

THE INFLUENCE OF BUILDING-STREET INTERFACE ON FOSTERING PUBLIC ACTIVITIES

Chamuditha Koralage* , Ranjith Perera, Jeeva Wijesundara

Sri Lanka Institute of Information Technology, Malabe, Sri Lanka
City School of Architecture, Colombo, Sri Lanka

Abstract

With the rapid urbanization process in cities today, the interrelationship between the built environment and city life has come into a disequilibrium. It is convinced that the influence of building street interfaces fosters public activities on streets. This research is based on two case studies selected according to the land use pattern in the central zone of Colombo city. Data collection methods include documentation of physical and qualitative characteristics of building street interfaces, observations, and activity mapping on building street interfaces. The study investigates the physical and qualitative characteristics of the building interface which imposes a significant effect on achieving the optimal conditions for staying and moving activities. It further evaluates four types of neutralized activity pattern zones; Dominant staying, Dominant moving, conflictedly active, and rarely active zones. The subjective physical and qualitative characteristics were examined in terms of Physical comfort, Enclosure, Human scale, Complexity, Territoriality, Permeability, and the activity-based characteristics were identified concerning Spatial tranquillity, Intensiveness of activity, specification of participants, affected for certain activity behaviors on different building street interfaces.

Conclusively, the study elaborates that the neutralization patterns of public activity patterns in different building street interfaces depends on the secondary activity patterns and the influence of different physical qualitative characteristics of space. Moreover, the study outlines necessary recommendations for delineating the building street interface as a public space in an urban setting.

Keywords: Building-street interface, Activity patterns, public spaces, Neutralization patterns

* Corresponding Author: Chamuditha Koralage; E-mail- Chamudithakoralage@gmail.com

Introduction

The modern world cities are in a competition of urbanization. It keeps adding more shapes and forms to the skylines of the cities and similarly, this process of urbanization has become a summoning for many different problems and due to that, some cities have gone for a state of dead cities. With these situations, many researchers have studied about this matter can most of them have come up with the same reason, the lack of human responsiveness in cities (Lynch, 1960).

When looking into the form of cities and street scenes in a town, there is a variation of public activities that can clearly be identified; outdoor activities, recreational activities, functional and socially interactive activities are finely interwoven in a pattern, with each other. This conceivable combination in the urban context, usually happens in between buildings, but it is not merely the recreational, social, or pedestrian activities. It compromises the whole range of activities which contribute to make the public realm, outdoor spaces, communal areas, and other functional areas more attractive and meaningful (Gehl & Koch, 2011). When examining this combination thoroughly, the physical forms of the city, built fabric, facades and the formation of streets are also major interweaving factors that affects the human activities along the streets and building, and have received considerably less attention over the years (Karszenberg, 2016).

The built environment cannot portray the character of a city, individually. The factor which communicates the certain character will depend on what the observer experience on the streets (Karszenberg, 2016). It clarifies that the activities on streets have a direct impact on the image of a city, which means this street element will directly affects on the judgment which oscillates between good or bad given on the image of a city.

On making the image of a city, different urban elements such as the streets, buildings, public spaces etc. Which take part in a city, has influenced indifferent extents on making a city's unique character. Among all the urban elements in a city, the streets play a major role in inter-connecting those different elements as a one (Lynch, 1960). The streets in terms does not just act as an element for vehicular and pedestrian thoroughfare, it will be the biggest social space in a city which generally spread all over the city extents. Basically, when experiencing a character of a city, it will generally be an observation about all the other elements in a city, through moving on the street element (Gehl and Koch, 2011).

Even in a single street, there can observe many different public activity patterns on that building street interface zone. For these variations in public activities, on a building street interface, there should be a relationship between those public activity patterns and the physical and qualitative nature of building street interface, as a public space (Lynch, 1960). Through this study, it will examine such variations in public activities on building street interfaces and especially the subjective physical and qualitative nature of building street interface, which are necessary to identify on creating human convivial street to enhance city life (Lynch, 1960).

On behalf of examining the influence of building street interface, on fostering public activities, this study will be formed through finding answers for the following research questions.

- What are the elements of a Building – street interface which affects on public activities?
- What are the qualities in a Building – street interface which can foster public activities?
- How to fulfill the physical and qualitative needs of a Building – street interface to foster public activities?

Research Objectives

The objectives of this research are as follows,

- To examine the elements of a Building – street interface which affects on public activities.
- To examine the qualities of a Building – street interface which affects on public activities.
- To examine the method of fulfilling physical and qualitative needs of a Building- Street interface to foster public activities.

