

Use of Urban Pockets to Enhance Walkability in Office Neighbourhoods in Colombo Urban Context with Special Reference to Fort, Colombo

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Abstract- Urban pockets have been recognized as resourceful collective spaces for urban functions in a modern-day city. Also, urban design and planning of major developed cities incorporate the walkability concept in order to minimize traffic, environmental, and health problems. Colombo is considered the commercial capital with a high density of office neighbourhoods that attract high density of vehicular movement. Fort is recognized as office neighbourhoods in the Colombo area where the traffic congestion is higher. Previous research considers the physical factors of the street in order to enhance walkability. They lacked consideration of the walking behaviour-flow, junctions, and small urban spaces in the process. The study aims to identify the undefined urban spaces that can be used as urban pockets by studying public behaviour patterns regarding walkability in office working hours in Colombo. In order to identify the possible urban spaces that can be developed as urban pockets, the research indemnify the current walking patterns and walkability of the area. The identified walking pedestrian flow laid over the identified leftover spaces which have the possibility to develop without changing the current urban context. Overall images for study area were developed with the existing and possible urban pockets based on walking patterns and the lack of walkable routes in order to enhance the walkability of office neighbourhoods.

Keywords: *walkability, walking behaviour, urban pockets*

I. INTRODUCTION

Since modern cities became urban islands with a dense network of roads, people, and enclosed

building morphology sense of place, Imageability and legibility degraded, as many people need the technology to navigate in the city. Large vehicle transportation and lack of pedestrian-friendly sidewalks and streets make walking a less important factor in urban design. Even with the modern-day sustainable city concept which has become merely a fashionable statement, we prefer vehicle transportation over walking which creates a negative impact of vehicular use varies to fields of health, safety, environmental and social behaviour. Older cities like Paris, Via del Corso Paseo de Gracia, and Brooklyn have more walkable streets, alleyways, and sidewalks created social experiences and social encounters leading to a sustainable city foundation. Yet, the modern cities neglect the social and health factor while developing the pedestrian infrastructure. Later, most of the urban and town planners understood the impact and taken certain policies and design changes in town planning like Colombo and Megacity urban planning. The research considers some foreseen development issues like safety, comfortability, and convenience where pedestrians led to a lack of navigation, legibility, and overall image of the Colombo.

A. Need of study

Colombo is considered as the commercial capital which is the hub for transportation, trade and administration. This creates more office neighbourhoods in central Colombo which is leading to higher traffic congestion. Colombo has undefined spaces, niches and alleyways that can be used as urban pockets. The study will be addressing the issues in walkability in Colombo office neighbourhoods where the inner city experienced a higher amount of destination trips

Hollie. The research focuses on the destination target walkability rather than the street itself.

B. Research Aims

The study aims to identify the undefined urban spaces that can be used as urban pockets. It explores the possibilities of the architectural implication of urban pockets in Colombo- Office neighbourhoods to enhance walkability and to identify possible physical urban features that affect urban walkability around Office-Colombo, current walking patterns, current urban pockets and to identify possible urban area that can be developed as urban pockets.

C. Literature Review

Overview of walkability:

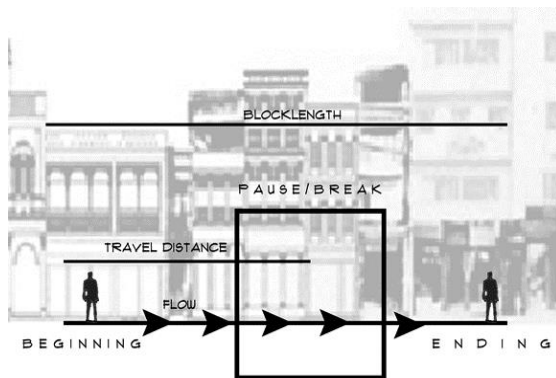


Figure 25 Factors that affect Walking Journey
Source: Author

Walkability is described as the extent to which the built environment is friendly to the presence of people walking, living, shopping, visiting, enjoying or spending time in an area. It considers the factors and variables of physical and built environment, socio-economic environments rather than giving a specific definition. The general theory of walkability describes how, walkability satisfies four main conditions of human useful, safe, comfortable, and interesting. (Forsyth and Southworth, 2008: Lo, 2009 and Jeff Specks, 2010). When a human travels from one place to another, there are some factors in his journey affecting the walkability: His beginning, ending, travel distance, flow, building facade and length of the block. This consists of 'The Street, node and the street edge.

