RESEARCH ARTICLE

FRAMING CULTURAL LANDSCAPES: A COMPARATIVE ANALYSIS OF BINONDO AND GEORGE TOWN'S GATEWAYS AS MEDIATORS OF HERITAGE AND ENCLAVE IDENTITY

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Manuscript Info	***Abstract***

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In Southeast Asian cities shaped by colonial legacies and diasporic entanglements,ceremonial gateways serve not only as spatial thresholds but also as articulations of cultural identity. This study offers a comparative analysis of symbolic gateways in Binondo, Manila—the world's oldest Chinatown, andGeorge Town, Penang, a UNESCO World Heritage Site known for its characteristic shophouse streetscapes In Binondo, cultural presence is made visible through monumental Pailous (Paifang) arches strategically erected at key entry points to the district, marking its boundaries, such as the Binondo Welcome Arch, Filipino-Chinese Friendship Arch, and the Ongpin South and North Bridge Arch. In contrast, George Town does not feature boundary-defining gateways; instead, its urban landscape is punctuated by more localized, culturally embedded threshold markers within community enclaves, such as the Little India Arch, Campbell Street Gateway, Zhang Clan Qinghe Hall Entrance Arch, and Lee Jetty Clan Arch.This study looks at how gateways contribute to the character of historic cities, using both visual analysis and spatial measures. These measures include the Green Visual Index, which captures how much greenery is visible; the Road Area Index, which quantifies pavement or foreground coverage; the Sky Open Index, which reflects how open or enclosed a space feels; and the Spatial Enclosure Index, which gauges how much the surrounding buildings create a sense of containment.

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Together with ideas from Lynch's imageability theory and Tuan's phenomenology of place, these tools help reveal the visual impact these gateways create.While Binondo's gateways serve as focal points that stabilize identity within a fragmented, commerce-driven landscape, George Town's dispersed gateways embody a conservation-oriented approach that prioritizes multicultural coexistence and community-shaped spatial order. This study looks at how monumental gateways—and sometimes their absence—shape the character of historic cities. It considers the roles they can play in cultural landscapes, and how they connect to questions of memory, governance, and identity over time. Overall, the comparison shows that gateways—and even their absence—do more than just mark thresholds. They express different cultural ways of making places legible, shaping how heritage landscapes carry identity, governance, and memory through time.

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Introduction:-

Ceremonial gateways have long served as symbolic and spatial devices in the built environments of many Asian cities. In the Chinese architectural tradition, the Pailou or Paifang functions as a ritualized threshold—marking entries into sacred, familial, or civic spaces and reflecting Confucian values of honor, ancestry, and social order (Knapp, 2005). As Chinese diaspora communities expanded across Southeast Asia, such forms were often reinterpreted in colonial and postcolonial urban landscapes, where gateways came to represent not just heritage, but also claims to space, identity, and continuity in changing political and economic contexts (Tan, 2007).Binondo, officially established in 1594 under Spanish colonial rule, has evolved into a dense, mixed-use district spanning approximately 66 hectares (City of Manila, 2020). It remains a hub of Chinese-Filipino commerce and identity but is also characterized by infrastructure congestion, inconsistent heritage regulation, and visual disarray, making its monumental Pailous tools for cultural recognition.

Meanwhile, George Town—formally established in 1786 following British acquisition and named in honour of King George III—has a UNESCO-designated core zone of 109 hectares and a buffer zone of 150 hectares, and it retains a formal heritage management plan that emphasizes multicultural layering, architectural continuity, and community-based conservation (UNESCO, 2008).Unlike Binondo, George Town does not employ a monumental gateway to assert district-wide boundaries. Instead, its urban identity is articulated through a network of dispersed ceremonial markers embedded within specific cultural enclaves. Each gateway is designed uniquely and contextually, reflecting their embeddedness within distinct cultural enclaves and the city's conserved, multicultural fabric. These gateways respond to their immediate spatial environments, serving as intimate, localized markers rather than grand district-scale placemakers.

Study Site:-

This study compares the roles of ceremonial gateways in Binondo, Manila and George Town, Penang, using visual and spatial analysis to investigate how these structures mediate cultural identity in their respective urban contexts. In Binondo, the gateways stand as monumental boundary markers—anchoring visibility in an increasingly vertical and chaotic commercial landscape. In George Town, the gateways are internally embedded within ethnic enclaves, and integrated into the surrounding architectural typologies of late 19th- to early 20th-century shophouses, temples, and clan associations (Yeoh, 2001; Logan, 2002). These differences are reflective not only of architectural traditions but also of divergent governance regimes, urban development pressures, and diasporic strategies for cultural continuity.

Figure 1. Map of Binondo Showing Location of Gateways

Binondo is marked by four key gateways that serve as symbolic thresholds into the district. The most prominent, the Binondo Chinatown Welcome Arch, stands at the southern entry via Jones Bridge. It signals the transition from Manila's civic core into Chinatown. Further along Quintin Paredes Street is the Filipino-Chinese Friendship Arch, a more modest structure symbolizing the longstanding relationship between Chinese migrants and Filipino society.

Blending cultural motifs from both traditions, it functions as an intermediary threshold guiding visitors deeper into Binondo.Ongpin Street, the cultural spine of the district, is framed by two smaller pailou-style arches that both cross the Estero de la Reina. The Ongpin North Bridge Arch, near Sta. Cruz Church, marks the intersection of Spanish colonial and Chinese cultural zones, symbolizing a confluence of spiritual and historical identities. The Ongpin South Bridge Arch concludes this sequence, reinforcing Binondo's boundary and enhancing spatial orientation. Together, these four gateways offer a narrative of identity, memory, and movement. More than boundary markers, they shape the experience of Binondo as a living cultural landscape (Yap, 2021).