Literature Review

A city is not just complete with a collection of structures and streets etc. it is a largely scaled environment which has its own imagery made up with its interconnected sub elements. Kevin Lynch (1960), has stated that the image of a city should not only to visually relish by the observers, but also to sense, hear and to be smelled. Within the city image, and it should portray the unique identity of different elements in an urban setting, within the habitable level of observers. When looking into an image of the urban setting, it consists of different overlapping imageries of urban elements (Lynch, 1960). According to Lynch (1960), the overall image of a city will be made up with the elements of Paths, districts, edges, and nodes. In his line up, he has given a priority to streets as a key element which effect on the overall image of a city. According to his definition “Paths are the channels along which the observer customarily, occasionally, or potentially moves” (Lynch, 1960). It affirms the importance of streets, on making the image of a city. As he mentions, these streets are the predominant factor which determines the image of the city because the people are moving along them to observe the city. With relatively to their perspective of observation, the other elements will be sensed by the observers, underlies on the experience they sense on streets (Lynch, 1960).

Land use patterns and vibrant cities

One of the key factors which enhances the vibrance of urbanity, is the diversity of land use; in other words, the arrangement for the uses of land for different purposes. According to the urban design compendium, successful communities require a full range of local services and facilities indeed, Including the commercial, educational, health, spiritual and civic uses. Importantly, these facilities should conveniently site and connected with the residential areas, through safe and comfortable routes (English Partnerships and Housing Corporation, 2007). As per the urban design compendium, the towns and cities have traditionally developed around crossroads, centers of activities or stopping places with the increment of population and the growth of housing, retail, community, and employment uses around the original core. Moreover, it states that the virtues of mixed development in modern development, it often remains as the exception rather than a rule (English Partnerships and Housing Corporation, 2007).

Creating places for people

According to the Urban compendium, asserted by Llewelyn Davies (2007), it has stated that to create well-used, well-loved places, it is a necessity to affirm their safety, comfort, variety, and attractiveness. Furthermore, it says that the places should be distinctive, offer variety, choices, and fun to enhance the life of a public place. In the places which offers opportunities to meet people, play in the street and watch the world go by, can reminisce the genuine colour of a certain city (English Partnerships and Housing Corporation, 2007).

“Please look closely at real cities. While you are looking, you might as well also listen, linger and think about what you see”

Jane Jacobs.

With the above quote by Jane Jacobs, it speaks up how interesting it is to feel the city. To grab this experience, the best place in an urban setup is its largest public realm, the street. Gehl and Koch has stated that when creating places for people, it is important to concern on designing and dimensioning all forms of outdoor space and building layouts according to their functions and the familiarity with human senses (Gehl and Koch, 2011).

The building street interface as a public realm

When reminiscing the true colour of a city, the specific segment of a streetscape, which acts as the public realm, is the building street interface. Within this building street interface, as a public space, the plinth level highly affects on the street activities, as the major segment which directly encounters with public activities on street. Karszenberg et al (2016) states that the urbanites experience their cities in what we call the ‘public realm’. It has a broader meaning than just “public space” and it includes façades of buildings and everything that can be seen at eye level. Plinths are therefore a very important part of buildings and though the building is ugly; with a vibrant plinth it can make the experience into a positive. As the shape of the city and the characteristics of urban life are influenced by the way public and private distinction is made, establishing a flexible and elaborate boundary between the two realms in the building street interface, urbanism can be enriched, and the danger of encroachment by private interests into the public realm and the threat of public intrusion into the private sphere can be both minimized and carefully managed (Madanipour, 2003).

Public activities in a social space

The subdivision of our social world and the spaces we inhabit into public and private spheres is one of the key features of how a society organizes itself (Madanipour, 2003) and in a city, as a public space, well performing public activities stands as a major fact that deliver its true colour. As per Heffernan et al (2013), there are many benefits which can be achieved through well performing public activities on streets. Moreover, their study on relationships between the quality of active frontages and public perceptions of public spaces, they assert that the quality of an active frontage can significantly affect people's perceptions of a public space in terms of its level of safety, level of comfort, sociability and liveliness. Furthermore, Good-quality active frontages can contribute to create successful public spaces, which can help deliver far-reaching benefits for towns and cities (Heffernan, Heffernan, and Pan, 2013).

According to Gehl Koch (2011), the outdoor activities which can be observed in a public space, can be categorized into three types. First, the **necessary activities** will be formed as an imperative to fulfill the everyday tasks. These necessary activities will happen throughout the time nearly under all conditions and, are independent from the exterior environment. The **optional activities** will happen only in favorable exterior conditions. When the dependent exterior conditions such as the weather and place etc. are in good condition, that kind of an environment will be inviting for people to form optional activities. Finally, the **social activities** or “**resultant activities**” will depend on the presence of other people in a public space. From a simple greeting to conversations, a broad spectrum of resultant activities will happen in a public realm which is in perfect condition for optional activities with a mass of people (Gehl and Koch, 2011).

Examining the two main elements of the study; public activity patterns and physical characteristics of building street interface, the following theoretical ideas had been deliberated to form the study. Observing the **public activities**, the three types of activities; necessary, optional, resultant activities asserted by Gehl Koch (2011) had been mainly got into the consideration due to its substantial relation with physical elements in categorization. Examining **physical characteristics** of building street interface, attributes asserted by Heffernan et al (2013); physical comfort level, enclosure, complexity etc. had been considered due to its significant effectiveness to public activities and the constructive ability to define a space technically.

