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Spatiotemporal Appropriation of Non-Furniture Architectural Elements on Minimarket Terraces within the Academic District of Bandung City

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Abstract

Gathering and lingering on minimarket terraces as a form of informal social activity has become increasingly common within urban academic environments. Nevertheless, this phenomenon has received insufficient scholarly attention from the perspective of behavioural architecture. This study investigates the limitations of the spatial elements of commercial terraces that stimulate users' physical adaptation and further elaborates the transformation of the terrace from a functional circulation area into an informal social space. Employing a descriptive qualitative approach, the research utilised place-centred behaviour mapping and semi-structured interviews conducted on the terrace of Indomaret Point Dipatiukur No. 85, Bandung City. Observations were carried out over five consecutive days to capture fluctuations in patterns of spatial occupancy. The findings demonstrate that the limited provision of formal seating facilities does not prevent users from independently appropriating the space. Non-furniture architectural elements, including the 18-centimetre-high main entrance steps, the landing platform, and the perimeter areas surrounding the structural columns, were identified as functioning effectively as catalysts for lingering activities. This spatiotemporal pattern of adaptation is driven by the rhythm of academic activities at the surrounding universities; whereby intensive social interaction shifts from brief transitional mobility on weekdays to more prolonged patterns of space occupation. The study provides empirical evidence that organic place-making can emerge through the active negotiation between the human body and the physical configuration of the non-furniture architectural elements of everyday built environments.

Keywords: Behavioural architecture, minimarket terrace, spatial affordance, spatial appropriation, third place

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Introduction

Contemporary urban districts that develop around higher education institutions frequently experience a shortage of formal public open spaces capable of accommodating the dynamic patterns of sociability among young people. As the predominant representation of Generation Z within the urban academic landscape, university students exhibit distinctive communal preferences for social interaction, mental relaxation, and inclusive self-expression beyond classroom hours without financial constraints (Liya et al. 2025; Hasibuan et al. 2021). When urban spatial planning at the macro scale fails to provide adequate communal plazas within educational clusters, the modern retail property sector inadvertently fills this spatial void. Commercial terraces attached to minimarkets have emerged as new spatial magnets because of their strategic locations near transportation nodes and institutional gateways (Suherman and Murwadi 2021; Susanti and Natalia 2018). In Bandung, this phenomenon is reflected in the transformation of the front terraces of modern retail outlets from profit-oriented circulation corridors into reliable pockets of informal public activity (Anggiani and Ayudya 2024; Bachtiar, Sanjaya, and Purwanto 2023). Consequently, developing a deeper understanding of informal social interaction within these transitional spaces is essential for enabling designers to produce architectural environments that respond more empathetically to natural human behaviour.

Behavioural architecture, as a field of inquiry, seeks to understand how the physical characteristics of the built environment shape the behaviour of its users. This understanding is founded upon four interrelated concepts: spatial affordance, grey space, the third place, and place-making. Previous studies have demonstrated that physical environments embody latent functional potentials capable of eliciting particular behavioural responses from users (Widmer and Rérat 2025; Stevens, Daly, and Dovey 2024). While mainstream place-making theory has traditionally been dominated by large-scale, top-down formal design approaches, such as the planning and design of urban squares (Laurens 2004), recent scholarship has increasingly shifted its attention towards understanding how place-making can emerge organically through bottom-up initiatives that appropriate existing infrastructure with minimal intervention. Within the Indonesian context, research on informal public spaces has largely concentrated on traditional horizontal urban environments, including neighbourhood alleys in urban kampungs and traditional marketplaces (Nestri Kiswari and Tri Hesti Mulyani 2026; Harani, Atmodiwirjo, and Yatmo 2024). As a result, a significant theoretical gap remains, as many scholars continue to assume that the development of place attachment requires a profound local character, expressed through the presence of *genius loci* within monumental settings (Zhang, Dimitrijevic, and Romice 2025). To date, architectural research in Indonesia has yet to explain with sufficient precision how the non-designed components of contemporary retail environments such as entrance steps, structural columns, or landing platforms can stimulate users to gather and occupy space without the provision of formal furniture.

