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The Regaining of Traditional Street: Combining Street Network Configuration with Temporary Urban Interventions

N S Khalid¹, R N Raja Othman¹, I Che Abdullah¹, M A Marzuki¹ and N Nasrudin¹

¹Centre of Ekistics and Human Settlement, Faculty of Architecture, Planning and Surveying
Universiti Teknologi MARA, 42300 Puncak Alam, Selangor, Malaysia

Email: shakilakhalid@salam.uitm.edu.my

Abstract. Observations and Axial analysis models are combined into Space Syntax to study the corresponding relationship between a street network and how temporary urban interventions in a traditional shopping street in Little India, Kuala Lumpur, may affect public life. Little India was chosen as the case study because of its historical and cultural significance. The study aims to explore the most important temporary urban interventions - activity-based interventions in traditional shopping street through the spatial logic of street network. Static snapshots and people-following were conducted in Little India, to observe activity and movement during a whole day on a weekday and a weekend day. Two (2) parameters in Space Syntax were chosen including global integration and local integration to measure its urban interventions, activities, and movement among visitors in traditional shopping streets. The result indicates that there is a certain correlation among these parameters with the following spatial configurative analyses; all lines analyses and segment based angular analyses. It finds significant relationships between global integration and local integration, and the activity pattern. It is proposed in this paper that streets with a high degree of integration and adjacent to main streets; Jalan Tun Sambanthan is a key factor for carrying forward temporary urban interventions in Little India. More attention should be paid to the street network to preserve diversity, make the streets active, and importantly to improve public life.

1. Introduction

Concerning what lies behind a city, [1] reveals that it is a street. If a city's streets look interesting, the city will ideally look interesting. But if they look dull, the city looks dull. Furthermore, [2] provide the definition of streets, quoting [3] as linear three-dimensional spaces enclosed on contrasting sides of the building, as part of public realm. An extensive description of the roles of streets in most of the cities is provided by [4] who view streets as not only the corridors of movement for public and goods, but streets showcase the community and connect people. Here, streets play a vital role as a social space and as connectors to emphasize the quality of public life [5]. In details, they represent how people use different spaces in urban areas, diverse facilities, and how urban design improve the strong relationship between physical space and way of use. Having given those broad perspectives of the roles of streets, it is fair enough to say that today street increasingly recognised as an effective urban public space to health, happiness, democracy, and improved urban economy.

Evidently, small-scale, quicker, improvements are progressively achieving the short-term commitment of making a place and local economy, the shop owners themselves achieve these short-term improvements through temporary urban interventions – the extensions to build urban fabric. Such



elements in temporary urban interventions are likely to support the economic environment, infrastructure upgrade and cultural enrichment, while supporting a strong sense of place to maximize quality of place as confirmed by [4].

Great changes of urban appearance have been resulted from urbanization in recent 30 years in Kuala Lumpur. Many historical buildings with iconic characteristics disappeared dramatically. To say this, there is the issues concerning on the weakened for the role of the street network in efficiently organizing urban space and public activities. Many large-scale development projects and tallest buildings can be found everywhere. It is still quite serious for enclosed management of city blocks as well as for the phenomenon of encroachment of public space. Street network alike capillary of human-being is being erased for massive urban regeneration. The flattening trend of urban spatial hierarchy also weakened richness and diversity of urban life. Besides, increasing automobiles aggravated energy issues and crucial climate change. Resulting pedestrians are pushed to the sides of road - streets become wider and less parts are left available for people to walk around. With Kuala Lumpur as an example, therefore, technique of space syntax is used to explore the relationship between the street network and temporary urban interventions, and what impact of the interventions on public life. More insightfully, a traditional shopping street in Kuala Lumpur in Little India, Brickfields, will serve as a case study to observe and measure the streets integration and connectivity. The aim of this research therefore is to examine how the relationship between the activity-based interventions and the spatial layout of the traditional shopping streets in urban area. This thus answer the research question of what and how temporary urban interventions contribute to the process of place making in traditional shopping street in Kuala Lumpur.