Methodology

This study is based on a case study approach. Exploring the influence of building street interface on fostering the public activities on street, two roads were selected as case studies from the central zone of Colombo city, the commercial capital of Sri Lanka. The study will be formed, relating to the key words, the building street interface, and public activities in-depth, on exploring the relationship and effective factors between them. Basically, exploring the influence of building street interface on public activities, this study has been conducted through three phases (Figure 1).

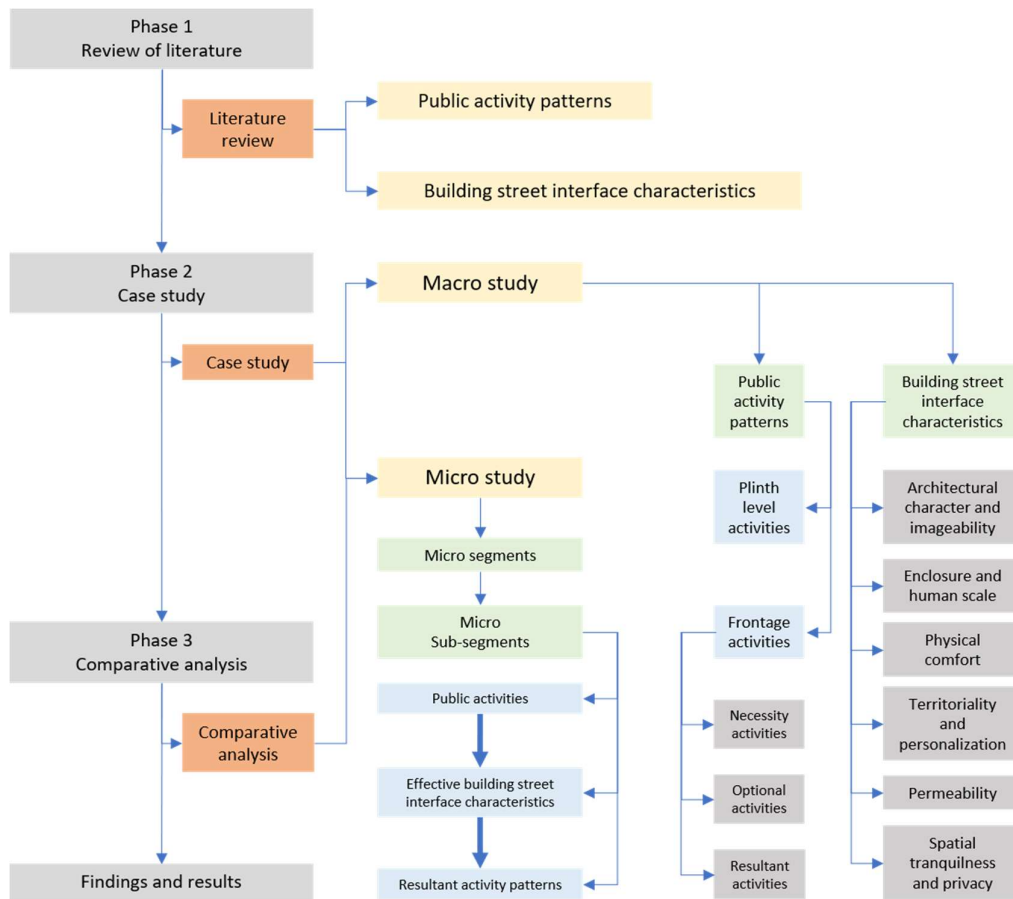


Figure 1: Research Structure
 Source: Author

1, it forms a basic background study on the physical and qualitative characteristics of a building street interface through a review of literature. Among the referred literature and basic observations, it has been selected a categorization for public activities as **Necessity, optional and resultant activities** and another six physical and qualitative characteristics: **Physical comfort, enclosure, Sense of human scale, Complexity, Territoriality and personalization and permeability** of the building street interface.

2, the data collection process had been carried along the selected physical and qualitative characteristics of building street interface and the activity patterns which can be identified on the selected streets recorded through **mapping, sectional diagrams and photographic surveys** (Figure 2).

Further, according to the specific features which has been identified during the case study observation period, additional three attributes had been set according to the activity-based characteristics: **Spatial tranquillness and privacy, intensiveness of activity, specification of participants**.

Determining the observation attributes for the case studies in secondary phase, the required theoretical background and factors has been fulfilled through review of literature on the subject in preliminary phase.

Physical comfort: the availability of shade, thermal comfort level, presence of formal and informal seating opportunities, noise level and the quality of visual environment has been considered.

Enclosure: the degree which building street interface has been demarcated with building fronts, tree canopies, shading structures, and parking activities along the road margin, has been considered

Sense of human scale: the physical characteristics of building street interface such as the sizes, textures, articulation of elements, proportions, building details etc. had been concerned.

Complexity: the building street interface characteristics such as façade articulation, number of openings their scales and rhythm, shapes, colors, and textures had been considered.

