

Ascertaining the kinetic patterns of informal spaces in the commercial streets of Pettah, Sri Lanka

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Abstract

The study is an investigation of "kinetic" patterns in the urban informal commercial sector of Pettah, Colombo. Kinetic spaces refer to the transforming temporary physical developments and structures that complement the "static"/ permanent built fabric of cities. They introduce a humanized scale to the city in terms of "form" and "function". Kinetic patterns represent development of the informal sector as connecting patterns between the static city and the activity patterns. Pettah is the main commercial and transportation centre in the country, which is currently undergoing transformations by removal of all informal, kinetic spaces and functions in a city beautification process. Yet, these patterns establish distinct characteristics within the city and need to be accommodated as part of the identity of the urban context.

Based on Christopher Alexander's "Pattern Language" and patterns related to the commercial context of cities, a theoretical framework was developed to explore examples of similar patterns in the kinetic developments in Pettah. They were traced and presented in a hierarchical order. The method of analysis was mainly through careful on site observations, activity maps and 2D and 3D maps documenting spatial and functional connections, photographs of the selected areas etc. The identified framework is place specific and primarily presented through graphical representations of the re-interpretation of Alexander's generic images of the universal pattern, to establish the kinetic patterns of Pettah.

The research ascertains that there is logic in the development of kinetic spaces and that the kinetic patterns follow the logic of the general pattern language of the city in terms of the practical connectivity of functions and physical spaces. The essential components of these pattern relationships are extracted to establish what is specific to the context.

Key words: Christopher Alexander's pattern language, Informal commercial spaces, Kinetic patterns.

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Urban Kinetic Spaces

The term “kinetic” captures the notion of related to motion or characterized by movement (Pearsall 2013). Thus, kinetic spaces are defined by their character or ability to change, convert or transform. Considering the architectural dimension of kinetic spaces, the physical components within a specific space transform the dimensions, scale and character of the specific context. The transformable and convertible nature of kinetic spaces is what adds character and dynamism to a context.

As (Beltrano, 2013) says, in terms of the political, cultural and social production, the city is transformed by people's accumulated engagements with it. These activities are best described as informal publics of everyday life. These types of activities include street vending, street dramas, public festivals etc. Most of the kinetic spaces in Sri Lanka evolve with the development of the informal sector. The informal sector are small scale units engaged in the production and distribution of goods and services whose primary objective is to generate employment for the participants rather than to maximize profits (Sethuraman S V cited in Lubell, 1991:17). Street vending forms a significant part of the informal sector activities and is a very frequently observed phenomenon in the local towns and cities. As Mehrotra (2008) expresses, kinetic spaces are generated through the transforming informal activities in between the static or permanent urban spaces (comprising the permanent buildings, boundary walls of the city etc.). Kinetic spaces evolve either in gaps between or against the static urban elements, always changing the surrounding context. Social, cultural or economical factors direct and dictate the generation of these spaces within an urban context. It could be a need for shelter, trading requirement or a rapidly changing function as a street festival, street drama etc. According to the activity, the physical space is converted to create a kinetic space. Considering the materiality of kinetic spaces, the specificity of the materials used defines the identity of the spaces. According to Mehrotra, (2008 :206). The kinetic city is temporary in nature and often built with recycled materials: plastic sheets, scrap metal, canvas and waste wood. It constantly modifies and reinvents itself.

The kinetic spaces of the informal sector respond to the functional structure of the city, pattern of human activity and the static physical components of the urban space. The local city character in terms of the social, cultural and economic structure is generated by the amalgamation of both the static and kinetic entities. The scale and character of the informal kinetic spaces have been part and parcel of the physical and social identity of our towns, humanizing the spaces and catering to a cross section of the population in their daily needs etc. It is therefore considered as an important component of city identity. If designed in a manner that mitigates some of the negative practical problems of managing human and vehicular traffic, it could be a valuable asset in place making in cities.

The objective of the study was to comprehend whether there is a specific a pattern in the development of kinetic spaces in towns/cities and the physical and functional generators of these patterns. Christopher Alexander (1977) provides a framework in his book the *Pattern Language* that establishes successful connections between the different physical and functional elements of the city to develop a framework for analysis of kinetic patterns in our local towns/cities. The intention was to use the generic universal pattern connections established by Alexander, to look at the specific cultural, environmental and economic context of Pettah. The established framework of developed patterns and connections between patterns become a key emphasis in the study. The analysis implicitly directs how these patterns could be understood to accommodate them in city design and development.

The Pattern Language by Christopher Alexander

Alexander's *Pattern Language* provides a practical guide to a structured logical collection of patterns for designers of the city and buildings. The first 94 patterns relate to the complex web that is the city. His study is influenced by human behavioural sciences and has tried to provide solutions to issues that people face in living in a contemporary city. As Broadbent (1990) states, what is significant is the establishment of a hierarchy in the patterns from macro to micro scale. Each pattern is connected to a "macro" pattern which comes at the beginning of the language and a "micro" pattern which comes later in the language. None of the patterns exist in isolation. The significance of the language is based on the connectivity between the patterns. A pattern is supported by a larger pattern in which it is embedded, pattern of the same size that surrounds it and smaller patterns which are embedded in it. The complete patterns represent the ideal socio-physical definitions related to the urban context (Alexander, 1977). These patterns deal with a functional/activity need with a specific working physical pattern. The solutions establish the appropriate physical arrangement for the functional success of the pattern (Alexander, 1977). His patterns are a practical method of understanding the natural process of the city which emphasizes human activity, scale and experience and promotes piecemeal development.