To address this scholarly gap, the present study proposes an integrated conceptual framework that establishes a causal relationship between the physical geometry of architectural elements and the resulting human spatial experience. This conceptual sequence operates linearly: the spatial affordances embedded within the dimensions of non-furniture architectural elements initially invite users to pause and rest, subsequently transforming residual commercial space into an active lingering space (Widmer and Rérat 2025; Nestri Kiswari and Tri Hesti Mulyani 2026). As such lingering activities occur repeatedly and consistently, the terrace gradually undergoes a functional transformation into an informal third place, distinct from both domestic environments and formal educational settings (Harani, Atmodiwirjo, and Yatmo 2024; Karang 2022). The culmination of this organic process of spatial assemblage is the enrichment of users' sociological experience and the development of a deeper sense of place attachment between university students and the building corridor (Bimantoro et al. 2022; Habibullah and Ekomadyo 2021). Accordingly, this study aims to identify the limitations of the spatial elements of minimarket terraces that stimulate user adaptation and to explain the process through which minimarket terraces are transformed from functional circulation spaces into informal social environments. By achieving these objectives, the study seeks to identify the specific geometric configurations of non-furniture architectural elements that generate spatial affordances while also revealing how fluctuations in urban temporality influence the sociability of young academic communities in Bandung.

Methods

This study adopted a descriptive–analytical qualitative research design, employing place-centered behavioural mapping as its primary methodological approach. The selection of this method was based on its established capability to record and visualise the reciprocal relationship between the fixed geometric arrangement of physical space and naturally occurring patterns of human social activity (Tantarto and Hertoery 2020; Hasibuan et al. 2021).

An intensive field investigation was conducted on the front terrace of Indomaret Point, located at 85 Dipatiukur Street, Bandung City. The selection of this single study site was justified by the characteristics of its surrounding context, which is strongly shaped by academic activities. The observation site is directly adjacent to the campus of Universitas Komputer Indonesia (UNIKOM) and is surrounded by numerous other higher education institutions (Tsumasabilla, Karang, and Wijayanti 2025; Budiman et al. 2022). This modern retail commercial corridor exhibits a high level of spatial appropriation by university students, thereby fulfilling the criteria for a representative field laboratory.

The target population comprised all visitors to the commercial terrace who were observed engaging in lingering activities for a measurable duration during the observation period. Participants were selected using purposive sampling, with the sampling criteria focusing on young university students

aged 18–25 years who formed small communal clusters on the outdoor terrace. Field data were collected over five consecutive days, proportionally distributed across two weekdays, two weekend days, and one public holiday, in order to capture the full range of variability associated with urban temporality.

Primary data were obtained through systematic visual observation by recording users' positions on behavioural mapping sheets during each observation period (Laurens 2004). In addition, secondary data included measurements of the site's physical dimensions, archival documentation of the architectural setting, and visual documentation in the form of photographs depicting the existing terrace conditions. To complement these spatial data and facilitate a deeper interpretation of users' experiences, semi-structured interviews were conducted with several university students to explore the psychological dimensions and social experiences underlying their patterns of spatial use.

Data analysis was undertaken using a systematic descriptive narrative–spatial approach. The analytical procedure commenced with data reduction, during which graphical plots, field notes, and interview transcripts were classified according to variables relating to non-furniture architectural elements and patterns of sociability. Subsequently, a superimposition (layering) technique was applied to all behavioural mapping sheets collected from different observation sessions in order to identify hotspots of lingering activity. The resulting spatial patterns were then examined in relation to the theory of spatial affordance and interpreted qualitatively to explain the mechanisms through which bottom-up place-making emerges within an urban context (Ekaputri, Harani, and Aminuddin 2025).

Ethical considerations for this built environment study were addressed by obtaining the voluntary verbal consent of each interview participant after providing a transparent explanation of the objectives of the research. The confidentiality of participants' personal information was ensured through the application of an anonymous coding system during the transcription process. Furthermore, all photographic documentation included in the publication was digitally edited to obscure facial features and other personally identifiable information, thereby safeguarding the privacy of space users.

Result and discussion

Physical and spatial characteristics of the study site

The front terrace of Indomaret Point, located at 85 Dipatiukur Street, Bandung City, exhibits a linear geometric configuration with an overall open area measuring 3 m × 9 m. Structurally, the outdoor space is sheltered by a 1.8-metre-wide canopy, which provides effective microclimatic protection against solar radiation and heavy rainfall. Field verification confirmed that standard commercial furniture, consisting of outdoor tables and chairs, is provided only within designated areas, leaving

the remaining space to function as the circulation zone connecting the interior and exterior of the building (figure 1). The site is predominantly defined by several non-furniture architectural elements, including three entrance steps (riser height: 18 cm; tread depth: 32 cm), a 3-metre-wide ceramic landing platform forming the western perimeter, and two square reinforced-concrete structural columns measuring 30 × 30 cm and 20 × 20 cm, respectively (figure 2).