Territoriality and personalization: the sense of surveillance, sense of appeal, sense of ownership and the acts of demarcating formal and informal intimacy spaces had been considered.

Permeability: the level of accessibility, walkability, spatial forms and micro elements, visual transparency and the visibility of a space has been considered.

Spatial tranquillness: the optimal condition for a certain activity with the spatial form, layout and other present activities etc. has been considered.

Intensiveness of activities: the optional or necessity status of the activity and the public participation volumes of activities has been considered.

Specification of participants: the random or regularity status of the participants and their connection with the context (Residential, visitor etc.) has been considered.

3, the analytical process had been conducted along the micro study, which stands as the secondary step of each case studies the elected streets has been divided into identified building street segments and for the in-depth study, those segments had been further divided into sub segments. In this phase the primary public activity types have been identified and their neutralized activity patterns had been critically analyzed with concerning on the affected physical and qualitative characteristics of certain building street interface sub segments.

Limitations

Observing the selected case study roads; York Street and Justice Akbar Road, one building-street interface segment from York Street had to be dismissed due to the inability of observing natural public activity patterns with ongoing conservation process; Public access restrictions.

Moreover, due to the case study location within the city bounds of Colombo, the accuracy of study results will depend on the characteristics and conditions applicable to the certain urban settings. Furthermore, the case studies were selected according to the categorization of land use patterns; institutional, commercial, residential. A case study for pure residential land use pattern couldn't be identified and other land use types such as industrial land uses etc. had not been included due to inability of identifying substantial examples within the study area.

Case study Selection

When exploring the public activities on different building street interfaces, there can observe uniqueness's varying from one to another. As one of the main reasons for this variation of activity patterns, it can identify the **land use pattern** of a context, which imposes a significant effect on both **building street interface characteristics** and the **public activity patterns** on street.



Figure 2: Case study road locations
Source: Google



Figure 3: York street
Arcaded frontage
Source: Author



Figure 4: Justice Akbar Road
frontage
Source: Author

Case study 1 – York Street

In the local scenario, concerning on the land use pattern in the city of Colombo, York Street had been selected as the street with commercial land uses, due to its massive variation of building front typologies (Figure 4) and the varies types of public activities which can be observed along

the street. Most importantly, York Street has a wide diversity of buildings with different architectural characters and building front façade typologies and there are identifiable formal and informal public activities which are conjunct with different building front setups and their plinth level functional uses.

Case Study 2 – Justice Akbar Road

As the second case study, Justice Akbar Road, has been identified as a mixed commercial and residential street which portrays many unique characteristics of a residential street (Figure 5). Concerning on the streetscapes of Justice Akbar Road, though 100% of plinth levels are being used for commercial uses, it can observe residential uses on upper levels of the buildings in street façade. Most importantly, there is an enormous variety of public activities, on the building street interface of Justice Akbar Road with different building front setups.

With both roads, which portrays different activity patterns and various building street interface types to one another, has proven its eligibility for this study, through their identical variations which can be measured according to the research attributes.

Findings and Discussion

As per the findings, it revealed some specific activity patterns which can be observed in building street interfaces, and their subjective physical and qualitative characteristics as well. Primarily, it revealed a pattern which an activity becomes dominant in building street interface, and the building street characteristics which effects on determining the dominant activity type than another. Secondly, the study indicated the subsidiary factors which will further affect on the building street interface public activity patterns.

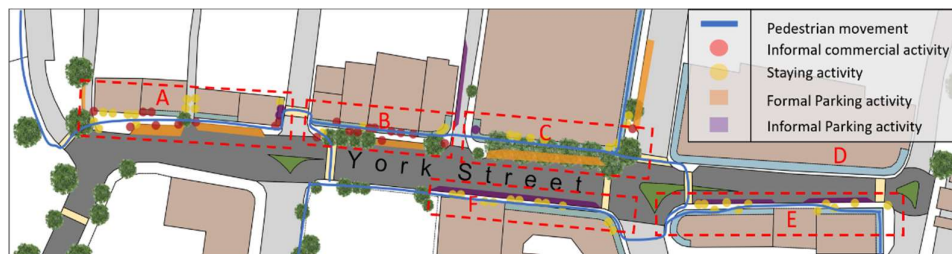


Figure.5: Public activity patterns – Case study 1; York street

Source : Author



Figure 6: Public activity patterns – Case study 2; Justice Akbar Road

Source : Author

Neutralizing activity patterns

Among the observed activity patterns in both of case studies, it can identify two major categorizations in public activities which can be observed in the building street interface, as staying, and moving activities. Most importantly, the study revealed that the commonly observable public activity patterns on building street interfaces are in a neutralized state because of the effect imposed by several factors on their original activity patterns (fig 7).