Five elements of the city Paths, nodes, edges, districts, and landmarks act as whole. These

elements act in micro context as reference points increase legibility and increase ones' individual reaction. Lynch (1960) Ewing and Handy (2009) designed a conceptual framework for Measuring the Unmeasurable defining physical features that influence the walking behaviour.

Research evidence suggests urban morphology factors like building orientation and setbacks, block length, building height and street enclosure and building scale and variety contribute to the walkability. Based on the direct connection between block length and walking distance increasing number of intersections is beneficial. Furthermore, activities in edges increase walkability. Softness and the vitality of the street façade increase the safety feeling of pedestrians therefore the pedestrian movement as well. (Dunay et al., 2000: Singh., 2016)

Also, Stoner (2002) identified the flow of travel can affect the walkability. Moudon and Appleyard (1970) emphasised that liveable streets are more walkable and Gehl (1971) categorized the social activities that create the liveable streets. Mehta (2008), combine the conceptual framework of Ewing and Handy's (2009) model of the environment with the ecological model of Alfonzo's (2005) to create a comprehensive model for walkability along the main street setting to analyse the sociological impact to walkability. It is emphasis on both micro and macro sociological factors.

Overview of the walking behaviour:

The individual human can choose his own movement or walking relaying on other factors. According to Daamen and Hogendoorn, walking behaviour can be measured by walking speed, walking direction, walking experience, group formation and density of the pedestrian street. According to Choi, E (2012) walking behaviour of a group effect with the surrounding and formulation change according to the street and crowd. The impact of built environment differs from the land use patterns, urban grid and services etc. Levine and Frank (2007) discussed the resident group tend to walk and favour walkability in a reference of supporting physical characteristics like compact urban form, good pedestrian infrastructure, green spaces and local amenities.

Overview of Urban pockets:

A public space can be a street, node, square or edge which is accessible to public realm for occasional ceremonial moments, entertainment, and meeting people. An urban space is more of an external space between building in the urban context. They are more of urban voids that eventually become public space within human activities. (Krier 1979: Trancik Roger 1986)

One of the dominate public space is the square. A square or plaza is both an area framed by buildings and an area designed to exhibit its buildings to the greatest advantage. Consider the physical form and function of a node, a square is the larger form of a node. It is a strategic point of physical context where the activities concentrate and attract and often identity, symbolic meaning and a landmark. (Cliff Moughtin,1992: Lynch,1960: Alexander C. ,1977: Schulaze and Alexander C.)

Udayarathna (1999) defines urban pocket as small external space between building and geometrically bounded by the variety of elevations of built structures that are closed to each other. Considering the location and the function of the urban pocket, it can be regarded as a positive urban element which is create active actions. According to Blake, urban pockets are small size and located in 1-3 block/lot size. It is visually connected with base level or ground level mostly located in ground level of the street. Identifying the patterns of these urban pockets, they are mostly targeting on the local community, based on four block radius walking groups. There spaces can be niches, nodes, end of alleyways, street corners and left-over spaces of the urban grid. Urban pocket concept is a modern concept emerged after modernism left out large number of leftover spaces. Urban designers use urban pockets as green space, breathing space and community gathering space. These spaces are interconnected by road network creating ecological and social network in the city

II. METHODOLOGY

A. Introduction to Study areas

Colombo Fort:

Fort Colombo had been origin by the strategic location of the Colombo- the Fort. The Land use

of Colombo fort is based on administrative and commercial based pattern. Fort area urban grid has course grain pattern and it is interconnected by streets and urban solids are connection one to another. In Fort area, even though it lacks green areas voids and public open spaces, urban voids can be identified within the building mass linking building to the street.