Beyond these core gateways, the Arch of Solidarity in San Nicolas and the Arch of Goodwill near Sta. Cruz also contribute to the broader narrative of Chinatown's heritage. However, their locations beyond Binondo's traditional boundary distinguish their spatial role. While acknowledging their cultural significance, this study focuses on the four main gateways that directly frame Binondo district's entrances, emphasizing their function as central spatial and cultural thresholds.Unlike Binondo's monumental arches, which function as territorial placemakers asserting visibility and cultural presence amid urban congestion, George Town's gateways operate as internalized, context-sensitive spatial cues. This study focuses on four representative examples—the Campbell Street Gateway, the Little India Arch, the Zhang Clan Qinghe Hall Gateway, and the Lee Jetty Arch—each of which articulates cultural identity at the enclave scale rather than serving as district-wide boundary monuments.

Figure 2. Map of George Town Showing Location of Gateways

Located in the heart of George Town's Indian-Muslim quarter, the Little India Gateway sits within a commercial and religious node characterized by Tamil Muslim businesses, Hindu temples (notably Sri Mahamariamman Temple), and festive street culture (Khoo, 2014). The area lies within the UNESCO Core Zone and is designated a Cultural District under the George Town World Heritage Site Special Area Plan.Situated at the convergence of Chinese trading corridors, this site historically hosted Cantonese and Hokkien commercial activity. Campbell Street was once Penang's red-light district and now functions as a vibrant textile and gold retail stretch (Lee & Wong, 2022). The area falls in the Buffer Zone, just outside the UNESCO core, allowing more development flexibility while retaining vernacular shoplots.The Qinghe Zhang Clan Association Hall, built in 1906, serves as a focal point for Hokkien Zhang lineage members. The gateway entrance into the hall complex is deeply internalized, reflecting

traditional Southern Chinese courtyard typology.The Lee Jetty is one of six Chinese clan jetties built in the late 19th century by Hokkien settlers. Its entrance arch leads into a floating stilt-house community, where architecture adapts to tidal and fluvial conditions (Logan, 2002; Khoo, 2014). The site is recognized under the George Town SAP as living intangible heritage, vulnerable to tourism pressures and sea-level rise.

Rationale:-

Unlike Binondo, which uses monumental pailou arches to mark territorial boundaries and reclaim visibility amid modern congestion, George Town's gateways operate as internalized spatial cues. Their diversity of placement, proportion, and symbolism is a direct outcome of its UNESCO-led conservation model, emphasizing authenticity, continuity, and inclusivity over spectacle (UNESCO, 2008; ICOMOS, 2011).Amid accelerating urban pressures, this study examines how these gateways frame experience, express identity, and negotiate heritage within their distinct contexts. By comparing their design and spatial roles, the research aims to inform sustainable heritage conservation and urban design strategies that balance tradition with contemporary urban realities.

Review of Related Literature:-

Ceremonial gateways in heritage districts are not merely decorative constructs; they serve as vital spatial and cultural thresholds that mediate identity, guide orientation, and frame collective memory. Scholars across urban morphology, semiotics, and environmental perception agree that the effectiveness of a gateway lies in its ability to articulate symbolic meaning while being legibly embedded within the urban fabric.Stevens and Thai (2024) assert that gateways function most successfully when morphologically aligned with coherent urban patterns—such as axial continuity, consistent façade lines, and rhythmic street interfaces—ensuring that the structure maintains visibility and reinforces wayfinding. This echoes Lynch's (1960) theory of imageability, where distinct urban elements enhance a city's cognitive legibility.Expanding on the symbolic dimension, Ying and Liu (2025) argue that gateways act as ideological signifiers whose meanings are not fixed but evolve alongside sociopolitical contexts. They anchor the intangible aspects of identity—rituals, migration memory, and cultural resilience—within physical thresholds. These insights are particularly relevant in diasporic settings like Binondo and George Town, where hybrid identities emerge through layered architectural signifiers.

Tan (2023) foregrounds the perceptual dimension of gateways, noting that spatial enclosure, skyline harmony, and uninterrupted sightlines are necessary for maintaining visual salience—especially in congested heritage districts. This is reinforced by Rui and Cheng's (2023) spatial metrics framework, which empirically demonstrates that lower visual entropy and higher enclosure indices correlate with a stronger sense of place, pedestrian comfort, and symbolic clarityIn Binondo, the symbolic presence of its Pailou arches is diminished by signage saturation, visual clutter, and intrusive modern infrastructure. Such conditions obscure their intended role as cultural landmarks, underscoring the importance of strategic spatial framing to safeguard their legibility within the urban fabric. Conversely, in George Town, Penang, the absence of monumental boundary-marking arches and the preference for embedded, site-specific gateways reflects a different conservation approach—favoring integrative, community-scaled interventions within a UNESCO-regulated urban core (UNESCO, 2008).Together, these scholarly perspectives highlight a crucial intersection: for gateways to be effective in shaping cultural landscapes, they must balance symbolic meaning with spatial clarity. This research adopts this dual framework—symbolic and spatial—as a lens for comparing how Binondo and George Town articulate heritage through their gateway typologies under differing urban governance regimes and morphological contexts.