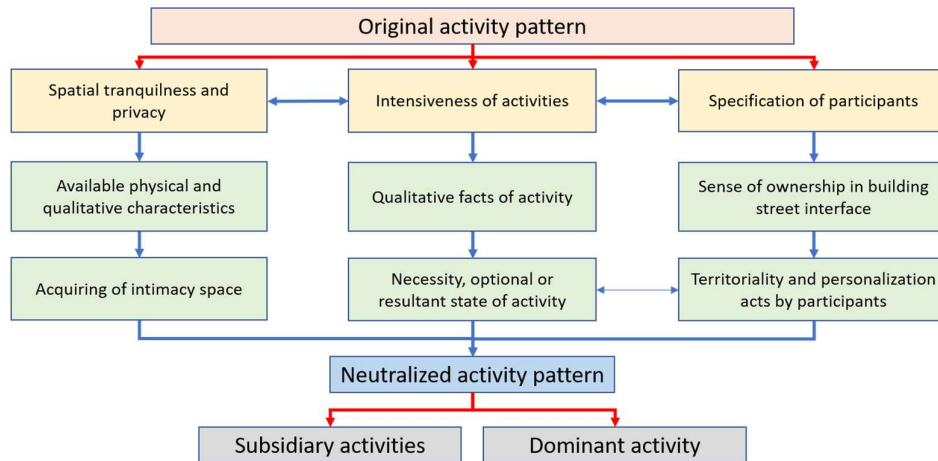


Figure 7: The nature of activity pattern neutralization
 Source : Author

According to the study results, it confirmed the effect of **spatial tranquillity**, the **specification of participants** and the **intensity level** of an activity will subject to determine the neutralized activity pattern and the dominant activity.

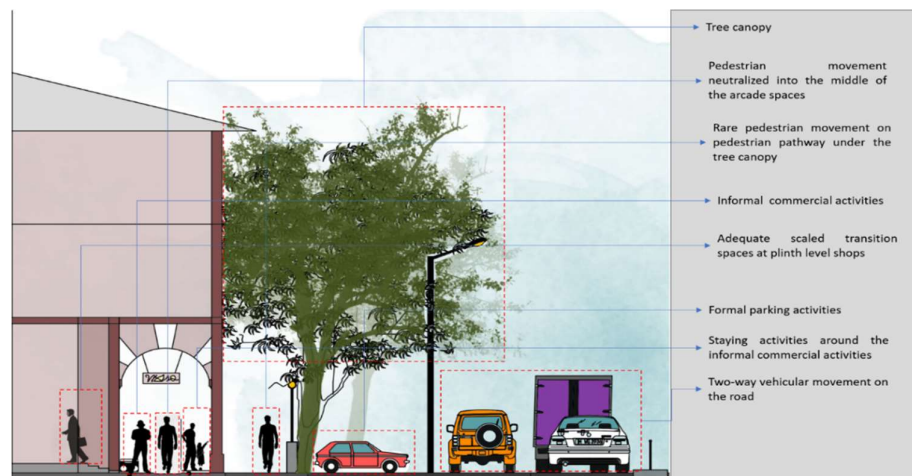


Figure 8: The nature of activity pattern neutralization - York street sub segment B2
 Source : Author

Spatial tranquillness

As one of the most effective factors which affect on becoming a staying or moving activity dominant in a certain building street interface, the **spatial tranquillness** factor plays a major role. The study, confirmed that apart from the physical and qualitative characteristics of a building street interface, the different activity patterns itself, effect on each other to neutralize their resultant patterns. With the presence of different activity types within a one building street interface, there will be a competitive situation to acquire the **intimacy space** for certain activity types. This intimacy space for an activity will depend on the **level of privacy from other activity patterns** which will be available according to the spatial tranquillness in a building street interface. Basically, the physical and qualitative characteristics of a building street interface, creates this spatial tranquillness, which is the **optimal spatial condition with minimalized obstructions** for a certain activity.

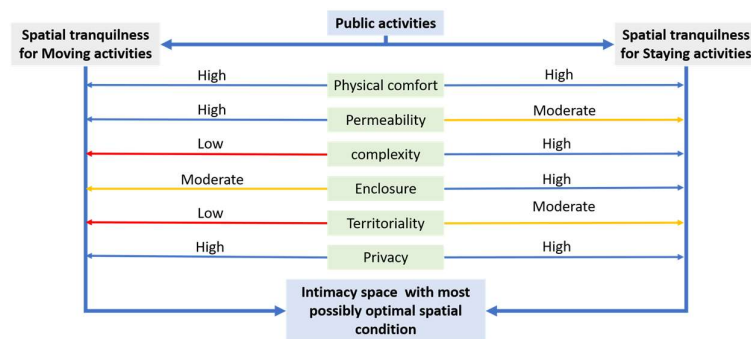


Figure 9: Effective factors on spatial tranquillness
 Source : Author

Considering on the spatial conditions, there can observe a direct and inverse pattern which determines the privacy level of each activity type. Finally, with the available spatial tranquillness for moving and staying activities, there can identify the resultant activity pattern which had been neutralized with the demarcations of intimacy spaces.