His prescription is for cities to develop naturally according to the needs of the population. As Bhatt and Brand (2008)⁴ state, Alexander's writings are guided by the notion that there are unconscious patterns by which people identify and live in space and that these relationships can be discerned and brought into the conscious realm. The patterns discuss and describe how a specific space can be transformed from being merely functional to being social, interactive and vital (Bhatt and Brand, 2008). Thus the connections are worth considering in the natural development of kinetic patterns of the informal sector of a city to comprehend the logic behind their establishment.

Method of Study

Patterns from Alexander's "*Pattern Language*" relating to the development of a commercial sector of a city were selected in a hierarchical order from macro to micro scale as a basis to investigate Pettah. The selected patterns relate to the overall urban life of the city. They were selected on the basis that the pattern of physical and functional development of Pettah is a combination of the pattern elements expressed in the selected patterns and relate to the informal kinetic development of the context.

The selected patterns that relate to the commercial context of Pettah are as follows-

- Shopping street- Pattern 32
- Market of many shops by individual owners -Pattern 46
- Street café - Pattern 88
- Food stands- Pattern 93
- Building edge - Pattern 160
- Opening to the street- Pattern 165
- Canvas roofs - Pattern 244

The rationale for selecting the patterns for analysis of Pettah was through a careful evaluation of the structure of the physical context and distribution of kinetic spaces in terms of scale and organization. The main structural organization of the kinetic patterns of Pettah is along the grid

network of streets. Thus the “Pattern” of “shopping street” was selected to detail out and represent the macro scale pattern of the kinetic development. It also represents a linear development. The “Market of many shops” represents nodal development and activity nuclei of the kinetic pattern in the macro scale.”Street café” and “food stands” represent individual characteristics of specific kinetic spaces and functions at micro level within the macro patterns and “building edge”, “opening to the street” and “canvas roofs” capture the physical, spatial characteristics and the technology used in the individual kinetic spaces. For the purpose of this study, the pattern of “shopping street” will be discussed in detail and other 6 patterns summarized as graphical interpretations of Alexander’s working patterns to express developed place specific kinetic patterns of Pettah.

The main elements and linkages between the selected working patterns were extracted for the purpose of the study. Based on the main elements established in each pattern, the case studies were investigated in detail to comprehend the applicability and connectivity of the elements to form patterns in the local kinetic context. The major physical and functional generators of the interpreted local patterns were established to comprehend the organization of kinetic patterns of Pettah. This framework provides a method of analysis of the organisation of kinetic patterns in a given local town.

The graphical representations capture the pattern essentials and the detailed pattern of each case with spatial connections for a clearer comprehension of the kinetic pattern. The method of analysis was mainly through careful on site observations during specific times of the day and days of the week. Observations were made during peak hours of activity from 6.30 am to 3.00 pm during a weekday, a Saturday and a Sunday. One observation was made on a week day evening from 3.00 pm - 7.30 pm. Activity maps were drawn and analysed based on the observations. Two dimensional and three dimensional maps and sketches were done documenting spatial and functional connections. Photographs of the selected areas helped capture the essence of the character of that place. Graphical representation through carefully constructed maps and sections establish the local patterns of the kinetic and static context.

The identified framework is place specific and is presented primarily through graphical representations of the re-interpretation of Alexander’s generic images of the universal pattern, to establish the kinetic patterns of Pettah.

