. Concurrently, the quality of housing on

the Braga corridor improved, with the establishment of permanent homes and the development of road infrastructure, featuring wide sidewalks and shade trees lining both sides of the street. The establishment of the railway line to Bandung further accelerated population growth and urban development, attracting plantation owners and elites seeking European goods, dining, and leisure activities. *Societeit Concordia* became the focal point of upper-class entertainment, offering concerts, theatre performances, and dances, which positioned Bandung as one of the most modern cities in the Dutch East Indies [26]. Many plantation owners and elites from outside Bandung, especially from Batavia (now Jakarta), came to Bandung by train in the morning, spent their time enjoying entertainment in Bandung, and returned by train in the evening. According to Hardjasaputra [27], *Societeit Concordia* was one of the characteristics of Bandung's development as a modern city during the Dutch colonial period.

During the 1920s–1940s, Braga reached its peak as a commercial and cultural hub. The street evolved into “*De Meest Europeesche Winkelstraat van Indie*” (the most European shopping street in the Indies), lined with luxury shops, fashion boutiques, restaurants, banks, and automobile dealers catering to the European elite. The annual *Jaarbeurs*, a Dutch government trade fair held in Bandung each June or July, further stimulated commercial activity and tourism. Architectural regulations issued under the *Stadsvorming Ordonnantie*, with input from urban planner Thomas Karsten, guided the visual harmony of the corridor. Buildings were required to be continuous without front yards, have a maximum of two stories, and include adequate windows for lighting and ventilation[6], shaping the cohesive urban character that defined Braga Street's identity as a symbol of colonial modernity

RESULTS AND DISCUSSION

The figure - ground and sense of enclosure of Braga Street

The development of the Jalan Braga corridor closely coincided with the establishment of Bandung as a new capital city. This study focuses on the period following the turn of the 20th century, highlighting the rapid transformation of the Jalan Braga corridor from an elite residential area into a commercial zone. The spatial and morphological development of the Braga Street corridor can be

divided into three distinct periods: the early development period (1900-1920), the modern colonial period (1920-1940), and contemporary Braga as it stands today (2025).

During the early 1900s, Braga Street evolved from a mixed-use area of small detached buildings into a dense commercial corridor. Despite various architectural changes, the corridor continues to retain its original spatial layout and linear configuration. This transformation is illustrated in photographs showing the evolution of each street segment across three distinct periods (Figure 4). The relationship between enclosure and figure-ground defines the spatial morphology that characterizes the Braga Street corridor. The sense of enclosure emerges from the spatial proportion between building height and street width, shaping the perceived comfort and coherence of space. To analyse this relationship empirically, the patterns of enclosure in Braga Street corridor were examined by comparing the built mass to the open spaces in the figure-ground composition (Figure 5). This condition is further analysed through ten cross-sectional profiles representing variations in building height, setback, and façade continuity on both sides of the street. The results, presented in figure-ground and enclosure diagrams, illustrate how the corridor's three-dimensional character evolved across different historical periods while maintaining its urban rhythm and human-scale proportion.

During its early development, the Braga Street corridor exhibited a low level of spatial enclosure, as most of the building distances (D) exceeded twice the height (H) of the buildings. From the 1920s to the contemporary period in 2025, the ratio between height and width gradually became more proportional, suggesting an improved spatial balance.

The addition of new building heights was accompanied by increased spacing, as taller buildings were placed behind the older structures, maintaining the enclosure ratio within a consistent range. Several sections display similar distance and height proportions, as summarized in Table 1. According to the literature, the comfort-related enclosure ratio ranges from 1:1 to 1:2.5 (line highlighted in grey). The observed continuity of enclosure ratios from 1920 to 2025 indicates a stable spatial character. While this analysis demonstrates physical consistency that may support a perception of comfort, further observational or perceptual studies are needed to verify users' experiential responses to these spatial conditions.