With support of literature review a conceptual framework was developed to identify the pedestrian routes based on walkability, identify urban leftover spaces favour as public spaces and higher activity spaces. Three research areas were selected to follow the methodology. They are, walkability, walking behaviour and Built environment. Observations, figure ground map were used for data collection. A questionnaire was distributed among the selective areas, taking a sample of 150 individuals to identify the overall walkability of the selective areas. Observation methods were used for identifying the walking behaviour in the selective area. Mapping, Station Survey and Tracing methods were used to identify the walking behaviours and activity patterns in one station and movements.

B. Background for walkable behavioural analysis: An analysis on Questionnaires

Questionnaire was developed to identify the satisfaction of the overall walkability conditions: Safe, Comfortability, Interesting and Usefulness and identify walking behaviour and how far the built environment impact to its behaviour. Based on the questionnaires, majority of the walking population are coming from outside the central area and majority of them use public transportation. Among these walking population people who used private vehicle, tend to leave their vehicle at parking space and walk to the destination. Majority of Fort walking population who hired vehicle for their transport were drop of at near the destination and walk to their destination. Also, majority of the walking population felt exhausted, and require pause or a break during their walk. Considering their response to navigation, walking distance and time suggested pedestrian prefer to walk small distance, during small time and they tend to increase the walking distance when they are encouraging by the pauses, resting points, shades, and well-maintained sidewalks.

III. ANALYSIS PHYSICAL FORM

The analysis refers to four main areas which are existing urban pockets, identified leftover spaces, the walking behaviour, and its linkage to the leftover spaces. The analysis will recognise the functional urban fabric in order to develop and interlinked urban pockets system which will enhance the walkability of the office neighbourhood. Data collection was conducted on selected streets. Street observations were targeting to identify the walking behaviour and leftover spaces.

Existing Urban pockets and its activity patterns

Front of Dutch Hospital:

The front of Dutch hospital is the one of recollecting urban pockets in Fort area. It is located between two high-rises BOC tower and WTC tower and front of renovated Dutch Hospital. This urban strip act as collector to working occupants in Fort area. Vast open space and low height building background create a noticeable pause.

Based on the primary observations, a common pattern was identified. The walking behaviour was directly linked with the spatial quality of the urban pocket. The small alleyways linking it to

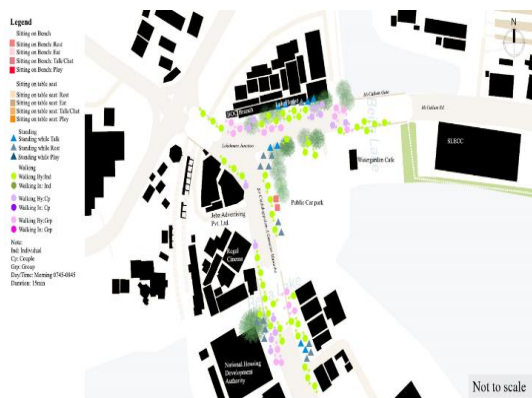


Figure 3 Activity pattern in Urban Pocket 02 and 03 Lakehouse and NHDA
Source: By Author

Chatham Street create a continuous pedestrian flow which can be linked to leftover space. Most of the occupants use outdoor pocket as a resting or meeting space.

There are no long stay active activities and most of the activities are based on passive activities.

The soft edge of this Urban pocket create progression to the building smooth and quality of waiting, pause of resting space. Even though space lack of shades such as trees etc. people tend to sit and sunbathe. This space acts as an urban pocket and a destination target space in Fort, Colombo.