Intensiveness of activities

The study reveals that the Intensiveness of public activities, can also impose a significant effect on creating their dominance in building street interface. Determining the intensiveness of a public activity on building street interface, Regularity and irregularity of the activity, the participant volumes, movement speeds, static or dynamic quality of the activity can define the intensiveness of a certain activity against the other activities.

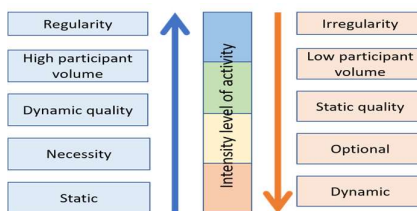


Figure 10: Effective factors on intensity level of an activity
 Source : Author

Further, this intensiveness factor of an activity, can impose a significant effect on determining its neutralizing activity pattern on the building street interface and with addition of the necessity, optional or resultant state of the activity, this intensiveness factor can be varied.

Perception of participants

As another factor which imposes an intensive effect on achieving the dominance of an activity in building street interface, the specification of participants stands in a main position. As per the study results, it has revealed the **territoriality and personalization acts of participants** are effective facts which determines the neutralization patterns of certain public activities. As the main factor which affects on the level of territorializing and personalization, study confirmed the emphatic behavior of participants, according to their **sense of ownership** in a certain building street interface.

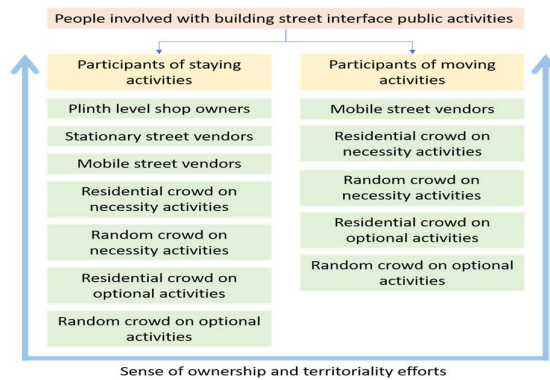


Figure 11: Effective factors on sense of ownership
 Source : Author

According to the observations, it confirmed the sense of ownership in a building street interface will majorly depend on the regularity of presence and the necessity, optional or resultant state of their activity.

Dominant activity patterns and effective characteristics

As per the results, it can identify that among the neutralized activity patterns in a building street interface, there is always a dominant activity which has been backed up with more positively affecting characteristics available in different conditions. The study has been confirmed that the physical and qualitative characteristics of a building street interface are also circuitously effects on the factors such as the spatial tranquillity and the intensiveness of activities.

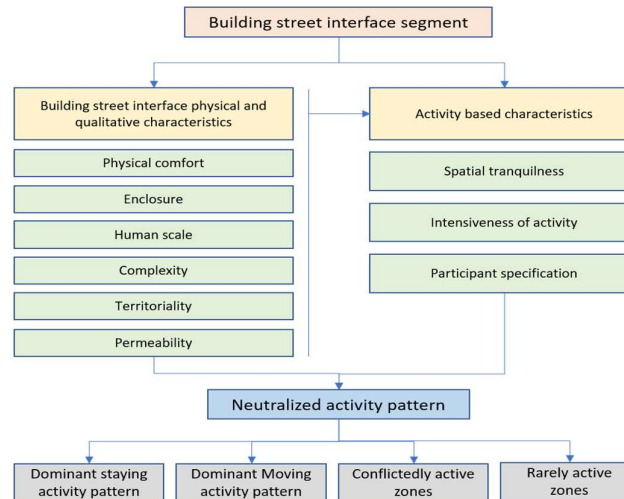


Figure 12: Effective factors on dominant activity patterns
 Source : Author

Apart from them, the case study itself proved the direct influence of these physical and qualitative characteristics, on different staying and moving activities. In this segment, it will demonstrate the variation of physical and qualitative characteristics of building street interface, in building street interface segments which has different types of naturalized activity patterns.

Dominant moving activity zones

Concerning on the building street interface segments which has a dominant moving activity pattern, there can observe **both necessity and optional** moving activities. As per the study results, the necessity activities show a less dependency on physical and qualitative characteristics of building street interface and the optional activities show the dependency of physical and qualitative characteristics, seeking for the optimal conditions. According to the study, a **moderate or higher physical comfort level** with better thermal comfort level and spaciousness creates an optimal space for moving activities. Moreover, the study confirms the dominance in building street segments which has a **less or moderate complexity** with a regularly articulated facades and **moderately or highly enclosed** with arcade, hooded spaces, tree canopies or just the building façade shading structures and parking activities next to movement path. In the building street interfaces with **moderate or high human scale** responsiveness, **moderate or less territoriality** of plinth level functions and staying activities and most importantly the **higher permeability** can be observed as enhancing factors for moving activities.