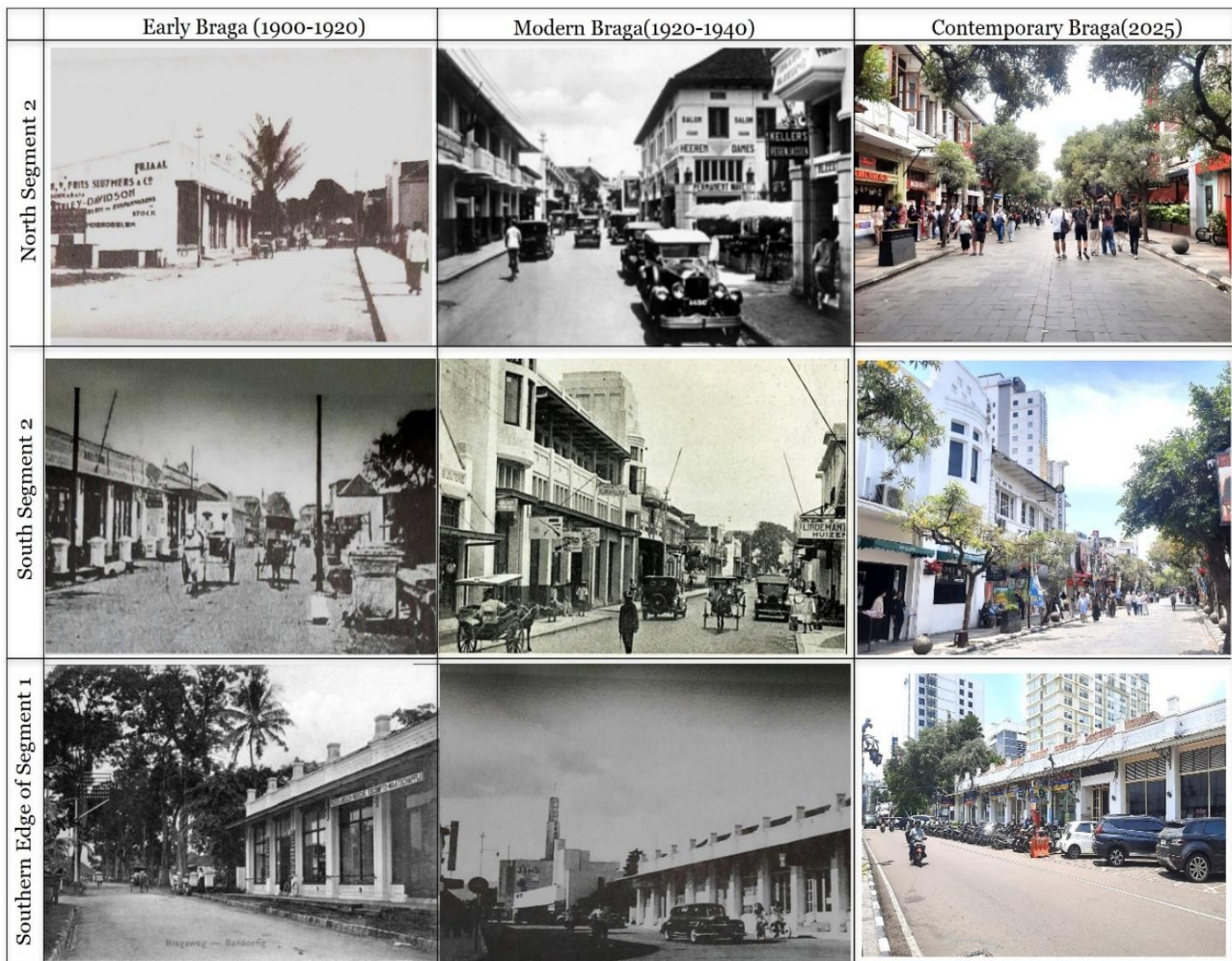


Figure 4. Development of the Braga Street corridor by periodization (Source: KITLV [28] & Author)