Pettah – The Background

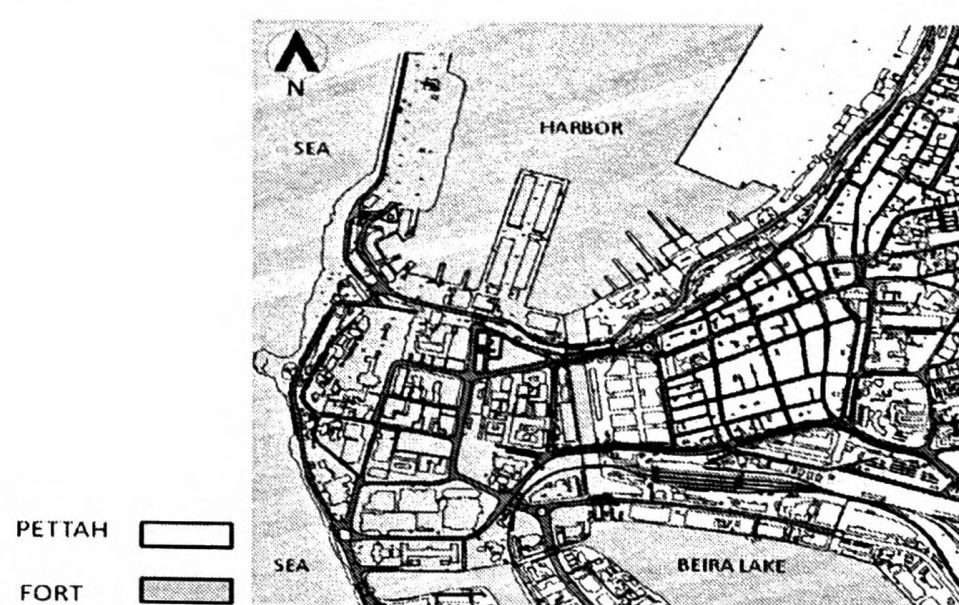


Fig. 1 : Map of Fort and Pettah, Colombo
Source: Survey Department, Sri Lanka

Pettah is located east of the commercial capital of Fort, and is about 0.6 sq. km in extent. It is built on a grid of 10 Streets interlocking each other at right angles which was established during the Dutch rule of Sri Lanka. The grid network ties up the commercial context to a convenient walkable distance of approximately half a kilometre either way. The streets are designated and zoned for commercial activities in terms of permanent shops.

The civic centre of Pettah was known by different names during different stages of history, partly representing its socio-cultural position and diversity⁵. The name itself was influenced by the many cultures that moved through, and lived within Pettah, during colonial rule.

The physical order of Pettah spans many eras and the pattern of development laid centuries ago has shaped the present Pettah. With approximately 450 years of colonial rule, Pettah is the result of the layering of three historically formed strata by the Portuguese, Dutch and the British (Rajapakse, 2001) which has transformed the physical environment. The static component of the grid network of streets, block and plot divisions that exists today represents part of the colonial ideals, which portray the story of the place. The static and kinetic fabric is embedded within the old structure and layers of urban history (Rajapakse, 2001). As Mehrotra (2006) states of a similar context, the static component of Pettah is situated in the temporal landscape of kinetic spaces.

With the development of the harbour in the mid 19th century, Pettah transformed into a commercial zone from a prime residential during Dutch rule (17-18th Century). Pettah at present is famous for its bazaars and shopping streets and a few prominent markets. It is Sri Lanka's busiest commercial area, where many business organizations are centred⁶. The morphology of the static part of the city consists of narrow and deep plots with buildings built wall to wall forming a continuous edge to the streets. The skyline varies from two storey buildings to four storey buildings. It is a sector of the city that is in constant motion and as Mehrotra (2006) states about Mumbai, although much smaller in scale, Pettah's physical fabric is characterized by its kinetic quality

Shopping Streets of Pettah

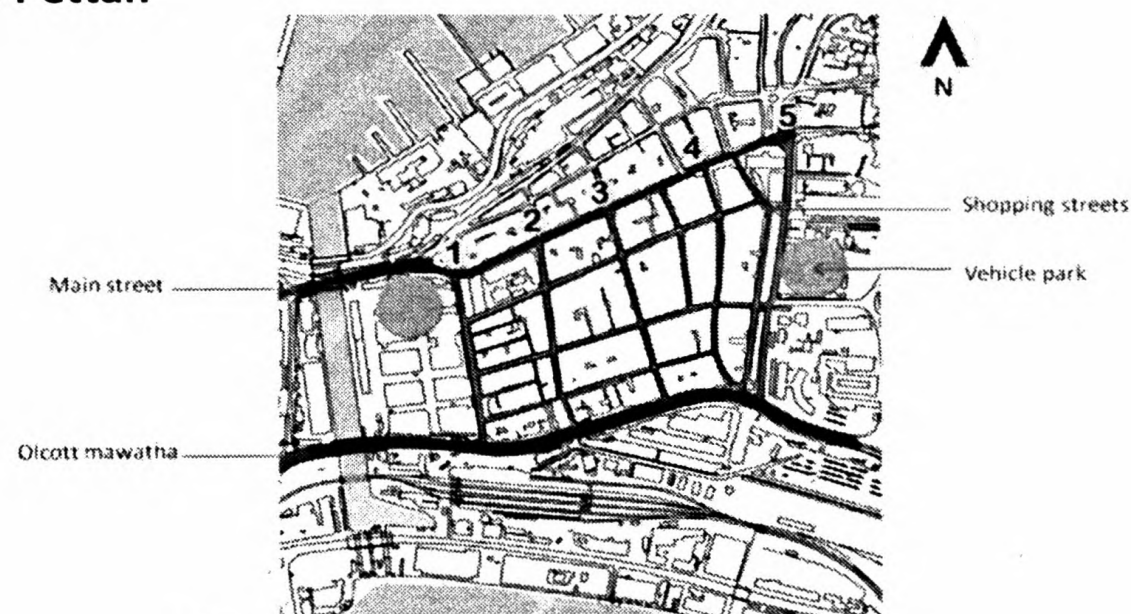


Fig. 2 :Main shopping streets in Pettah area.