Figure 1
Front View of the Terrace of Indomaret Point, 85 Dipatiukur Street, Viewed from the Front parking area

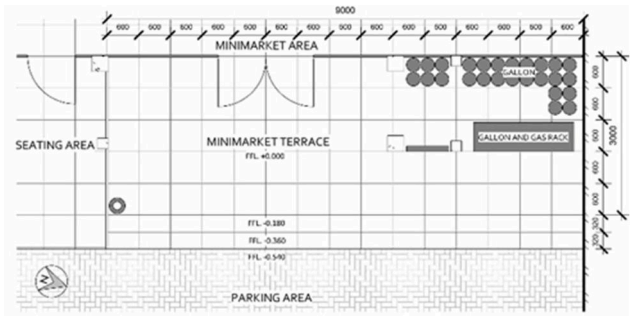


Figure 2
Measured floor plan of the Terrace of Indomaret Point, 85 Dipatiukur Street

For analytical purposes, the terrace was divided into three spatial zones: Zone A, comprising the entrance-step corridor providing primary access to the store; Zone B, representing the central circulation area immediately in front of the entrance; and Zone C, consisting of the perimeter surrounding the structural columns. Behavioural mapping revealed a marked contrast in occupancy distribution, with Zones A and C consistently functioning as the principal hotspots of lingering activity (figure 3). In contrast, the observation records demonstrated that Zone B remained almost entirely free from prolonged occupation because it functioned exclusively as the primary circulation corridor for retail customers (Suherman and Murwadi 2021). A detailed classification of users' social activities and their observed frequencies is presented in table 1.

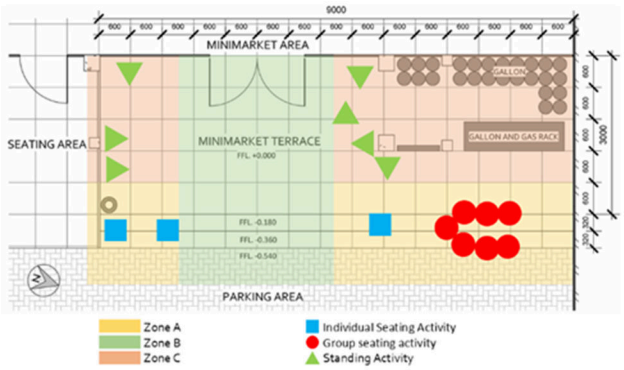


Figure 3
Behavioural map illustrating the spatial distribution of user activities on the Terrace of Indomaret Point, 85 Dipatiukur Street

Table 1
Classification of user activities observed on the Minimarket Terrace during the observation period

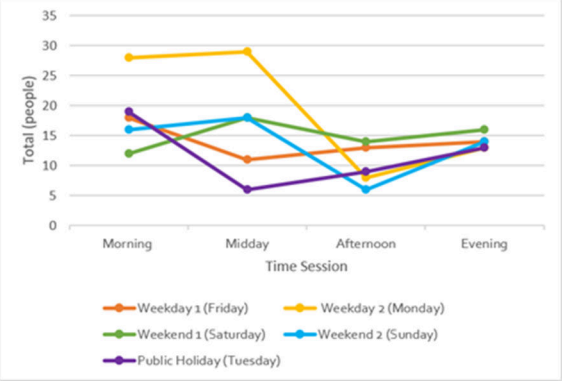
No	Activity	Physical characteristics of the activity	Primary observation zone	Frequency
1	Conversing	Two or more individuals facing one another or sitting side by side, accompanied by active hand gestures, responsive facial expressions, and either standing or sitting in close proximity	Zone A	Frequent
2	Waiting for Shared Transportation	Standing or leaning against a column without engaging in any notable activity, facing the roadway while waiting for a pick-up vehicle	Zone C	Frequent
3	Waiting for Someone Shopping	Standing or leaning against a column without engaging in any notable activity, facing sideways, looking alternately towards the interior of the minimarket and the roadway while waiting for companions	Zone C	Frequent
4	Using a Mobile Phone	Head inclined towards the screen while holding a mobile phone, undertaken in standing, sitting, or squatting positions	Zone C	Frequent
5	Relaxing While sitting	Sitting on the entrance steps or occasionally on the floor, adopting relaxed postures with legs sometimes extended, typically in groups	Zone A	Frequent
6	Smoking	Hand repeatedly raised towards the mouth while holding a cigarette between the index and middle fingers	Zone C	Frequent
7	Consuming Products Purchased from Indomaret	Holding bottled beverages or packaged food, engaging in eating or drinking, while carrying products recently purchased from the minimarket	Zone B	Occasional
8	Feeding Cats	Squatting while leaning towards cats resting on the floor, extending the hand downward to feed and gently stroke the animals	Zone A	Rare