Lakehouse Urban Pocket and NHDA Urban Pocket:



Figure 3 Activity pattern in Urban Pocket 02 and 03 Lakehouse and NHDA
Source: By Author

These two urban spaces have been identified by the Fort occupants as the starting points of their journey to Fort and Pettah. The Lakehouse urban pocket is built in soft edge. It acts as an in-between space within road and Lakehouse. The spatial quality of the space specified as short-term waiting space and support the walking-by with long façade of continuation. NHDA urban pocket developed as niche with the large over shadowing tree and bend in road. Space provides more space to linger and create obvious landmark between Fort and Slave Island. Since both urban pockets act as bus also stops a higher pedestrian flow to be identified and many pedestrians tend to move forward rather than staying at the pocket even though space provide seating and shading mostly because of the behaviours of the pocket presented.

Identified leftover spaces



Figure 5 Identified Non-Built, Under us spaces In Study Area 01 Fort
Source: By Author

Leftover spaces can be defined as spaces that were left-over by the planning development of the townscapes. When considering Fort-Colombo area, it has been undergoing with tourism-based development proposal to re-establish abandoned buildings. This initiative changed the Fort façade as the administrative capital to an administration centre with a commercial base. Most of the unbuilt spaces were acquired as parking spaces considering the lack of parking in Fort region.

Identified walking patterns

Almost 80% of the walking crowd/pedestrian flow are adults who work or visit Fort area to obtain services. They tend to walk as individuals considering the time and traffic flow: Limited vehicular movement of the area. They were 'fast as individuals' during office working hours. 80% Of users were dropped off at nearby which required them to walk to the offices and 50% occupants who use personal vehicles park at another car parking space and walk to their destination.

D R Wijewardena Mawatha and Sir Chiththampalam Gardiner road feed the walking population to the Fort area and main streets. Lotus road and York Street divide these populations to the other streets and roads. Main three bus stops act as active starter points in the pedestrian flow. Highest pedestrian flow is concentrated on the WTC-BOC-Central Bank block and other pedestrian flow direct to SLT Head Office, Port Authority, State Sectary Office (Old Parliament) and Presidential palace. 80% of

users were dropped off at nearby which required them to walk to the offices and 50% occupants who use personal vehicles park at another car parking space and walk to their destination.

During lunch hours walking behaviour expands further to Galle face south.

Identified interconnections between leftover spaces and walking patterns



Figure 6 Pedestrian Tracing and Pauses during Moderate Traffic hours
Source: By Author



Figure 7. Identified Leftover spaces, Existing Urban Pockets and Pedestrian flow in Fort
Source: By Author

The occupants of the Fort favour walking considering the interconnected lobbies where built mass created spaces as niches, corners and street grid allowing to walk in alleyways. These spaces were grown to be public corridors and public spaces and respectively as urban pockets. Though later developments diminished the interconnected lobbies, the overall sense of

interconnected walkways has remained intact. Following figure overlays the leftover spaces and existing urban pockets with the pedestrian flow during moderate traffic time.

Identified Urban Left-over space and possibility of developing it as Urban Pockets: Niche 01:

Selected leftover space 01 is interconnected with existing urban pocket in front of Dutch with 400m of walking distance away from two blocks. The total of three alleyways and Chatham Street feed the walking population to this identified leftover space.

Also, it is in directly focused with the BOC and Dutch Hospital. This space can be identified as niche, taking square formation and it can interlink with adjacent unbuilt space. The base plan of the niche is at same level as the road. The boundary of the space is not well-defined due to lack of well-developed building edges. This increases the probity of defining and expanding the space to other building blocks and occupy by adjacent users of Banks, Navy and Hotels.



Figure 8 Identified Urban Left-over space and its' interconnection to the surrounding
Source: By Author

Identified Urban Left-over space and possibility of developing it as Urban Pockets: Niche 02:



Figure 9 Identified Urban Left-over space and its' interconnection to the surrounding
Source: Bv Author

Selected leftover space is an abandoned building which linked to another leftover space behind Ministry of Foreign Affairs. Like the niche 01, this space is fed by the Janadipathi Mawatha and York Street. Also, it is directly connected to Sir Baron Jayathilaka Mawatha connected to the Pettah pedestrian flow. Most of the Pettah occupants who need to visit Fort use Sir Baron Jayathilaka Mawatha. Space in between is next to proposed urban pocket 02 within walking distance of 174m. Building line and façade are clear enough to understand the boundary and it is also located at same level as the road given easy access to space.