Research Objectives:-

This study aims to examine how ceremonial gateways in Binondo, Manila, and George Town, Penang, function as spatial and symbolic mediators of cultural identity within their respective urban and heritage contexts. Drawing from Lynch's (1960) theory of environmental legibility and Tuan's (1977) phenomenology of place, the research investigates how the design, scale, placement, and framing strategies of Binondo's monumental Pailou arches contrast with George Town's dispersed and context-specific thresholds. The study examines how these gateways function as cultural markers of identity and memory, shaped by diasporic traditions and differing governance—from Manila's fragmented growth to George Town's UNESCO-guided conservation (ICOMOS, 2011). Drawing on Stevens and Thai (2024) and Ying and Liu (2025), it highlights how spatial clarity, symbolic coherence, and contextual integration enhance their role as urban placemakers.Ultimately, this comparative analysis seeks to develop a spatial-heritage framework that underscores the significance of legibility in understanding how gateways mediate between tradition and modernity within multicultural urban environments.

Methodology:-

Spatial Data Acquisition:-

To facilitate the spatial and visual analysis of the selected gateways in Binondo, Manila and George Town, Penang; photographic documentation was undertaken. The gateways were photographed from a standardized eye-level height of approximately 1.50 meters, simulating an average pedestrian's perspective. A viewing distance of roughly 8 - 10 meters was maintained from the side of the pedestrian approach, aligning with standard practices in streetscape perception studies where consistent sightlines are critical to comparative analysis (Li et al., 2020).The documentation took place during daylight hours, a temporal setting chosen to reflect typical levels of pedestrian activity and ambient lighting. These spatial and temporal parameters were implemented to ensure that the resulting imagery constitutes a valid and reliable dataset for subsequent visual and spatial index analysis.

Selection of Evaluation Indicators:-

To analyze the spatial and visual characteristics of each gateway, this study employed the Street Landscape Evaluation Index (SLEI). Originally developed from visibility-based landscape perception metrics such as the Green View Index (Li, Ratti, & Seiferling, 2015), the framework has since been extended in urban morphological research to include additional indicators of sky, road, and building visibility (e.g., Guo et al., 2025; Liu et al., 2024). These indices have proven effective in capturing how streetscapes are perceived in terms of openness, greenery, accessibility, and enclosure, making them particularly relevant for assessing heritage gateways situated within dense urban contexts.

The following four indices were selected based on their applicability to the acquired photographic data:

- Green Visual Index (GVI): Proportion of visible green elements (primarily vegetation), used as a proxy for environmental quality and visual comfort.
- Sky Open Index (SOI): Proportion of visible sky, indicating spatial openness and vertical permeability.
- Spatial Enclosure Index (SEI): Proportion of midground built structures (e.g., facades, walls, fences), contributing to the perceived degree of enclosure.
- Road Area Index (RAI): Proportion of paved circulation surfaces in the foreground, reflecting accessibility and functional movement space.

Each metric was derived from street-view photographs using manual visual classification rather than automated semantic segmentation. This approach ensured accuracy given the modest dataset and the architectural specificity of heritage gateways, aligning with established practices in streetscape evaluation research.

Visual Attribute Quantification:-

Each photographic image was imported into Adobe Photoshop, where a fixed analytical frame was established, demarcated by the openings of the gateway—framing the subject view. Within this frame, the image was segmented into the four primary landscape components: green (vegetation), sky (open air), middleground (built or vegetative enclosures), and road (paved foreground). Each component was quantified by measuring the number of pixels it occupied relative to the total image area.

Step 1: Open the image in Adobe Photoshop

Figure 3. Screenshot of Adobe Photoshop interface displaying the subject gateway image file

Step 2: Demarcate the view framed by the arch using a lasso tool

Figure 4. Screenshot of Adobe Photoshop interface displaying the subject gateway image file

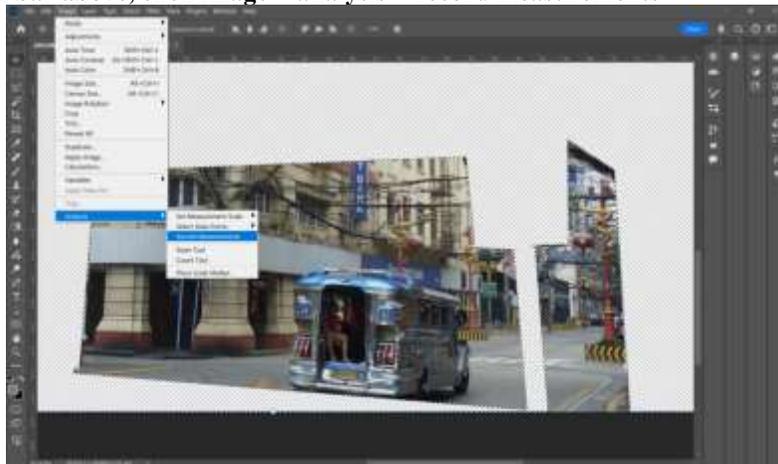**Step 3: On the menu bar above, click image > analysis > record measurements**

Figure 5. Screenshot of the Adobe Photoshop interface displaying the subject gateway image file, and showing the process of visual attribute quantification