Temporal patterns of user occupancy

Fluctuations in the cumulative number of terrace users exhibited a strong dependence on the temporal rhythms of the surrounding urban environment. The observational data revealed marked contrasts in occupancy patterns between weekdays and weekends (table 2). On Monday, the highest concentration of users occurred during the morning and midday periods. By contrast, observations conducted on the public holiday displayed a relatively flat occupancy curve from morning to midday, followed by a pronounced increase towards the late afternoon and evening, when the terrace reached a peak occupancy of 13 users (figure 1).

Observation Period	Weekday 1 (Friday)	Weekday 2 (Monday)	Weekend 1 (Saturday)	Weekend 2 (Sunday)	Public Holiday (Tuesday)	Characters of Domain Activity
Morning (08.00-10.00)	18 users – predominantly conversing	28 users – predominantly conversing	12 users – predominantly conversing	16 users – predominantly waiting while standing	19 users – predominantly waiting for companions who were shopping	Chatting
Midday (12.00-14.00)	11 users – predominantly sitting on the steps while using mobile phones	29 users – predominantly standing while waiting and conversing	18 users – predominantly standing while waiting	18 users – predominantly conversing	6 users – predominantly using mobile phones after shopping	Waiting While Standing and Chatting
Afternoon (15.30-17.30)	13 users – predominantly using mobile phones	8 users – predominantly using mobile phones after shopping	14 users – predominantly using mobile phones	6 users – predominantly sitting while using mobile phones	9 users – predominantly standing while waiting	Waiting While standing
Evening (19.00-21.00)	14 users – predominantly conversing	13 users – predominantly using mobile phones	16 users – predominantly using mobile phones	14 users – predominantly using mobile phones	13 users – predominantly using mobile phones	Using a Mobile Phone

Table 2
Temporal distribution matrix of user activities



Graphic 1
Comparison of temporal fluctuations in the number of Terrace Users at Indomaret Point, 85 Dipatiukur Street, according to day of observation

Patterns of lingering behaviour on the terrace of Indomaret Point were characterised by the formation of small communal clusters consisting of two to six individuals, whereas solitary occupancy was rarely observed. Users' bodily postures demonstrated a high degree of adaptation to non-furniture architectural elements. For example, the entrance steps were consistently appropriated as stable seating surfaces facing the parking area, while the reinforced-concrete structural columns were utilised as backrests that supported the body during prolonged standing. Interpersonal distances within these clusters generally ranged between 45 and 120 cm, corresponding to the personal and intimate social distances defined in proxemic theory. Users also engaged in tactical territorialisation by placing backpacks or motorcycle helmets on the ceramic landing surface to establish temporary spatial boundaries for their groups (figures 4, 5, and 6) (Tantarto and Hertoery 2020).



Figure 4
Social interaction on the Terrace of Indomaret Point, 85 Dipatiukur Street



Figure 5
Temporary territorial delimitation using a motorcycle helmet on the Terrace of Indomaret Point, 85 Dipatiukur Street

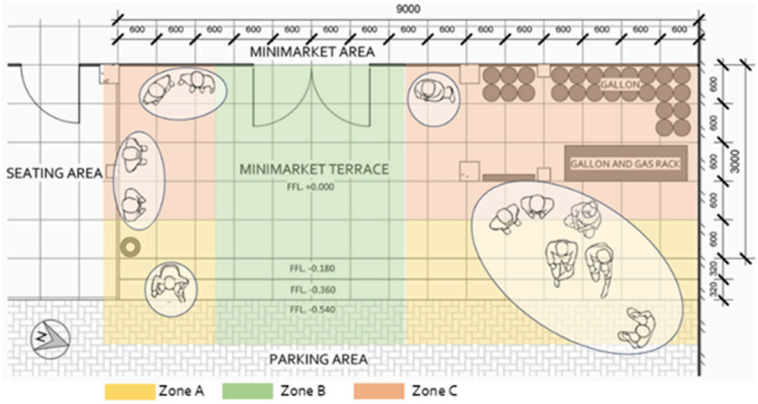


Figure 6
Proxemic cluster formation map of Terrace users at Indomaret Point, 85 Dipatiukur Street