Dominant staying activity zones

In building street interface segments, which can observe a dominant staying activity pattern with necessity and optional staying activities, it can identify the less dependency of necessity staying activities on physical and qualitative factors of building street interfaces than the optional staying activities. In general, the study results prove the dominant staying activity pattern in building street interfaces with **higher physical comfort** levels which consists with a good thermal comfort conditions and formal, informal seating opportunities. As per the study, the **high enclosure** with arcaded, hooded spaces, tree canopies or facades with shading structures and gradually articulated building fronts with **high complexity** are optimal conditions which enhances staying activities. Moreover, the study confirms, **higher human scale** responsiveness on building fronts

and the **moderate or less territorialization** on plinth level and frontage activities will subject to create optimal conditions for staying activities. According to the study results, **moderate or higher permeability** in building street interface will also act as enhancing factors for necessity and optional staying activities.

Rarely active zones

In most of the less active building street interfaces, it can observe the resistive conditions in most of their physical and qualitative characteristics and due to certain situation, there can shortly observe the necessity activities and optional activities are rare to observe. According to the study results, it has been identified the **low physical comfort** level with almost hard thermal comfort conditions with no tree canopies or shading structures and **less enclosure** level with only the building facades and parking activities on both sides of building street interface, as common characteristics which can be observed in these types of segments. According to the case study observations, it has been identified **low to high complexity** levels on these building street interface segments. Though it identified less human scale responsiveness on these segments, the **high territorialization** behaviors of plinth level activities, with spillovers and expansive structure on the pedestrian pathways has been identified. However, the **less visual and physical permeability** on these building street interface segments with blind facades and obstructive elements on pedestrian pathway, affirmed the improper condition for public activities.

Conflictedly active zones

According to the study results, it has been identified the building street interface segments which has conflicting statuses on identifying a dominant activity pattern. In these segments, the **moderate or less physical comfort** level can be identified with **moderate or high complexity** of building street interfaces, can identify as factors which negatively affect on the optimality of space for public activities. Also, the **less enclosure** level and **less human scale** responsiveness can identify as factors which further limits the optimality of space for public activities. As per the case study observations, it has been identified **moderate or high territoriality** of plinth level and frontage activities which also subject **low permeability** on these building street interface segments, along with the other effective factors.

Table 1: The inter relationship between Building Street interface characteristics and activity zones
 Source: Author

	Public activity neutralizing patterns			
	Optimal conditions		Acrid conditions	
	Dominant moving activity zones	Dominant staying activity zones	Conflictedly active zones	Rarely active zones
Physical and qualitative characteristics of building street interface				
Physical comfort	- Moderate or High thermal comfort - Spaciousness	- Moderate or High thermal comfort - Spaciousness - Formal, informal seating opportunities	- Less thermal comfort - Noisiness - Compactness	- Less thermal comfort - Compactness
Enclosure	- Moderate or high enclosure	- High enclosure	- Less enclosure	- Less enclosure

Human scale	- Moderate or high human scale responsiveness	- High human scale responsiveness	- Low human scale responsiveness	- Low human scale responsiveness
Complexity	- Moderate or less complexity with regularly articulated building fronts, less spillovers, and extensive structures	- Moderate or high complexity with irregularly articulated facades with spillover activities, extensive structures	- High complexity with irregularly articulated facades, spillovers, and extensive structures	- High complexity with blank facades spillovers and extensive structures
Territoriality and personalization	- Less territoriality and personalization efforts of plinth level activities and informal frontage commercial activities	- Moderate or high territoriality and personalization efforts of plinth level activities and informal frontage commercial activities	- High territoriality and personalization efforts of plinth level activities, informal frontage commercial activities and participants of staying and moving activities	- High territoriality and personalization efforts of plinth level activities
Permeability	- Moderate (3 - 4m) or Wide scaled (More than 4m) pedestrian pathway width - Less or no obstructive structure such as light poles, signal poles, maintenance equipment points etc.	- Moderate (3 - 4m) or Wide scaled (More than 4m) pedestrian pathway width - Less obstructive structure such as light poles, signal poles, maintenance equipment points etc.	- Moderate (3 - 4m) or low scaled (less than 3m) pedestrian pathway width - Obstructive structures such as light poles, signal poles, maintenance equipment points etc.	- Low scaled (less than 3m) pedestrian pathway width - Obstructive structures such as light poles, signal poles, maintenance equipment points etc.
Activity dependent factors				
Spatial tranquillity	- High spatial tranquillity with linear and wide spatial volume	- High spatial tranquillity with irregularly articulated facades with wide spatial volume	- Less spatial tranquillity with irregularly articulated compact spatial volume	- Less spatial tranquillity with irregularly articulated compact spatial volume
Intensiveness of activity	- Moderate public volumes - Dynamic and regular movement - Moderate and high speeds of movement	- Moderate public volumes - Static and regular quality of staying patterns	- Higher public volumes - Dynamic and irregular regular movements - Moderate and slow speeds of movement	- lower public volumes - Dynamic and irregular movements

Specification of participants	- Higher percentage of participants on necessity moving activities. - Moderate percentage of participants on optional moving activities	- Higher percentage of participants on necessity staying activities. - Moderate percentage of participants on optional moving activities	- Totally or Higher percentage of participants on necessity staying activities.	- Totally or Higher percentage of participants on necessity staying activities.
-------------------------------	--	---	---	---

Based on the findings, creating the building street interface, an optimal space for public activities, the following general recommendations for practice can be adduced accreting to the study results.