Source: author

⁵ During early Dutch rule, it was termed the "City", (De Silva 1988:221) and later on "the Old City" or "Oude Stad" (Greig 1987:229). It was in the British period that the term "Pettah" came in to existence. "Pettah" is a term of Anglo Indian origin derived from the Tamil term "Pettai" meaning 'outside'. In the Sinhalese Language it is called 'Pita Kotuwa' meaning outside the Fort', (Anderson 1997: 105).

⁶ https://en.wikipedia.org/wiki/Pettah,_Sri_Lanka

Streets and designated commercial activities

1. Malwaththa road. – Shops selling shoes bags and accessories
2. 1st cross Street.- Shops selling electronic items- (fans,watches,T.V's, light fittings)
- 3.2nd cross Street. Mainly textile and clothing
- 4.4th cross Street. – Mainly textile, clothing and costume jewellery
5. Bodhiraja Mawatha. – Vegetables, fruit and retail goods, fashion accessories

Two major traffic arteries known as Olcott Mawatha and Main Street define the North and South edges of the grid network. These two roads provide the main transportation access to the connecting cross shopping streets. Two parking spaces in the east and west corners of the grid fulfil the parking requirement of Pettah.

Considering the character of the streets, the cross streets between the two major arteries are denser with commercial activities than the parallel streets, with merchandise unique to each street. Street specific merchandising provides legibility and easy identity to customers to engage in their shopping needs. The Kinetic structures extend from the static merchandising spaces as outdoor merchandizing spaces. Supportive kinetic functions as food stands, tea spots, juice stands are generated in-between the merchandizing spaces. These patterns provide the functional requirements of the shopping streets while creating the unique kinetic fabric that is Pettah.

As most of the consumers are commuters from distant towns as opposed to the neighbourhoods of Pettah, easy accessibility and connectivity to other major activities and transportation nodes encourage the successful function of the static and kinetic shopping spaces of Pettah.

The Pattern of "Shopping Street" (Pattern 32)

Alexander's definition of the Shopping street indicates the following-

"Shopping centres depend on access: they need locations near major traffic arteries. However, the shoppers themselves don't benefit from traffic: they need quiet, comfort, and convenience, and access from the pedestrian paths in the surrounding area."
(Alexander, 1977, p. 175)

According to Alexander, the shops must be arranged along a street, itself pedestrian, but opening off a major traffic artery to be convenient for traffic and convenient for people walking, and connected to the fabric of the surrounding town. Parking should be opening off a major traffic artery, in a convenient location.

Essentials of the pattern "Shopping street" as established by Alexander:-

1. Access to major traffic arteries (from pedestrian paths)
2. Convenience for traffic
3. Convenience for pedestrians
4. Connectivity to the fabric of the surrounding Town
5. Shopping arranged along the street
6. Convenience in parking