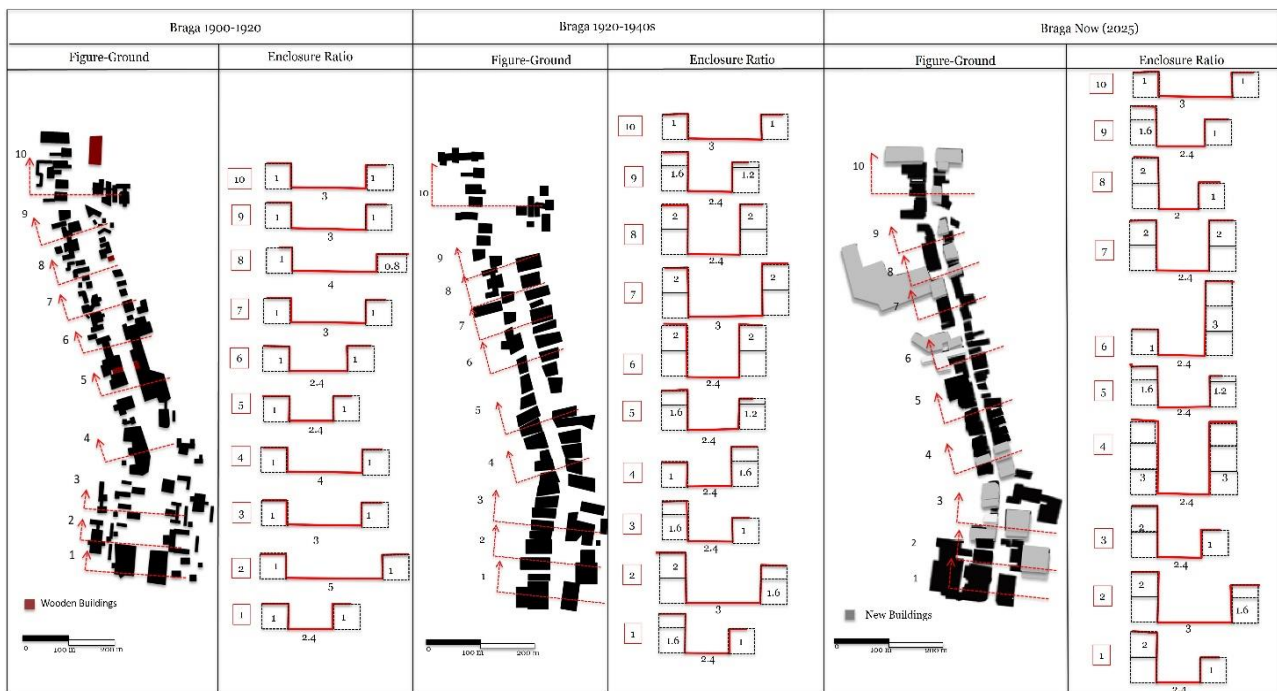


Figure 5. Analysis of the figure-ground relationship with the enclosure ratio of the Braga Street corridor

Table 1. Comparison of height and distance ratios of buildings on Braga Street

Section	Street Segment	West Height – Width - East Height Ratio (H-W-H)								
		1900-1920			1920-1940s			2025		
		H	W	H	H	W	H	H	W	H
10	Segment 2	1	3	1	1	3	1	1	3	1
9		1	3	1	1.6	2.4	1	1.6	2.4	1
8		1	4	0.8	2	2.4	2	2	2	1
7		1	3	1	1	1.6	1	1	1.4	1
6		1	2.4	1	1.6	2.4	1	1.6	2.4	1
5		1	2.4	1	1.2	2	1	1.2	2	1
4		1	4	1	1	2.4	1.6	3	2.4	3
3	Segment 1	1	3	1	1.6	2.4	1	2	2.4	1
2		1	5	1	2	3	2	2	3	1.6
1		1	2.4	1	1.6	2.4	1	2	2.4	1

The height–width–height (H–W–H) ratios of buildings along Braga Street from its early development (1900–1920) to the 1920–1940s period and the contemporary condition in 2025 are summarized in Table 1. The data were derived from direct field measurements and the analysis of historical maps and photographs to estimate building heights and inter-building distances. The comfort ratio was calculated by comparing the number of street segments with enclosure ratios between 1:1 and 1:2.5, an optimal range for pedestrian comfort according to enclosure theories, to the total number of observed segments.