Step 4: A measurement log panel will appear below the screen where the number of pixels will be displayed. Log down the total area of pixels.
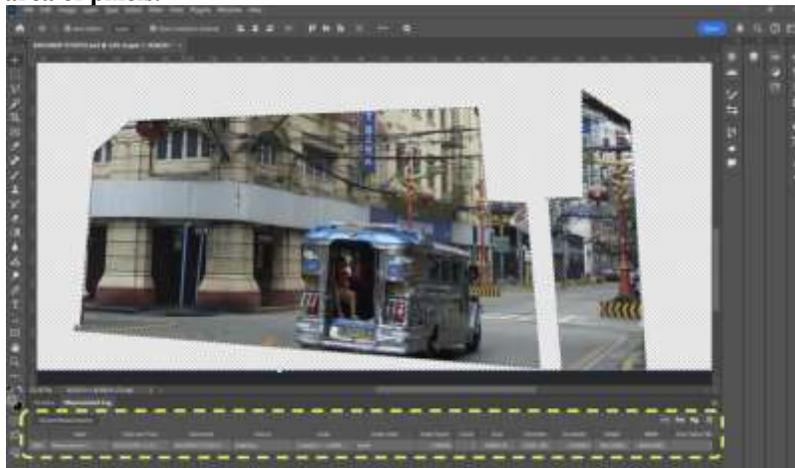

Figure 6. Screenshot of Adobe Photoshop interface displaying the subject gateway image file, and showing the process of visual attribute quantification

Step 5: In the same manner, demarcate all segments composing the frame based on each corresponding index, and record the pixel measurement.
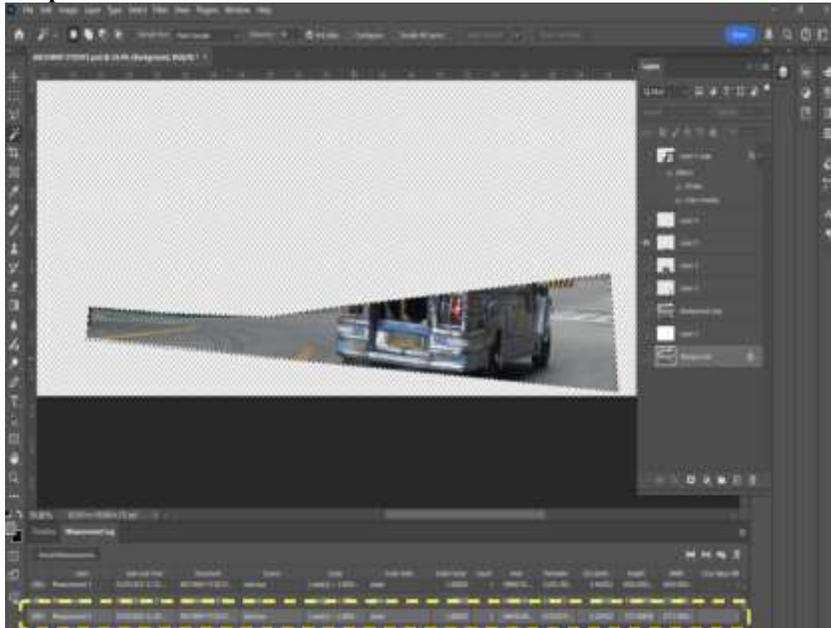

Figure 7. Screenshot of Adobe Photoshop interface displaying the subject gateway image file, and showing the process of visual attribute quantification

These pixel-based measurements recorded were normalized as percentage values to ensure cross-comparability among images. The quantified data were systematically tabulated, with each row representing one gateway and each column corresponding to an individual visual index.

Comparative Synthesis and Interpretation:-
Following data quantification, a comparative synthesis was conducted to analyze variations in spatial composition, environmental quality, and visual structure across the four gateways. This multi-index evaluation provides an evidence-based framework for interpreting the spatial composition created within monumental thresholds that hold key identity of the cultural fabric.

Results and Discussion:-
In this study, the gateways of Binondo and George Town are examined not just as structures, but as lived spaces shaped by both tradition and modern urban life. Using measures such as the Spatial Enclosure Index (SEI), Green Visual Index (GVI), Sky Open Index (SOI), and Road Area Index (RAI), the analysis shows how each gateway balances heritage symbolism with the practical realities of a changing city.

Binondo:-
The gateways in Binondo reflect the area's role as a commercial and cultural hub, with forms that emphasize visibility and symbolic entry. The following results present their spatial indices, showing how enclosure, greenery, sky openness, and road space shape the experience of Manila's Chinatown.The Chinatown Binondo Welcome Arch presents a moderately enclosed spatial composition, with a Spatial Enclosure Index of 66%, giving it a strong sense of framed entry typical of ceremonial gateways. The Green Visual Index at 15% adds a subtle layer of softness to its visual impact, suggesting some landscape presence—likely from nearby trees or planting strips. However, with a Sky Open Index of only 3%, the background is heavily compressed, creating a dense urban foreground that may limit visual relief. Its Road Area Index of 16% balances circulation needs with visual massing, closely aligning with the ideal framing proportions.

Figure 8. Framing analysis of the Chinatown Binondo Welcome Arch, illustrating the delineated Street Landscape Enclosure Indices (SLEIs).

Chinatown Binondo Welcome Arch		
	Pixels	Percentage
Green Visual Index	371,287.50	15%
Road Area Index	396,040.00	16%
Sky Open Index	74,257.50	3%
Spatial Enclosure Index	1,633,665.00	66%
Total	2,475,250.00	100%

Table 1. Quantitative values and proportional distribution of Street Landscape Enclosure Indices (SLEIs) within the visual frame of the Chinatown Binondo Welcome Arch.

The Filipino-Chinese Friendship Arch demonstrates a high level of spatial compression, with a 69% Spatial Enclosure Index and minimal Green Visual (5%) and Sky Open (4%) Indices. The high degree of enclosure contributes to a dense spatial character, limiting openness and reducing environmental softness. The Road Area Index, at 22%, slightly exceeds the ideal, suggesting a broader foreground space that offsets the tight enclosure of the background and middleground. Overall, the space conveys a rigid, urban character with limited spatial permeability.