Kinetic Pattern of the “Shopping Street “of Malwaththa Road

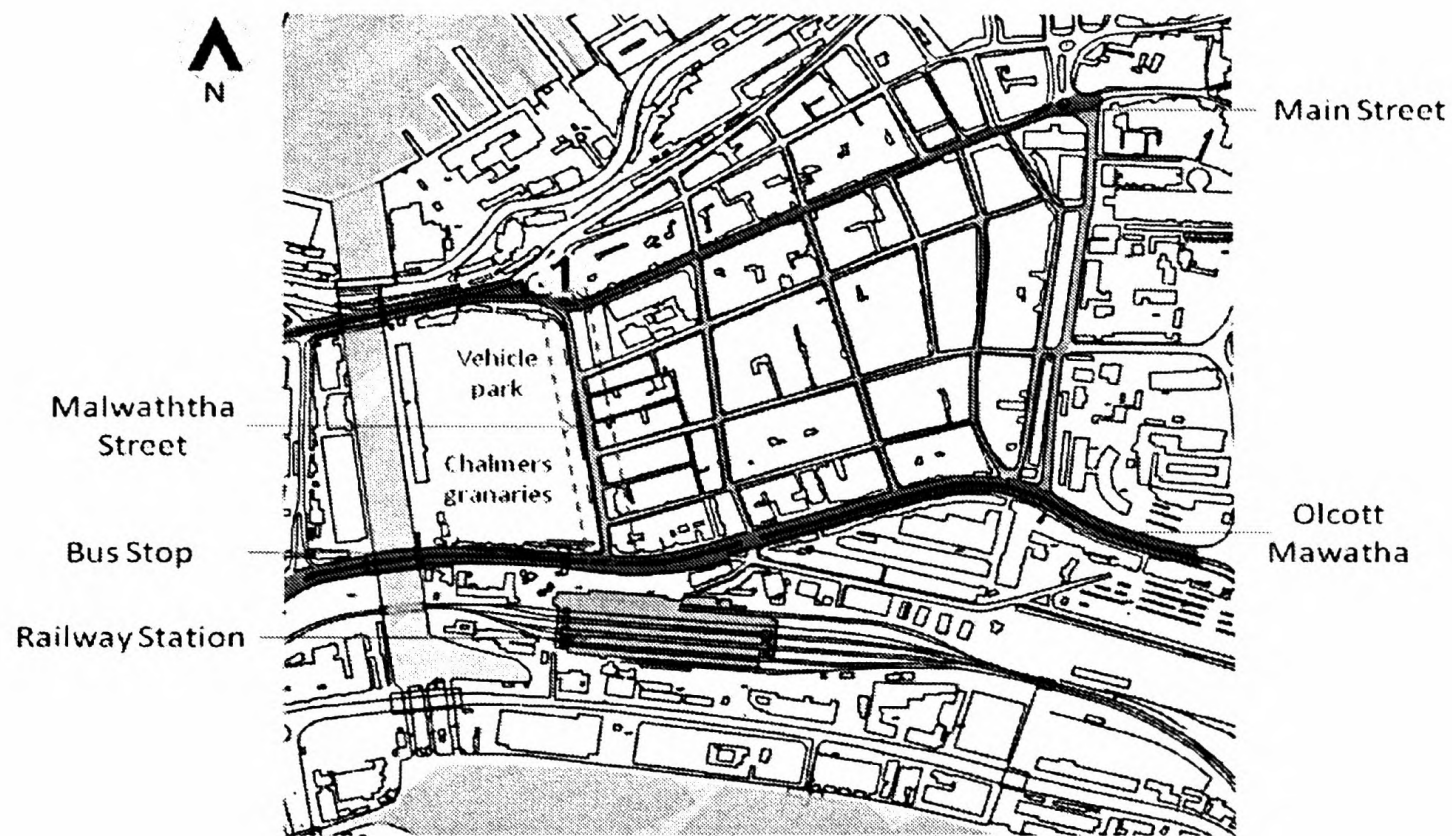


Fig. 3 : Malwaththa street in the Pettah street grid
Source: author

Olcott mawatha and Main street are a major vehicular access way and shopping street connected by Malwaththa road. As the first cross connection in the street grid connecting Main Street and Olcott Mawatha, Malwaththa road is about 350m long and is the shortest connection between the Main Street and Olcott Mawatha enhancing accessibility. Although a mixed vehicular and pedestrian road, Malwaththa road has become a major pedestrian link connecting Main Street from the Fort Railway station.

Adjoining Malwaththa road to the west, Chalmers granaries car park facilitates the parking needs of the consumers. The car park is accessible from Sir Baron Jayathileke Mawatha (part of Main Street). On the other hand , the bus stop at the south end of the street near the pedestrian bridge at Olcott Mawatha acts as a transport interchange for commuters coming from busses to access the Main street.

Comparing the working pattern of “shopping street”(32) by Christopher Alexander, the kinetic pattern has naturally evolved according to the principles set out in Alexander’s definition of pattern requirements of a shopping street. Yet the pattern is modified in response to the local context. The kinetic spaces/ temporary built structures form a continuous edge to the western boundary of the street. They are attached to the Chalmers granaries' boundary wall forming a continuous physical edge. Most of the pedestrians use the west side of the street for walking, due to the activities along the edge with kinetic structures.