2. Literature Review

2.1. *Streets as a Stage for Public Practice*

In most urbanized cities, streets are the origin of dynamic commercial activities and have become the culmination of city infrastructure because of its flexibility to replicate facilities, social interactions and economy of people [6]. That is because most of the informal shopping activities, bazaar, temporary and mobile activities are established around the multiple needs of people. This proved that street as the physical carrier for the occurrence of urban activities. Beyond acting as thoroughfares for motor vehicles, urban streets often double as public space, based upon the cultural perspective of a particular place. In cultural perspective, urban streets are active public space and provide a place for variety social, cultural and political activities that create vibrant urban spaces and add to the experience of public life [2], [3]. People's public life occurs in those public spaces. These spaces capable to take in diverse human behaviour, uses and activities such as shopping, walking, gathering, and even using the amenities provided to socialize, as a daily routine and during the seasonal events.99r

The streets is no longer just perceived as a tool which facilities transportation between buildings and networks as mentioned by [1]. This thus supported by [7] that no longer is the street a tool that can only facilitate transportation between buildings, but streets more than that, it provides link to adjoining networks. The street is now seen as a public realm. The effective making of commercial streets is the way to improve the quality of place with concentration of activities and many amenities over a period of time. These quality shopping streets have a strong sense of place. In fact, street culture and bazaar naturally get unsettled and discontented. People who continue with the everyday city routine have enhanced the unpredictable kinetic atmosphere.

2.2 *Street Networks and Temporary Urban Interventions*

Comprehensive series of activity patterns based shopping streets are pioneer for a powerful change of traditional shopping streets, which provide opportunities to strengthen the sense of place [2], [3]. Different layers of street such as permanent, temporary and hybrid have great potentials to invite people and create welcoming spaces for all ages. Therefore, to uplift the quality of places that contribute to the vibrant public life – necessary to bring social, cultural, and economic potential in a single space.

Places are for people and improve public life, thus should be always flexible for various activities, users, and functions in relation to its components [4]. To added temporary urban interventions have a potential of adding more activity and at the same time, enhancing existing activities to these shopping streets, which will provide new opportunity for regenerating the place and its functions. Examples of temporary urban interventions are activity-based interventions, structural interventions and sensory interventions in shopping streets as placemaking elements. Because of the time limitation, this paper only gives focus on activity-based interventions which include seasonal activities, promotional activities, bazaar type activities, and pop-up activities in shopping streets as shown below.



Figure 1. Pop-up activities in Seoul, Korea, can lend richness to social, civic and economic fabric of local communities.

Source: To and Chong (2017)



Figure 2. Pop-up activities and bazaar type activities during the festivals in Malaysia.

Source: Tourism Malaysia, 2014

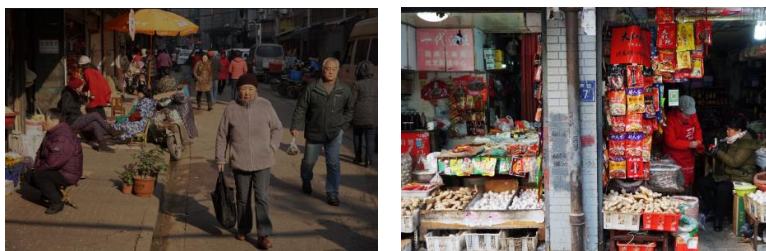


Figure 3. Example of the benefits of human-scaled streets in market streets in Wuhan, China.

Source: Kpeinhardt, PPS.org.

3. Research Methodology

To analyse the spatial quantitative, the following space syntax measures were taken into account - to describe global and local network configuration of streets design in Kuala Lumpur within 3 km from Little India. By according configurational measurements to the several streets segment, relationships between street morphology and individual activity patterns can be measured. The focuses will be given as [8] found that the presence of activity on street especially when there have temporary activities, thus high integration value of streets will shows a higher number of pedestrian and car movements [8].

At this point, the study has drawn an attention of how integrated and connected the traditional shopping streets within 3 km radius are in the Kuala Lumpur as a broad scale using axial map (see Figure 4). According to [9] and [10], an axial map is a network of intersecting lines that comprises the longest sets of lines of sight that pass through all the spaces in a study area. Integration is an indicator of how easily one can reach a specific line of the axial map [9]. This state that the higher the integration value of a line, the lower the number of axial lines needed to reach that line. In order to perform this, the researcher employed the parameters in space syntax that uses to measure the local integration (the local network) and global integration (for entire system). For the global network of analysis, space syntax take into account every possible relationship in the system – from anywhere to anywhere, whereas for the local integration analysis, only examine a certain local catchment.