Figure 9. Framing analysis of the Filipino-Chinese Friendship Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Filipino-Chinese Friendship Arch		
	Pixels	Percentage
Green Visual Index	994,035.50	5%
Road Area Index	218,687.81	22%
Sky Open Index	795,228.40	4%
Spatial Enclosure Index	13,717,689.90	69%
Total	19,880,710.00	100%

Table 2. Quantitative values and proportional distribution of Street Landscape Enclosure Indices (SLEIs) within the visual frame of the Filipino-Chinese Friendship Arch.

The Ongpin North Bridge Arch demonstrates a particularly high level of spatial enclosure at 85%, creating a tightly framed, corridor-like spatial experience. The complete absence of greenery and sky (0% Green Visual and Sky Open Index) reinforces a visually compressed environment, where architectural elements and building edges dominate the experience. The 15% Road Area Index supports this sense of constraint, close to the ideal ratio but reinforcing a narrow, enclosed threshold.

Figure 10. Framing analysis of the Ongpin North Bridge Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Ongpin North Bridge Arch		
	Pixels	Percentage
Green Visual Index	3,896,881.80	28%
Road Area Index	4,175,230.50	30%
Sky Open Index	695,871.75	5%
Spatial Enclosure Index	5,149,450.95	37%
Total	13,917,435.00	100%

Table 3. Quantitative values and proportional distribution of Street Landscape Evaluation Indices (SLEIs) within the visual frame of the Ongpin North Bridge Arch.

In contrast, the Ongpin South Bridge Arch presents no measurable GVI and a significantly high Spatial Enclosure Index (SEI), producing a much more confined visual experience. Unlike its northern counterpart, this arch is situated immediately after the crossing, making its approach more compressed and abrupt.

Figure 11. Framing analysis of the Ongpin South Bridge Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Ongpin South Bridge Arch		
	Pixels	Percentage
Green Visual Index	0.00	0%
Road Area Index	1,914,064.20	15%
Sky Open Index	0.00	0%
Spatial Enclosure Index	10,846,363.80	85%
Total	12,760,428.00	100%

Table 4. Quantitative values and proportional distribution of Street Landscape Evaluation Indices (SLEIs) within the visual frame of the Ongpin South Bridge Arch.

George Town:-
In George Town, the gateways are smaller in scale and integrated into the conserved streetscape. The following data highlights how their spatial indices capture variations in enclosure, vegetation, openness, and circulation within the city's heritage setting.
The Little India Gateway offers a well-balanced spatial experience, aligning closely with ideal framing values. The 10% Green Visual Index reflects the presence of modest vegetation—enough to soften the urban environment and

symbolically anchor the gateway to the vibrant, sensory landscape of Little India. Its high Sky Open Index (40%) suggests a generous vertical openness, enabling the gateway to visually project against the skyline. Meanwhile, the moderate Spatial Enclosure Index (35%) and relatively low Road Area Index (15%) foster a pedestrian-friendly and culturally engaging threshold. In George Town's multicultural context, this spatial openness allows the gateway to represent Indian-Malay identity without overt monumentality. It aligns with urban theories that value visual access and human-scale openness in pluralistic cities (Madanipour, 1996). As an urban threshold, it enhances identity without exclusion, echoing the spirit of George Town's UNESCO World Heritage designation that celebrates layered cultural expressions (UNESCO, 2008).

Figure 12. Framing analysis of the Little India Arch, illustrating the delineated Street Landscape Enclosure Indices (SLEIs).

Little India		
	Pixels	Percentage
Green Visual Index	311,035.10	10%
Road Area Index	465,403.00	15%
Sky Open Index	1,244,140.40	40%
Spatial Enclosure Index	1,088,622.85	35%
Total	3,110,351.00	100%

Table 5. Quantitative values and proportional distribution of Street Landscape Enclosure Indices (SLEIs) within the visual frame of the Little India Arch.

This gateway demonstrates the closest alignment with ideal framing proportions, acting as a quiet but effective urban threshold. The 10% greenery and 17% road index reflect a tightly controlled urban environment—visually structured but not overly dominated by infrastructure. Its 34% Sky Open Index provides sufficient upward visibility, offering a sense of openness without diminishing the urban enclosure. With a Spatial Enclosure Index of 39%, nearly ideal, the gateway strikes a strong balance between containment and openness.

Figure 13. Framing analysis of the Medan Lebuh Campbell Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Medan Lebuh Campbell		
	Pixels	Percentage
Green Visual Index	238,353.20	10%
Road Area Index	396,900.00	17%
Sky Open Index	810,400.88	34%
Spatial Enclosure Index	929,577.48	39%
Total	2,383,532.00	100%

Table 6. Quantitative values and proportional distribution of Street Landscape Evaluation Indices (SLEIs) within the visual frame of the Medan Lebuh Campbell Arch.

Unlike other gateways, the Zhang Clan Qinghe Hall Arch exhibits extreme values that suggest a highly introverted, enclosed spatial character. With 0% green and 0% sky visibility, the space reads more like an internal courtyard or cloistered heritage enclave. The 33% road area further reinforces this hard-surfaced, possibly ceremonial spatial quality. The defining feature is its very high Spatial Enclosure Index (67%), making it the most enclosed space of the four.This spatial logic reflects traditional Chinese clan hall architecture, where gateways are designed to protect, mark lineage, and preserve memory, rather than to invite public interaction or frame large urban views. This arch functions as an inward-facing cultural marker, more about lineage and heritage preservation than urban wayfinding or boundary declaration.