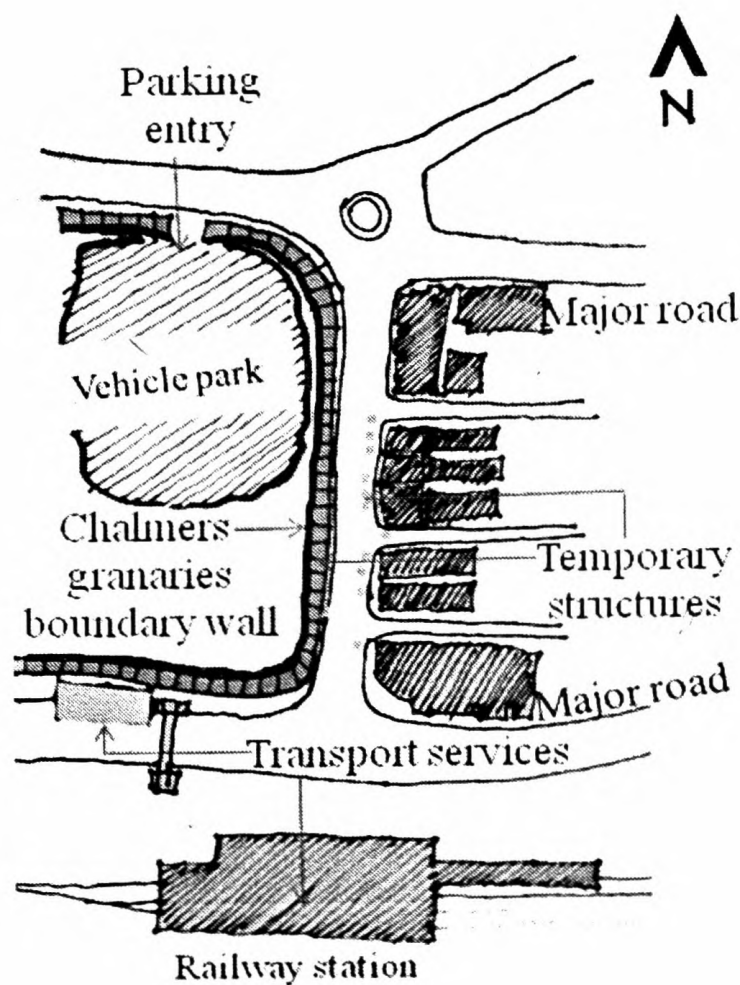


Fig. 4: Formation of the kinetic pattern along Malwaththa street
 Source: Author

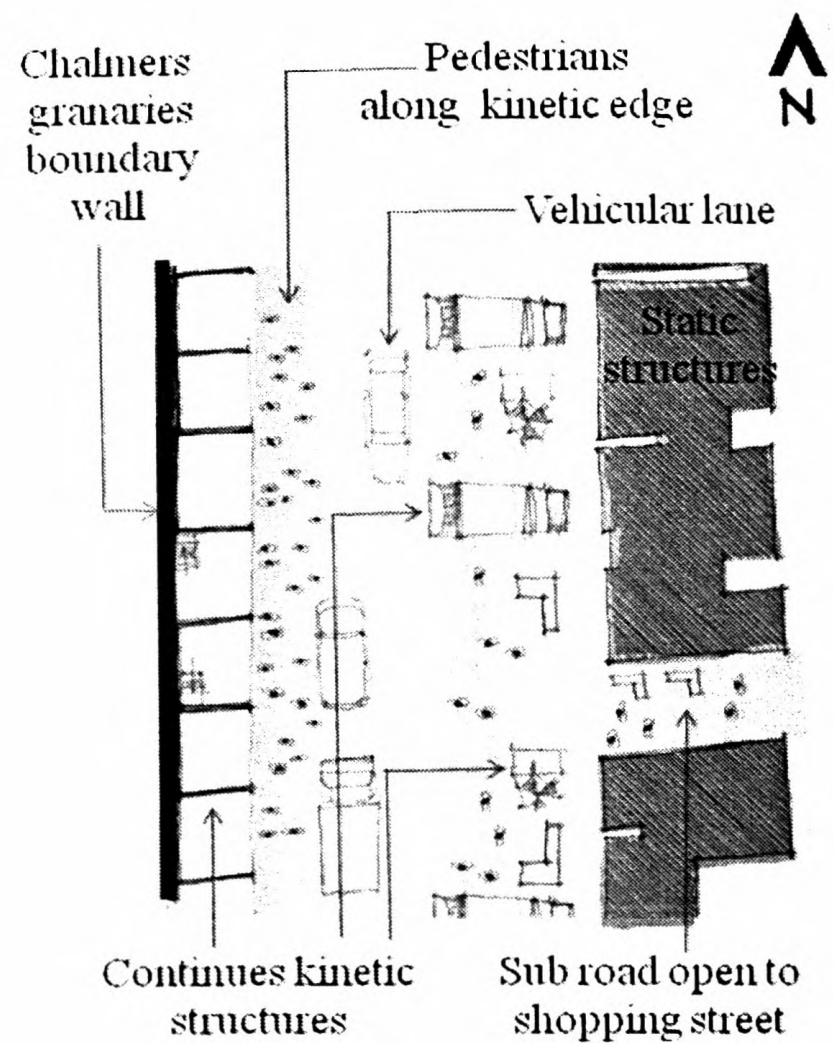


Fig. 5: Continuous Kinetic structures
 Source: Author

The type of activities on the two ends of the street differs from the activities in the mid section or along street proper. Olcott Mawatha end contains shops ranging from gram shops, juice bars mobile phone shops and accessories which are generated in response to the spill-over of commuters from the railway station and the bus stop. In Malwaththa road itself, the shoe and bag stalls are built out of compact mobile and temporary structures. They are built on the street itself. Partition walls of the structures are built using both masonry walls and steel partitions attached to the boundary wall. Some of the stall owners have created attic levels for storage facilities. The front facades of the kinetic structures are completely open to the street (Pattern 165- Opening to the street). The openness is important to create easy visibility of merchandise to the moving crowd. Open shelves and items hanging vertically from the structures on both sides of the street with straddled activities create a vibrant street experience. The pedestrians are able to see, touch and feel the goods more closely while passing by. Openings, showcases, shelves to a height of approximately 8 feet respond to human scale. Each kinetic space approximately 6-8 feet in width contributes to a fine grained development with a continuous rhythm in the experience of space, colour, texture of goods etc.

Maliban Street, Prince Street and Keyzer street along with three other secondary streets open on to Malwaththa road on the east side feeding pedestrians to Malwaththa road. Mobile shops in front of the static fabric enhance and support the temporary, kinetic character to the east side of the street.