- On the building setback reservations, it can improve the sense of safety and sense of interest to make the building front a live space, by creating opportunities for public seating, rather than making the space restricted for the public.
- Situations in which the building street interface does not have enough level of enclosure or identifiable demarcations between the building street interface and vehicular Thoroughfare zone of the road, it can create tree canopies which give many more benefits in return such as the increment of physical comfort and enclosure, uplifting the visual quality and increasing the spatial tranquillity for staying and moving activities, etc.
- It should settle policies and maintenance standards to control the territorializing of building fronts by the plinth level activities and should create more chances for activities such as informal commercial activities to ensure the publicness and liveliness of streets.

Conclusion

Based on the results of this study, it has revealed that the activity patterns which it can observe on building street interfaces are in a neutralized status due to the influence of other activity patterns and the influence of different physical and qualitative characteristics of building street interface.

Apart from the physical and qualitative characteristics of building street interface such as the complexity, physical comfort level, enclosure, human scale responsiveness, territoriality, and permeability, the study confirmed the influence of the activity-related factors such as the spatial tranquillity, intensiveness of activities and participant specifications on those neutralization patterns of activities. Nevertheless, the two activity types, which are the staying and moving activities identified in the case studies, it has been reminiscing an inverse co-integrative pattern between the optimal levels of some physical and qualitative characteristics.

In addition, it has been discovered that within a neutralized activity pattern, there can observe a dominant activity that acquired the most available optimal condition and the other subsidiary activities neutralized within their available extents of intimacy spaces. Moreover, the study indicated that the necessity and optional state of a certain activity, will also impose a certain effect on the neutralizing pattern of activities.

Overall, with the two case studies from different land use contexts, the study has shown the influence and importance of mixed commercial and residential land use in a street façade and facilitating the presence of activities to perform at their optimal levels, to create lively streets which are in the active state throughout the different times of the day.

More generally, the study has been shown the rich activity variations in commercial and mixed residential streets, which have been conflictedly neutralized with each other activities with a continuous competition to acquire the optimal conditions and the adequate intimacy space required to perform better. These identifications, which have been resulted through the study, prove the opportunity of bringing out the true colour of city life by facilitating a public convivial backdrop for street activities through well-designed building street interfaces.

References

- Alexander, C. (1990). *A pattern language*. München: Fachhochsch., Fachbereich Architektur.
- Cullen, G. (1999). *The Concise Townscape*. London: Architectural Press.
- English Partnerships and Housing Corporation (2007). *Urban design compendium 1*. London: Llewelyn-Davies.
- Ewing, R.H. and Clemente, O. (2013). *Measuring urban design: metrics for livable places*. Washington, D.C.: Island Press, pp.1–163.
- Gehl, J. and Birgitte Svarre (2013). *How to study public life*. Washington: Island Press.
- Gehl, J. and Koch, J. (2011). *Life between buildings: using public space*. Washington, Dc: Island Press, pp.9–197.
- Gehl, J., Lotte Johansen Kaefer, Solvejg Reigstad and Danish, R. (2005). *Close encounters with buildings*. Cph.: Centre for Public Space Research/Real Dania Research, Institute of Planning, School of Architecture, The Royal Danish Academy of Fine Arts.
- Great Britain. Homes and Communities Agency and Roger Evans Associates (2013). *Urban Design compendium. 2, Delivering Quality Places*. London: Homes & Communities.
- Hassan, D.M., Moustafa, Y.M. and El-Fiki, S.M. (2019). Ground-floor façade design and staying activity patterns on the sidewalk: A case study in the Korba area of Heliopolis, Cairo, Egypt. *Ain Shams Engineering Journal*, 10(3), pp.453–461.
- Heffernan, E., Heffernan, T. and Pan, W. (2013). The relationship between the quality of active frontages and public perceptions of public spaces. *URBAN DESIGN International*, 19(1), pp.92–102.
- Jacobs, A.B. (2013). *Great streets*. Cambridge, Mass. MIT.
- Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House, Cop.
- Karszenberg, H. (2016). *The city at eye level: lessons for street plinths*. Delft, The Netherlands: Eburon, pp.14–324.
- Lefebvre, H. and Nicholson-Smith, D. (1991). *The Production of Space*. Malden, Ma; Oxford: Blackwell.
- Lynch, K. (1960). *The image of the city*. 20th ed. Cambridge, Mass.: The M.I.T. Press, pp.1–180.
- Madanipour, A. (2003). *Public and Private Spaces of the City*. [online] Routledge. Available at: https://www.researchgate.net/publication/236144085_Public_and_Private_Spaceof_the_City.
- Mehta, V. and Bosson, J.K. (2009). Third Places and the Social Life of Streets. *Environment and Behavior*, 42(6), pp.779–805.