Figure 14. Framing analysis of the Zhang Clan Qinghe Hall Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Zhang Clan Qinghe Hall Arch		
	Pixels	Percentage
Green Visual Index	0.00	0%
Road Area Index	768,940.26	33%
Sky Open Index	0.00	0%
Spatial Enclosure Index	1,561,181.74	67%
Total	2,330,122.00	100%

Table 7. Quantitative values and proportional distribution of Street Landscape Evaluation Indices (SLEIs) within the visual frame of the Zhang Clan Qinghe Hall Arch.

The Lee Jetty Arch, situated within the Chinese clan jetty settlement, blends cultural specificity with organic spatiality. With 11% greenery, it slightly exceeds the ideal, softening the jetty's entrance and connecting it to the waterfront. The Sky Open Index of 29% suggests a moderately framed vertical view—important for emphasizing the arch and signifying entry into a unique semi-public space.The Road Area Index (27%) is relatively high, reflecting the utilitarian nature of jetty settlements, where pedestrian and logistical uses coexist in a compact space. Yet the Enclosure Index (33%) remains within comfortable bounds, creating a sense of closeness. The archway leads to a series of arches, leading to a wooden dock that extends toward the sea.

Figure 15. Framing analysis of the Lee Jetty Clan Arch, illustrating the delineated Street Landscape Evaluation Indices (SLEIs).

Lee Jetty Clan Arch		
	Pixels	Percentage
Green Visual Index	540,272.81	11%
Road Area Index	1,326,124.17	27%
Sky Open Index	1,424,355.59	29%
Spatial Enclosure Index	1,620,818.43	33%
Total	4,911,571.00	100%

Table 8. Quantitative values and proportional distribution of Street Landscape Evaluation Indices (SLEIs) within the visual frame of the Lee Jetty Clan Arch.

Synthesis:-
The comparison of Binondo and George Town's gateways through the Street Landscape Evaluation Indices (SLEIs) highlights two different urban logics—one rooted in monumentality and compression, the other in proportionality and permeability.

Spatial Enclosure Index (SEI):-
Binondo's gateways register consistently high SEIs, from 66% up to 85% (figures 8, 9, 10 and 11). This creates dense, corridor-like thresholds, where legibility is partially compromised by visual clutter. The effect, however, is a compressed urban environment that often overwhelms pedestrian scale. In George Town, by contrast, the SEI ranges from 33% to 67%, producing thresholds that are enclosed enough to signify identity yet open enough to maintain accessibility and comfort (figures 12, 13, 14 and 15). The more moderate values reflect George Town's sensitivity to human scale and its integration into heritage streetscapes.

Green Visual Index (GVI):-
Greenery is minimal in the four Binondo gateways, rarely exceeding 15% and in some cases disappearing altogether (figures 8, 9, 10 and 11). This absence reinforces a hard, urban quality where vegetation plays little role in shaping the experience. George Town's gateways, meanwhile, consistently register around 10–11% GVI (figures 12, 13, 14

and 15). Though modest, this layer of greenery softens the built environment, offering visual comfort and a sense of cultural connection without disrupting architectural rhythm.

Sky Open Index (SOI):-
Perhaps the sharpest contrast appears in sky openness. As shown in figures 8, 9, 10 and 11, Binondo's gateways record very low SOIs—typically between 0% and 4%—which reinforces their heavy enclosure and compresses upward views. This visual density heightens monumentality but limits perceptual relief. George Town, by comparison, demonstrates far greater openness, with SOIs ranging from 29% to 40% (figures 12, 13, 14 and 15). This vertical breathing space allows gateways to project against the skyline, improving legibility, orientation, and pedestrian recognition.

Road Area Index (RAI):-
Binondo's road indices fall within a narrow range of 15%–22%, aligning with circulation requirements but functioning largely as utilitarian forecourts to monumental structures (figures 8, 9, 10 and 11). In George Town, the RAI varies more widely from 15% to 33%, reflecting adaptation to different cultural settings—from clan halls with ceremonial forecourts to jetty settlements where circulation is both functional and symbolic (figures 12, 13, 14 and 15). These variations highlight George Town's flexibility in embedding gateways within lived environments rather than staging them as isolated monuments.Taken together, Binondo's SLEIs highlight patterns of enclosure and compression, where spatial thresholds are shaped by dense urban fabric. This density reinforces cultural identity by intensifying the experience of passage and emphasizing gateways as symbolic anchors within the crowded landscape. George Town, by contrast, relies on balance—moderate enclosure, modest greenery, generous openness, and adaptive circulation—to create gateways that are less about monumental assertion and more about permeability, contextual integration, and pedestrian experience.