Figure 4. Axial map of the pedestrian and vehicle network for the 3 km radius from Little India, Brickfields. The axial map reveals the significant balance for both global and local integration value.

*Note: Black lines represent the global integration and local segregated lines represents in light grey.

Because of city is very large, dense and well-populated, the purposes of individual moving about the urban landscape do not constitute the sum-total of activity contained them [11]. Their collective activity gives rise to a pattern of use and movement that is independent of the individual behavioural. In this kind of situation, static snapshots and people-following method were conducted in Little India during a whole day on a weekday and a weekend day. The observations were taken during seasonal activities such as Deepavali festival when they have bazaar type activities. Additionally, along Little India, the visitors will see several informal activities and pop-up booths that offers various local goods such as telco promotion booth and drinks stall. Specifically chosen sites were observed and photographed through static snapshot and people-following methods in order to understand the

environment setting, crowding, types of visitors, their activities and movement pattern, and temporary events (temporary urban interventions) as shown in Table 1.

Table 1. The framework of research design for gathering data of how people use space in study area.

Temporary Urban Interventions	Observation Methods	Outcomes
Activity-based	Static snapshot	Mapping activity patterns in shopping streets
i. Seasonal activities	People-following	Mapping pedestrian movement pattern of the shopping streets
ii. Informal activities		
iii. Pop-up activities		
iv. Bazaar types activities		

When comparing the results from the static snapshots in Figure 4, the results comply with the dispersal of the integration values. This explains the debates by [8] that the more spatially integrated the street is, the more people on street. On the contrary, the more spatially segregated the streets are, resulted in the fewer people on street. It is described that space syntax is a set of tool linking space and people, and a set of techniques for analyzing spatial configuration [8].

4. Analysis and Results

For the purpose of this research, two (2) analyses were conducted in Little India to read the pattern of activities. One of the analysis was a global measurement (R_n), which helped examine the relationship between each axis and all other axes, and to show the degree of integration. The second analysis was a local measurement (R_3), which helped to identify the relationship of an axis with its connected axes (up to three steps away). The global and local analyses are very useful methods of looking at different scales of a spatial system of Kuala Lumpur.

4.1 Analysis on activity pattern in shopping streets

From the observation, there are many people on the street in Little India both during a weekday and a weekend. The activities took place in Little India are such as walking, shopping, taking the photo, eating, standing, and sitting. However, there is no large group of young people except those who come with their family. Most of the visitors are female. This explains that women more frequently be on street because they want to buy the groceries. For the observed activity patterns, few people stand or sit in front of the shops – just having a conversation and lingering. Most people are walking and travel through Little India from KL Sentral in order to reach the school, church, and offices. Also, there are people who take a photo around Little India especially after the upgrading of the urban image of Little India. Most of them are foreigners. Regardless of when comparing the results between during a weekday and a weekend, and the static snapshots analyses to evaluate the activity pattern, no significant differences can be seen. Since the degradation of business activities in Little India and the crowdedness of traffic, then these results are not surprising.

When revealing the flow of people to conclude the activity pattern on a weekday during the Deepavali festival, the largest concentration is on the western part of Little India (refer Figure 6). This is caused by a location of Indian restaurant at the edge and a temporary bazaar that sell the festive goods. There are most people concentrate on the temporary bazaar because the goods are cheaper and variety compares to the formal shop lots. In this scenario, the most silent streets/parts are in the formal shop lots. In the weekend, most activities take place particularly shopping and eating along Little India, even though the formal shop lots are closed. People visit Little India to buy the goods from the temporary bazaar. Based on the observation on a normal weekday, there are fewer people on the streets than in a weekend, except for the purpose of most of the people visit Little India is to find the Indian foods. Since most of the shops are closed on Sundays, it was assumed to find more people in Little India on weekday compare to on a weekend day.

When informal activities such as pop-up stalls take place in front of the formal shop lots, people will more attract. The pop-up stalls normally open only during the weekend. This type of temporary urban intervention offers activity mostly young people and children such as entertainment and eating local foods. This explains why space and society are importantly linked. Human activities, from the least to most complex, create spaces that reflect closely what they do and how they live in the space.