Spatial affordance of non-furniture elements in grey space

The concentration of lingering activities in Zones A and C demonstrates that the principle of spatial affordance operates effectively at the micro-architectural scale. The entrance steps, with a riser height of 18 cm, correspond closely to ergonomic anthropometric dimensions, enabling them to function as comfortable informal seating for young adults without inducing physical discomfort. Likewise, the 32-cm tread depth provides sufficient legroom, allowing users to fold or extend their legs comfortably without obstructing circulation through Zone B. These observations confirm that the affordances embedded within built-environment elements emerge dynamically when the geometric properties of architectural components align with the social and behavioural needs of their users (Widmer and Rérat 2025; Stevens, Daly, and Dovey 2024). Rather than constituting a limitation, the absence of formal seating acted as a creative stimulus, encouraging students to explore the latent functional potential of the surrounding non-furniture architectural elements (Laurens 2004).

As a residual commercial space, the outdoor terrace of Indomaret Point occupies a functional grey space, situated ambiguously between the private property of the retail establishment and the public realm of Dipatiukur Street. Although physically open to the street, the terrace possesses clearly defined vertical boundaries and benefits from microclimatic protection provided by the cantilevered roof overhang, thereby generating a sufficient sense of enclosure that encourages users to remain for extended periods (Nestri Kiswari and Tri Hesti Mulyani 2026; Harani, Atmodiwirjo, and Yatmo 2024). The tactical appropriation of this residual commercial space demonstrates that the spatial boundaries of modern retail architecture can be peacefully renegotiated through the everyday practices of local communities. Users effectively redefined a corridor originally designed exclusively to facilitate commercial circulation, transforming it into an inclusive pocket of sociability that alleviates psychological stress without imposing any financial obligations (Saputra, Purwanto, and Supriyono 2023).

Urban temporality and the mechanisms of place-making

Urban temporality plays a central role in shaping the rhythm of sociability observed at the study site. The close correspondence between terrace occupancy patterns and the daily academic schedules of the surrounding universities demonstrates that the minimarket terrace functions as an adaptive micro stress-relief node, responding directly to the temporal pressures experienced by its users (Ekaputri, Harani, and Aminuddin 2025; Zhang, Dimitrijevic, and Romice 2025). During weekdays, spatial appropriation occurred primarily in short, dynamic episodes that reflected forms of tactical urbanism associated with brief group discussions or waiting for ride-hailing services. Conversely, as the pressures of academic routines diminished during weekends and public holiday evenings, the terrace underwent a marked transformation into a stable lingering space, where sustained social interaction could take place without temporal constraints (Liya et al. 2025).

Organic place-making emerged through the repeated and consistent performance of everyday social practices. As groups of students repeatedly appropriated the entrance steps and the perimeter surrounding the structural columns as preferred meeting places, these recurring spatial practices gradually dissolved the impersonal character of the commercial retail façade and replaced it with human-centred meanings grounded in shared social experience (Bimantoro et al. 2022; Habibullah and Ekomadyo 2021). The assemblage of human bodies, digital devices, beverages, and the physical comfort provided by the terrace collectively generated a new genius locus that became embedded within the collective memory of the youth community (Karang 2022). Consequently, the outdoor terrace evolved into a reliable informal third place.

Interview findings further reinforce this interpretation. Most student participants explained that their preference for occupying the terrace's non-furniture architectural elements stemmed from the relaxed outdoor atmosphere, the absence of close supervision by store staff, and the broad visual openness afforded by the Dipatiukur streetscape (Anggiani and Ayudya 2024). Sitting together on the entrance steps fostered a sense of social equality, eliminating the class distinctions often perceived within formal cafés, where participation is frequently conditioned by the financial obligation to purchase relatively expensive food and beverages (Budiman et al. 2022). These empirical findings suggest that the quality of human experience within informal public spaces is fundamentally shaped by psychological freedom and the degree of visual connectivity offered by the surrounding architectural setting (Bachtiar, Sanjaya, and Purwanto 2023).

Interpreting Density: Positioning the Findings within the Global Literature

When examined alongside the broader body of international scholarship on contemporary public-space design, the concentration of users observed on the terrace of the Dipatiukur minimarket represents a constructive theoretical anomaly. Whereas studies of the built environment in many Western contexts frequently identify human congestion within public

spaces as a source of spatial discomfort and declining urban quality of life (Simoes Aelbrecht 2025), the concentration of users within this compact transitional space in Bandung's academic district was instead associated with social vitality and community resilience (Tsumasabilla, Karang, and Wijayanti 2025).