Conclusion and Recommendations:-
The comparative spatial analysis of gateways in Binondo and George Town reveals profound insights into how architectural framing mediates cultural identity, legibility, and spatial experience in heritage districts. In Binondo, the dominant spatial language of its gateways—exemplified by the Chinatown Binondo Welcome Arch and the Filipino-Chinese Friendship Arch—is marked by high enclosure, limited sky openness, and minimal greenery. This results in dense, compressed visual fields that emphasize monumentality but often compromise perceptual clarity and environmental comfort (figure 16).
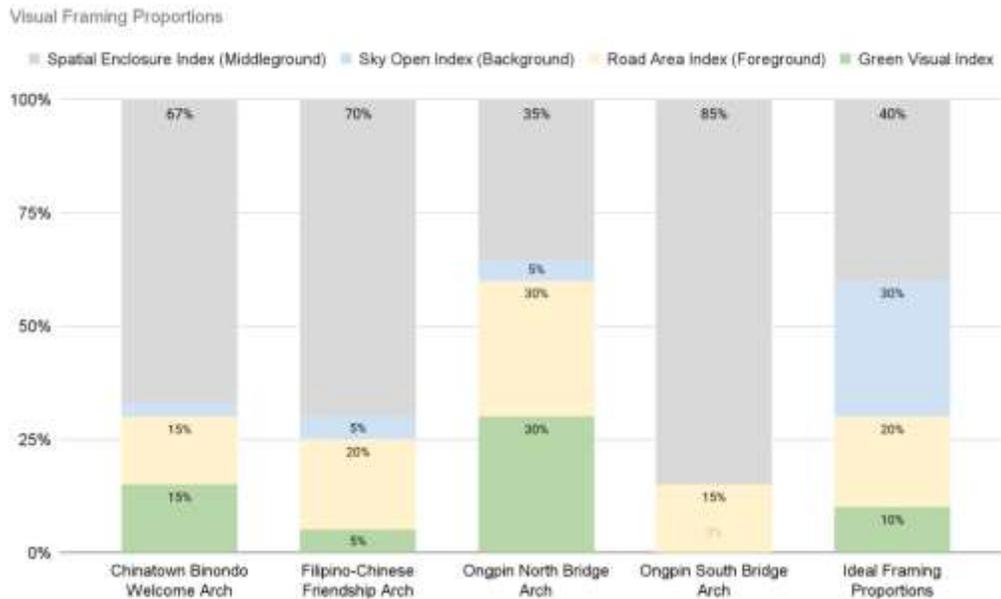

Figure 16. Comparative analysis of the Street Landscape Enclosure Indices (SLEIs) of the Binondo Gateways

In contrast, the gateways of George Town—exhibit a more calibrated spatial composition that foregrounds permeability, cultural legibility, and environmental balance. The Little India Gateway, for example, achieves a well-proportioned Spatial Enclosure Index (35%) while offering generous vertical openness (Sky Open Index of 40%) and a modest but effective layer of greenery (10%). This spatial configuration supports not only symbolic legibility but also pedestrian comfort and ecological relief (figure 17).
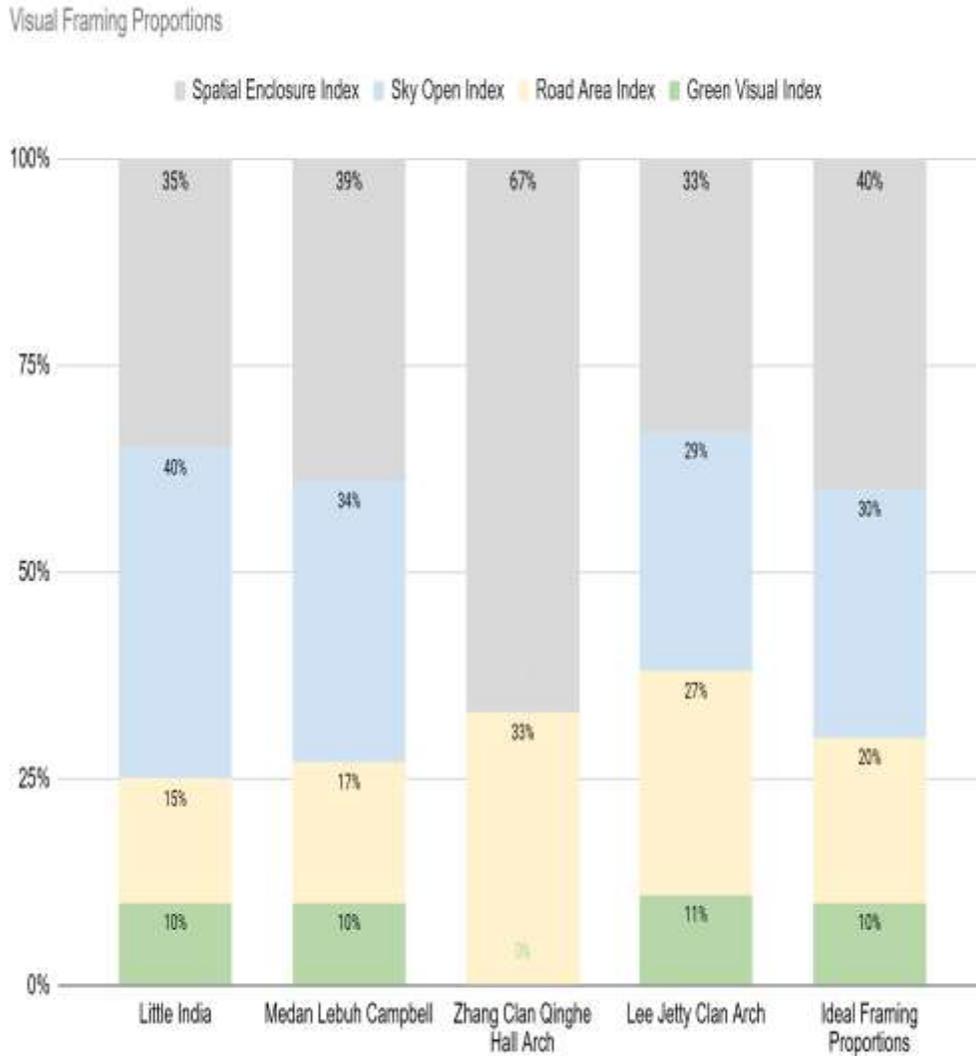