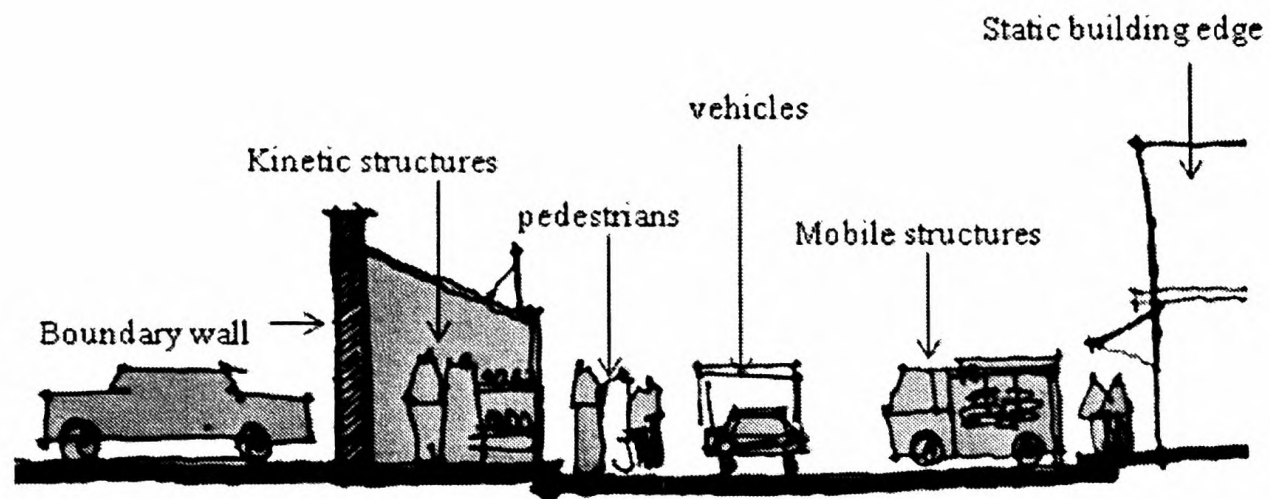


Fig. 6: Section through Malwaththa street
Source: Author

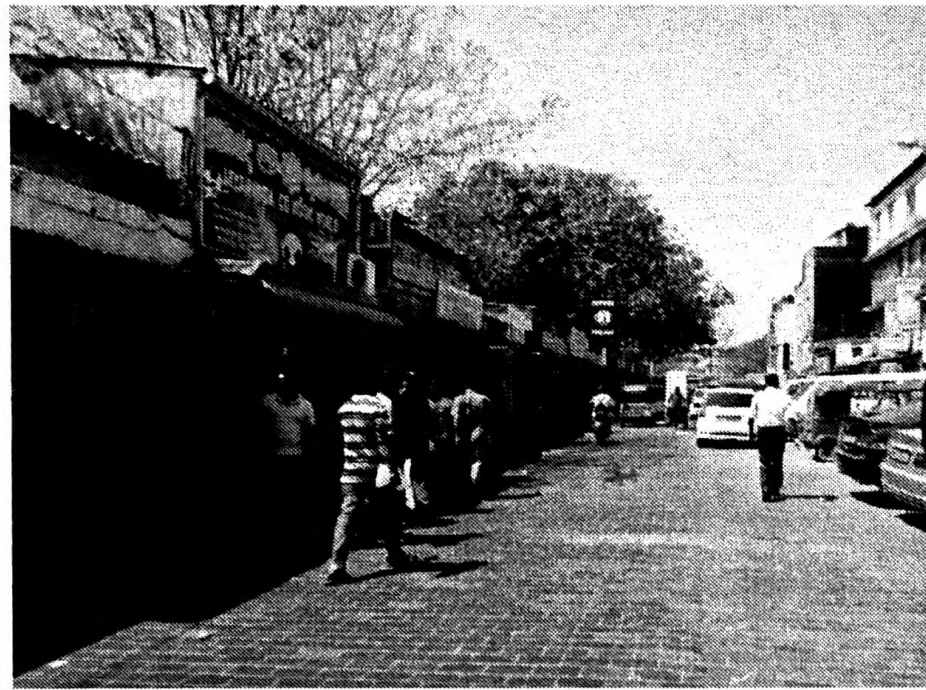


Fig. 7: Kinetic structures along west edge of the street.
Source: Author



Fig. 8: Mobile shoe stall at east edge of the street
Source: Author



Fig. 9: Bus stop at Olcott Mawatha
Source: Author



Fig. 10: Entrance to parking from Main Street.
Source: Author

Most of the stalls on the east edge are vehicles converted for selling goods as shoes etc. They arrive in the morning (around 8.00 -8.30 am) and expand the structure and shelves and leave in the evening (after 7.00.pm)⁷.