During the early development of Braga in the 1900s, the comfort ratio was only 27 %, indicating that most sections of Braga Street lacked the desired enclosure and spatial comfort. By the 1920-1940s, this ratio increased significantly to 82%, suggesting a major morphological adjustment toward a more comfortable and human-scaled spatial form. In 2025, the comfort ratio remains at 82%, demonstrating a consistent preservation of these spatial proportions across a century of urban transformation.

The consistent closure along the Braga Street corridor not only reflects visual continuity but also compliance with theoretical comfort parameters for enclosure. However, this continuity should not be viewed solely as the result of organic spatial evolution. Alternative explanations, such as the enforcement of conservation regulations, restrictions on the height of heritage buildings, and tourism-oriented design controls, may also have contributed to maintaining the proportions of this corridor. This shows that the morphological

persistence of Braga is shaped by both physical and policy factors.

From a broader perspective, the findings resonate with ongoing debates in heritage conservation and urban design regarding the role of spatial form in maintaining historical identity and experiential quality. The consistent enclosure ratio exemplifies how morphological continuity contributes to the preservation of the street's sense of place, while also supporting walkability and visual coherence within a heritage context. Nevertheless, the comfort ratio presented here is derived purely from morphological indicators and does not capture the subjective or psychological aspects of user comfort. Future studies could incorporate observational or survey-based data to understand how these spatial proportions are experienced by contemporary users and how perceptions of comfort relate to heritage ambiance and urban vitality.

CONCLUSION

Braga Street represents a historically significant urban corridor that continues to function as a lively commercial and tourist destination. The spatial analysis reveals a generally consistent enclosure pattern, formed through the interplay of colonial and contemporary buildings. This spatial continuity contributes to a comfortable pedestrian environment supported by well-designed pathways and landscape elements. However, the continuity is not absolute; several sections display ruptures and inconsistencies due to new developments and adaptive reuse interventions that have modified the original proportions. These changes reflect the

ongoing negotiation between heritage preservation and commercial pressures within the corridor. Rather than claiming a uniform spatial harmony, this study highlights how Braga Street's morphological persistence coexists with dynamic adaptation processes. This nuanced understanding underscores the need for design and policy approaches that balance conservation with contemporary urban needs. The findings provide a heritage-sensitive perspective on spatial comfort and enclosure, emphasizing how morphological metrics can inform strategies for preserving the experiential quality of historic streets.

The study's novelty lies in integrating figure-ground and enclosure analysis across multiple historical periods to interpret spatial comfort in a living heritage context. Methodologically, it demonstrates how quantitative morphological indicators can complement qualitative heritage assessments. Practically, the research offers insights for urban designers and policymakers seeking to maintain human-scale spatial structures while accommodating economic activity. Future studies could expand the analysis to adjacent streets and explore user perceptions to better capture the experiential and psychological dimensions of comfort within heritage environments.

DECLARATIONS

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Data availability

The datasets and/or analyzed during the current study available from the corresponding author on reasonable request.

Authors' contributions

H. Izzati, D.H. Rahmi, and S.R. Marcillia = Preparation of article concepts .

H. Izzati = Data collection, data analysis, methods, and manuscript writing.

D.H. Rahmi, and S.R. Marcillia = Writing review and supervision

Competing interests

The authors declare that there is no competing of interests.

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