The accumulation of users around the entrance-step zone indicates a high level of spatial tolerance and a strong culture of collective sociability. Rather than responding to spatial constraints through withdrawal or avoidance, users adapted through flexible and peaceful proxemic negotiation (Aditya et al. 2020). Human density did not generate spatial conflict; instead, it fostered a stronger sense of community. Even interpersonal distances as close as 45 cm on the entrance steps were accepted through adaptive proxemic adjustments to the limited physical space.

Strengths, limitations, implications, and recommendations

The principal methodological strength of this investigation lies in its intensive five-day continuous field observation, which successfully captured the temporal variability of urban life while integrating quantitative behavioural mapping with the qualitative depth provided by semi-structured interviews. Nevertheless, the study possesses an inherent limitation arising from its focus on a single minimarket terrace within an academic district in Bandung. Consequently, the transferability of the theoretical findings to commercial terraces located in industrial estates, central business districts, or residential neighbourhoods requires further empirical validation through comparative studies (Hasibuan et al. 2021; Suherman and Murwadi 2021).

From a practical perspective, the findings suggest that future commercial architectural design should move beyond rigid retail façades concerned solely with maximising commercial circulation. Instead, architects are encouraged to integrate principles of spatial affordance into outdoor non-furniture architectural components from the earliest schematic design stages. For example, entrance-step riser and tread dimensions or the height of building podiums may be intentionally configured to satisfy anthropometric standards for comfortable communal seating (Widmer and Rérat 2025; Stevens, Daly, and Dovey 2024). Such behaviour-sensitive design interventions would reduce potential conflicts between customer circulation and lingering activities while simultaneously enhancing the social contribution of retail buildings to the surrounding urban environment (Zhang, Dimitrijevic, and Romice 2025).

At the broader scale of urban planning, the findings provide strong support for recognising residual outdoor commercial spaces as legitimate forms of supporting social infrastructure (Ekaputri, Harani, and Aminuddin 2025). This objective could be achieved through tactical urbanism policies that formally acknowledge and protect citizens' rights to engage in inclusive activities within everyday commercial residual spaces (Liya et al. 2025). Future research should expand the scope of investigation by conducting

comparative studies across commercial corridors located within different urban land-use clusters, thereby contributing to the development of a more comprehensive theory of spatiotemporal appropriation within the field of behavioural architecture (Susanti and Natalia 2018).

Conclusion

The spatiotemporal appropriation observed on the outdoor terrace of Indomaret Point, 85 Dipatiukur Street, demonstrates that the absence of formal seating should not be regarded as a barrier to social activity but rather as a physical stimulus that encourages university students to develop independent forms of behavioural adaptation. Users responded to this limitation through the active exploitation of the spatial affordances embedded within non-furniture architectural elements. Specifically, the entrance steps, with a riser height of 18 cm and a tread depth of 32 cm, functioned effectively as ergonomic informal seating, while the perimeter surrounding the square reinforced-concrete columns and the landing platform were appropriated as body-supporting surfaces during prolonged occupation. The temporal rhythms of the surrounding academic environment fundamentally shaped the transformation of the commercial corridor into an informal third place. Patterns of space use shifted from brief transitional occupation during weekday teaching hours to the formation of stable lingering spaces, with user numbers reaching 13 individuals during weekend afternoons and evenings. Beneath the microclimatic protection provided by the 1.8-m cantilevered roof overhang, intimate proxemic clusters (45–120 cm) emerged organically through tactical territorialisation, whereby users placed personal belongings, such as bags and motorcycle helmets, to establish temporary group territories.

This bottom-up process of place-making extends the application of behavioural architecture theory by demonstrating that inclusive grey spaces can emerge organically through the active negotiation between the sociological needs of urban residents and the functional flexibility of privately owned building envelopes. Although the present study is limited in its theoretical transferability owing to its focus on a single site within Bandung's academic district, the findings provide a robust empirical foundation for future comparative research across a wider range of urban functional contexts. From both practical and strategic planning perspectives, the study recommends that architects incorporate anthropometric considerations for outdoor non-furniture seating elements during the schematic design stage of retail buildings while encouraging municipal authorities to adopt tactical urbanism policies that formally recognise residual commercial spaces as valuable supporting social infrastructure, thereby fostering more humane, inclusive, and adaptive urban environments.

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