Legend:

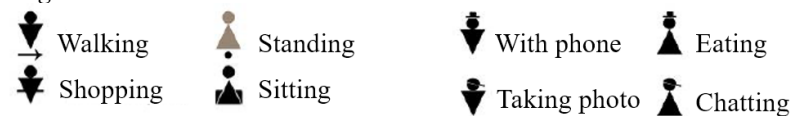


Figure 6. Concentration of activities during Deepavali Festival is quite scattered along Little India.



Figure 7. Concentration of activities when there have the informal activities in Little India.

*Note: The diagrams show a single round of observations.

4.2 Analysis on pedestrian flow of the shopping streets

To examine the differences between pedestrian and vehicular networks in explaining people movement behaviour, an axial map for the pedestrian and vehicular street network were developed, to represent the spatial configuration of the traditional shopping street network. The pedestrian network includes all alleys, paths and pedestrian-only lane in addition to the vehicle network. The global integration values result for the pedestrian axial maps is as shown in Figure 8.

Based on Figure 8, it is obvious that the more globally integrated streets, shown with the red lines, are more accessible streets within the network, whereas the more globally segregated streets, shown with the blue lines, are the fewest accessible streets. As described by [10], there is a strong relationship between spatial configuration and how people move within the city and the patterns of vehicular movements.

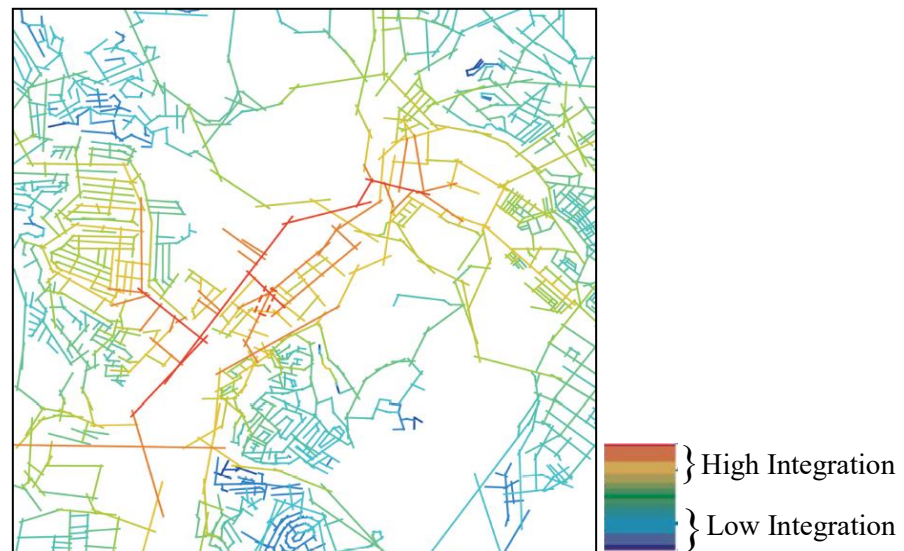


Figure 8. The global integration map shows that the highest integrated is the red line which is along Jalan Tun Sambathnan.

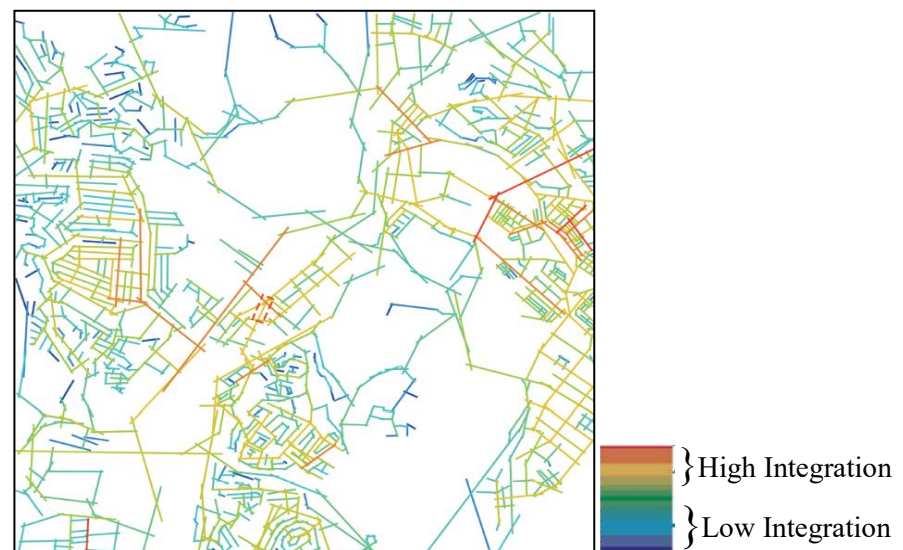


Figure 9. The local integration map shows that the highest integrated are Jalan Hang Tuah and Jalan Imbi.