Identified Urban Left-over space and possibility of developing it as Urban Pockets: Edge 01

This space is in edge of the Lakehouse and McCullum canal and is identified as positive developing urban element. The edge is a hard, contrasting edge which can be linked to the Olcott road and Lotus Road. It is also connected with the Urban pocket near SLECC and Beira Lake walkway. Lack of public occupancy and lack of access to the site appear to have caused the abandonment. The strip of the space is linked to the current public parking. This space is near the initial vehicular drop for the Fort, which creates the possibility of increasing walking patterns fort to Pettah.

Outline

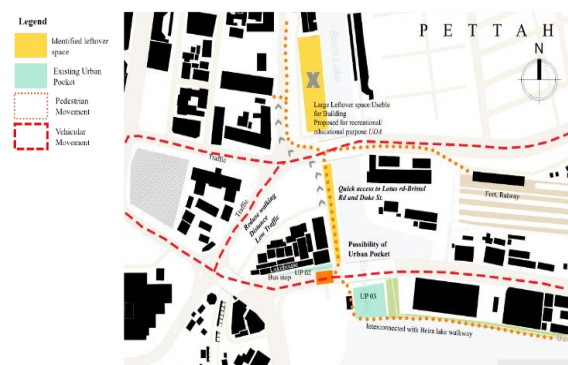


Figure 10 Identified Urban Left-over space and its' interconnection to the surrounding
Source: By Author

Based on the questionnaire occupants preferred a maximum walking distance of 400m and comfortable walking distance of 300m. 400m radius circles were placed within the range of

walking patterns that were identified. The Urban Pocket 02 and Urban Pocket 01 is on the edge of the 400m radius and the identified leftover that proposed as Urban Pocket Niche 02 is also on the edge of 400m. Proposed Urban Pocket-Niche 01 and proposed urban pocket edge 01 is also placed within the 400m range. Based on the activity patterns, UP niche 01 can be created to create continuity of walking distance of 174m almost close to 200m. The left-over space can be proposed as an urban pocket edge near Lake House to create shortcut to the Pettah increasing pedestrian walking toward Pettah rather than an increase in vehicular input to the centre.

IV. CONCLUSION

Walkability is a growing need in Colombo city considering the vehicular increment and air pollution. Even though the development considers pedestrian infrastructure the quality, security and comfortability of the pedestrian walkways have been neglected throughout the years. This research identified research gap in walkability research field that the effectiveness use nodes, junction or urban space. Considering the effectiveness to the walkability from small urban spaces-pockets in well-designed cities, this approach can be used in Colombo city too. Leftover spaces that have been built up by recent development create unnecessary wasted spaces around Colombo city. Research targeted on finding the leftover spaces that can be used as small urban pockets in order to enhance walkability of Colombo.

Overall image of Fort designed with linking to identified existing urban pockets and identified three leftover spaces. Each space is connected by the street grid system and each space locate within maximum walking distance of 400m. Fort built mass designed as soft edges where corridors and lobbies presented to the pedestrian streets. This physical factor and interconnected urban pocket network complete the model of walkability factors of pedestrian flow and the pause.



Figure 11 Conclusion Layover on Urban grid and Active walking linkage Source: By Author

Considering existing urban pockets in Fort area, only Front of the Dutch hospital pocket acts as significant destination pocket. Dutch hospital front pocket connects to two leftover spaces respectively leftover space 01 and 02. Both spaces are interlinked to the Dutch hospital pocket by alleyways and street grid. Other two existing pockets were stimulated by pedestrian activities to be developed as urban pockets which has significant destination sense in traveling routes.

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