Figure 17. Comparative analysis of the Street Landscape Enclosure Indices (SLEIs) of George Town's Gateways

Such proportionality reflects Madanipour's (1996) notion of urban thresholds that prioritize human-scale accessibility and multisensory engagement.Importantly, the spatial legibility of George Town's gateways does not rely on monumental scale but on contextual alignment, architectural rhythm, and the capacity to mediate transitions—both physical and symbolic—between different zones of identity. In contrast to Binondo, where gateways are strategically placed at boundary thresholds to signify entry, George Town's island geography naturally defines its spatial boundaries, reducing the necessity for a monumental marker.
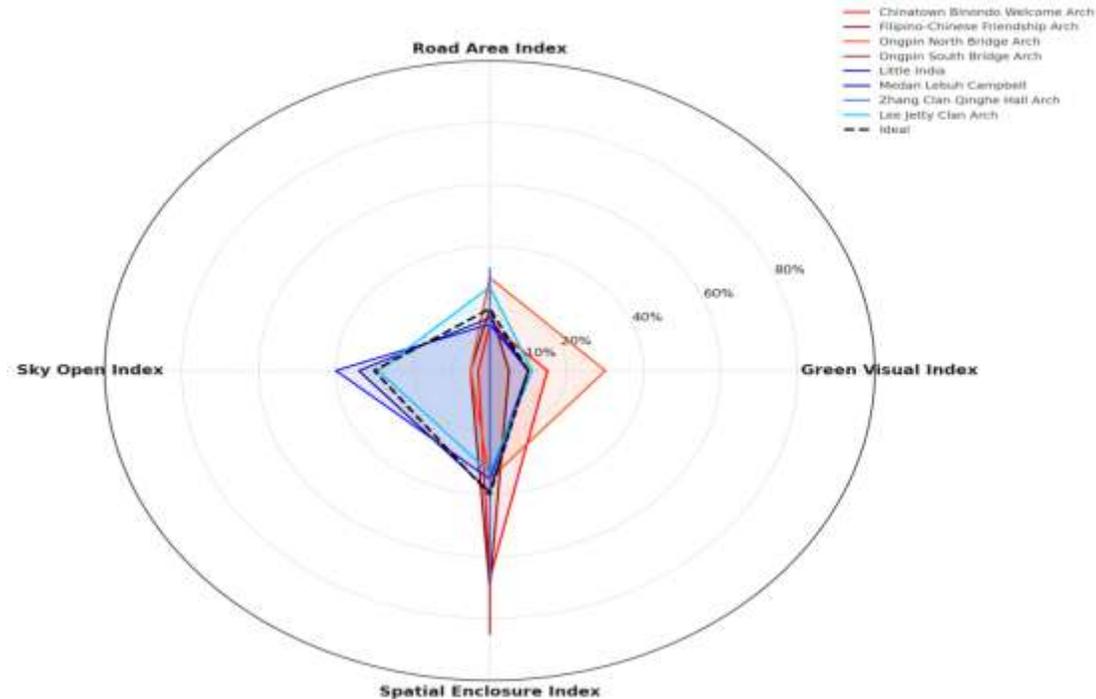
Figure 18. Combined Radar Chart comparing the Street Landscape Enclosure Indices (SLEIs) of Binondo's and George Town's Gateways

Figure 18 presents a radar chart comparing the Street Landscape Evaluation Index (SLEI) values of gateways in Binondo (red hues) and George Town (blue hues) against the ideal framing proportions (dashed black line). The axes represent four key spatial components—green visual index, road area, sky openness, and spatial enclosure. Binondo's gateways tend toward high spatial enclosure with limited sky openness, emphasizing density and compression, while George Town's gateways show greater balance across indices, more closely approximating the ideal framing conditions. The figure highlights contrasting spatial logics that shape cultural legibility and placemaking in these heritage districts.The findings in this study thus reinforce a broader theoretical proposition: that gateways in multicultural heritage landscapes should be evaluated not just for their aesthetic or symbolic content, but for their spatial performativity—how they guide perception, and support orientation in built form. It also underlines the value of quantitative spatial metrics, such as the Street Landscape Enclosure Indices (SLEIs), in the context of environmental coherence, especially in cultural districts.

Building on the findings of this study, future research should adopt a reverse visual corridor analysis to examine how these gateways are perceived from key vantage points within and around the district. This approach shifts the focus from viewing outward to the gateways to assessing how they function as visible spatial markers when approached from key public spaces, nodes, and peripheral streets. Such analysis can provide valuable insights into the legibility and symbolic anchoring of these gateways within the broader urban landscape (Lynch, 1960; Nasar, 1998).Longitudinal and ethnographic studies are recommended as it is essential to unravel how the symbolic meanings and social functions of these gateways evolve amid shifting political, economic, and social landscapes (Ying & Liu, 2025). Archival research combined with oral histories could contextualize these transformations, offering critical insights into the contested processes of heritage preservation and urban change.

Finally, the development of participatory design toolkits tailored to multicultural heritage contexts can empower local communities and planners to collaboratively shape gateway spaces that balance monumental visibility with contextual sensitivity, fostering urban thresholds that are meaningful, inclusive, and resilient (Stevens & Thai, 2024).In sum, this comparative study not only advances the spatial and cultural understanding of heritage gateways but also challenges all stakeholders to enact more accountable, culturally grounded, and environmentally responsive urban design strategies. The future of these gateways lies in their capacity to be simultaneously iconic and inhabitable—spaces that are not only framed visually but lived, remembered, and continually reinterpreted by the communities they serve.

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