The axial line with the highest value of global integration, Jalan Tun Sambathnan would be the one that could be accessed with the fewest number of turns from all other axial lines in 3 km radius of Kuala Lumpur. In contrast, an axial line that requires many turns to get to it from all other lines in the system is considered to have low global integration value, which is Jalan Sultan Abdul Samad and Jalan Tun Sambathnan 3. An axial line with the highest local integration value such as Jalan Hang Tuah and Jalan Imbi is a line that accessible with the fewest number of connections from all other lines in its surrounding. This result reflects the debate that the higher is the integration value, the nearer is the space to all spaces within the network.

Another way of using space syntax differently is by combining space syntax and observation method to track different pedestrian movement patterns in the street that could argue the integration value. To prove that, people-following observation were conducted during a weekday from 8 am to 9 am

(morning rush hour) and a weekend from 10 am to 12 pm (mid-morning period). The people following method has the ability to investigate the pattern of movement from a specific location, and to measure the average distance people will walk. Three (3) different points was chosen (A, B, and C) as a starting point to follow the people. The total number of people followed is 35 people during a weekday and 42 people during the weekend. They are various types of people – male, female, school children and elderly.

Table 3. Syntactical values of Little India for pedestrian and vehicular networks.

		Pedestrian street network	Vehicular street network
Total number of axial lines		251	395
Global Integration (R_n)	Mean	0.791	0.724
	Std. Dev	0.344	0.313
	Maximum	3.211	3.637
	Minimum	0.464	0.296
Local Integration (R_3)	Mean	1.087	1.590
	Std. Dev	0.535	0.571
	Maximum	3.017	3.637
	Minimum	0.251	0.333

The results reveal that pedestrian pattern of movement during the weekday is rather static. Most of the people exit from KL Sentral (from point A and B) to go to the services (on the western part of Brickfields) such as schools, and offices, as a short distance to access the services. Some of them went to the restaurant to have their breakfast (see Figure 10) because only restaurants operate in the early morning. The rest of the shops only open at 10 am every morning. This limits the movement of people in the streets. People movement pattern from point C is linear and they only go to the post office in Jalan Tun Sambanthan (in front of KL Sentral) which is the distance is 700 m.

While during the weekend (Saturday), the people movement seems scattered. The people-following observation was undertaken from 10 am whereas the shops are opened, but most of them are restaurants and grocery stores. A few of people use the back lane after Zen Hotel to go to the church. From the Figure 11, the results can indicate that the average distance of people can walk is 300 metre and the farthest place that they can reach from point A is Taj Garden Restaurant and church from point B. It also reveals that the longest line in the syntactical analysis is seems a semi-linear of street morphology.

Pedestrian enjoys walking along Jalan Tun Sambanthan because of the elements of built environment such as the small blocks, the street furniture, façade, pop-up booth and stalls, and the connected pathways. Additionally, pedestrian feel safe to walk because of the wide pathways (segregated from the vehicle lane), and there are many activities occur in front of the formal shop lots. – active public life.

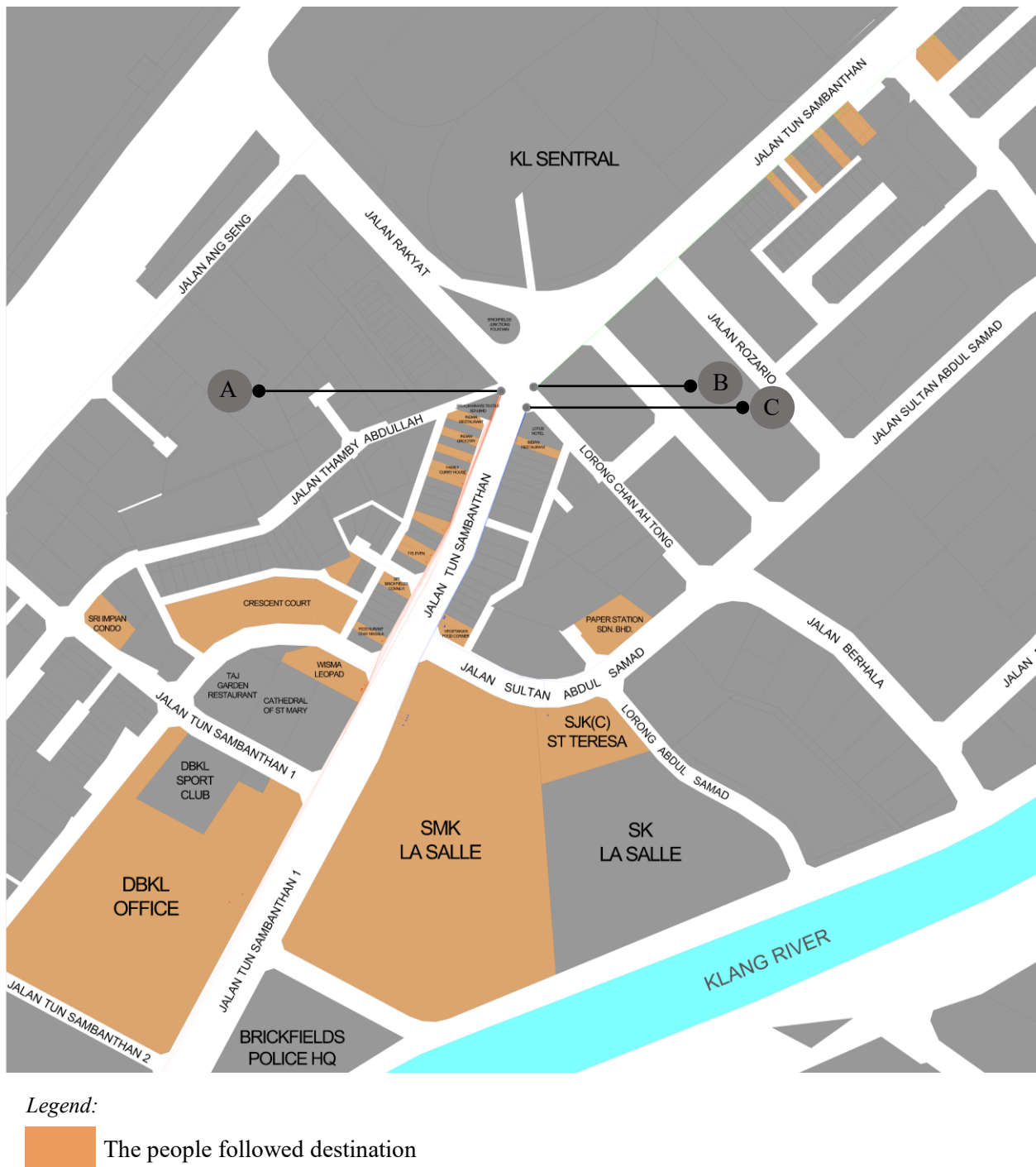
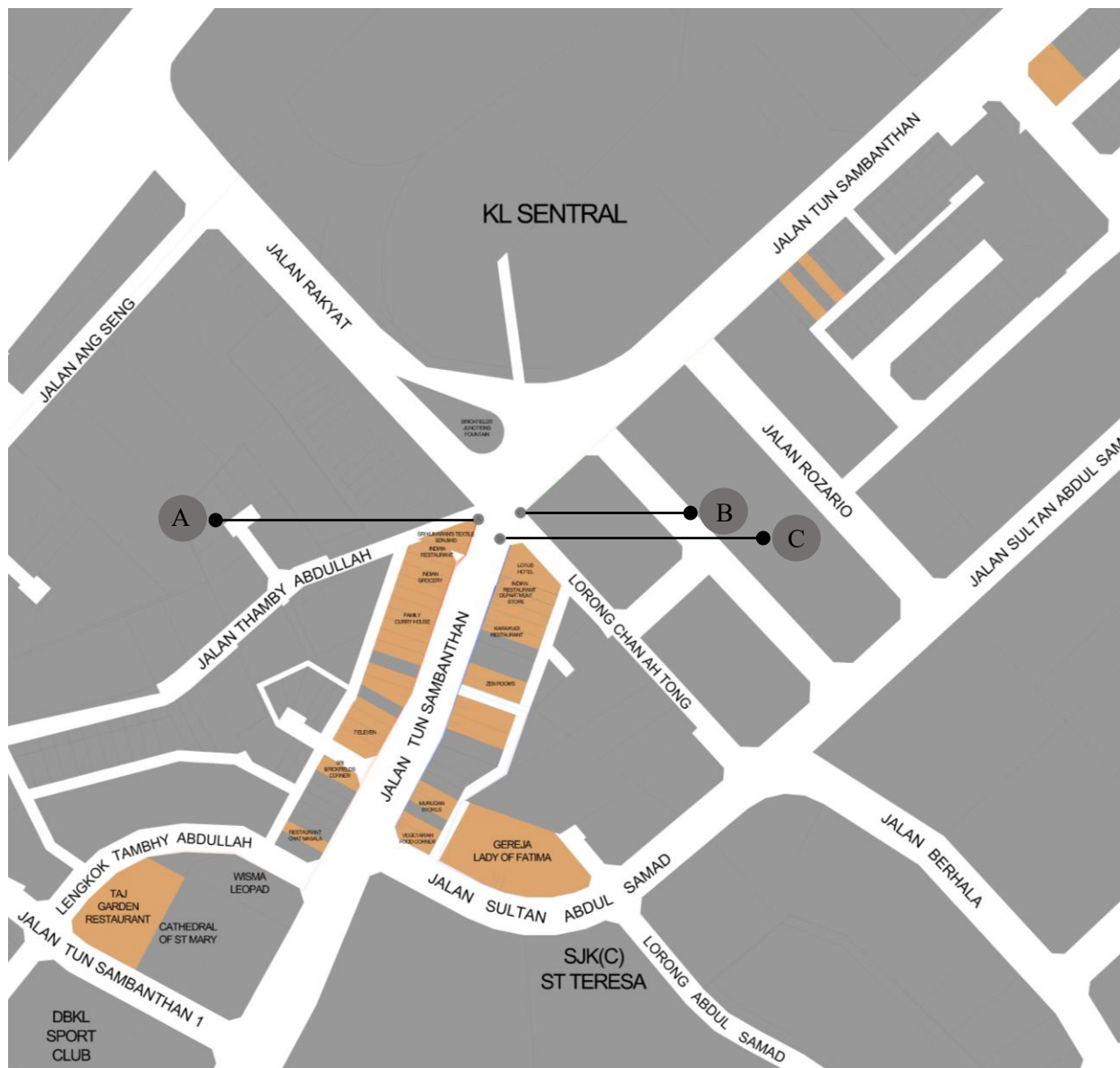


Figure 10. The pedestrian movement patterns from three (3) different points during the weekday.



Legend:



The people followed destination

Figure 11. The pedestrian movement patterns from three (3) different points during the weekend.

5. Discussion and Conclusions

This research employed space syntax as an advanced tool to analyze the traditional shopping street network in Little India, Kuala Lumpur. The results analyze that the axes with the lowest global integration values were concentrated 0.464 for pedestrian network while the vehicular network is 0.296. This may significantly improve the overall experience of the street for the pedestrian, as illustrated by improvements in the R_n value from 0.464 to 3.211 as the R_3 value would increase from 0.251 to 3.017. The level of space network could increase by 3.552. Here, it is emphasized that, while this is not a significant numerical change, the space network positively can change the application of the suggested urban design process. The results are also vital because of the space syntax method

demonstrated a great potential to extend our knowledge of how people move through space, encounter each other and form social groups.

This research has shown that the quality of local and global relational properties of street morphologies play an important role in measuring human behavior (how people response to space, how people move), and activity patterns as socio-spatially. The results are not surprising since the relational descriptions developed by space syntax theory have a solid behavioral basis. Research findings suggest that urban planners, architects and traffic engineers should give more consideration of how design in built environment influences human behavior and activity patterns beyond the local concern. The findings also contribute to the social contents in space as references for actions what and where we could perform. A broader conception of shop lot blocks and streets, one that emphasizes fit within the traditional shopping street and its temporary urban interventions, likely supported for making a traditional area more meaningful. This paper supports the city vision suggesting an integrated modelling approach in space syntax analysis with the hope to encourage space syntax community for further researches towards putting the people on safer streets and making an impact to the “place”.

Acknowledgements

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