Alexander (1977) describes other related patterns that assist in completing the pattern of a shopping street. A shopping street should have the characters of Pedestrian Street (pattern 100)

⁷ Opening and closing times of the kinetic commercial spaces are synchronized with the working hours of commuters and daily workers of the vicinity. Most of the food stands open early morning (around 6.30) with local foods (breakfast) catering to labourers of the commercial area, Manning market (whole sale market), Port and the target working population moving around the transport terminals and Colombo harbour. Food stands selling sweets and fruit, cater mainly to the consumers of the commercial area and passengers who use the transport services. Thus, most of the fruit stands, juice bars, mobile fruit, juice, sweets and snack vendors get active after 8.00 am. Other commercial services as fashion and textile items, vegetables, electronics and mobile shops ,movie and record bars open after 8.00 am. Most of them close between 7.30 -8.00 pm except the vendors who sell their items using a shop front or street space on a stand, cart or carpet. They remove their services from 4.00-5 .00 pm -because they have to move the goods to their homes a distance away. With the reduction of commuters from work places, some of the short food stands close or move out after 4.30 pm.

for use of pedestrians and divide the pedestrian and vehicular traffic areas using Network of paths and cars(pattern 52),connecting to Parallel roads(pattern 23). Pettah however does not facilitate separate pedestrian and vehicular access ways although beneficial. Apart from the related patterns described by Alexander, other micro patterns specific to the context of Pettah create vibrant kinetic spaces. Opening to the street has created more visibility and straddled openings along the stalls visually and physically connecting merchandise with pedestrians on the street. Use of open shelves enables more friendly and easy access to the customers to purchase the merchandise. Use of Canvas roofs generates shaded and colourful shop fronts in the kinetic street. Moreover, the micro patterns of street cafe, food stands are embedded in the macro pattern of “shopping streets” adding variety in the activities along the street.

Summary of major generators of the kinetic pattern along Malwaththa Road

- 1) Railway station opposite the south end of the street acts as a major transport/ activity node
- 2) Bus stop at the south end of the street acts as a transport/ activity node
- 3) The street as a linkage between a transportation node and primary shopping street (Main Street)
- 4) Proximity to Car park
- 5) Availability of the Charmers granaries boundary wall as a physical edge definition to anchor the kinetic spaces
- 6) Interconnecting streets that bring in more pedestrians on to Malwaththa Road

Following are six other selected kinetic patterns unique to Pettah and the re-interpretation of their pattern essentials through the established pattern relationships by Christopher Alexander

Table 2: Re-interpretation of pattern essentials

Pattern	Essential elements extracted from Alexander's Patterns	Secondary elements unique to the selected Kinetic pattern of Pettah	Major Generators of specific Kinetic patterns in Pettah
Market of many shops by individual owners Observed number of similar patterns- 5	<ol style="list-style-type: none"> 1. Established frequently in a given context 2. Specific goods and independent vendors. 3. Many smaller shops under one roof 1. Minimum space 2. Columns define the walkway 3. Basic services 4. Individually developed shops 	<ol style="list-style-type: none"> 1. Internal walkways of market open to pedestrian path of bus stand. 2. Walkways also act as commuter routes. 3.Linear development under one roof 	<ol style="list-style-type: none"> 1. Bus stand and Olcott Mawatha as transport node and major vehicular access. 2. Adjoining Manning market (whole sale market) generates similar activities /goods/services. 3. Boundary wall as an edge definition to Olcott Mawatha to anchor kinetic spaces. 4. Rear wall of buildings of bus stand to anchor the kinetic spaces. 5. Access to the commuter entrance paths of bus stand.
Street café Observed number of similar	<ol style="list-style-type: none"> 1.Established clientele 2.Easy access from surrounding 3.Open to street- visually connected to access street 4.Serves simple food and drinks 	<ol style="list-style-type: none"> 1. Functions as a quick take away food stall as opposed to a gathering place. 2. Supporting 	<ol style="list-style-type: none"> 1.Cushion store blank wall to attach the kinetic structure as physical edge definition 2. Intersection of 2nd Cross

patterns- 5	5.Supportive facilities and functions	functions are clustered around the kinetic street cafe. 3. High commuter density.	street and Prince street as a pedestrian traffic intersection 3. Left over / expanded open street space of prince street to attach kinetic spaces 4. High density of vendors/ commuters of the 2nd cross street 6.Expanded volume of space at the intersection
Food stands Observed number of similar patterns - 10	1.Located along road crossings, accessible to cars and paths 2.Takes on the character of the compatible neighbourhood fabric and form- portable carts, small huts etc. 3.Responds to moving crowd 4.Temporary and Easy visibility to crowd	1. Located along commuter route. 2. Functions of surrounding context determine location of food stands. 3. Food is specific to surrounding context. (eg- specific food sold in front of the Mosque)	1.Main street -2nd Cross street traffic intersection 2.Mosque as a religious and functional landmark 3. Increased density of religious worshippers as special category of consumers.
Building edge)	1.Form and shape of the building edge		-
Opening to the street	1. Opening size of shop front 2. Straddle the function through path		-
Canvas roofs	1. Type of the activity 2. Climate condition 3. Type of the fabric component	Use of other types of temporary roof structures like Plastic sheets, steel sheets, fabric etc.	-

LOCATION OF SELECTED KINETIC PATTERN IN PETTAH.

Kinetic patterns

- ① Shopping Streets
- ② Market of many shops by individual owners
- ③ Street café
- ④ Food stands
- ⑤ Building edge
- ⑥ Opening to the street
- ⑦ Canvas roofs

Major roads

- A Main street
- B Olcott Mawatha

Vehicle parks

■

Transport terminals

- C Railway station
- D Central bus stand
- E Bsatian Mawatha bus stand
- F Gunasinghapura bus stand

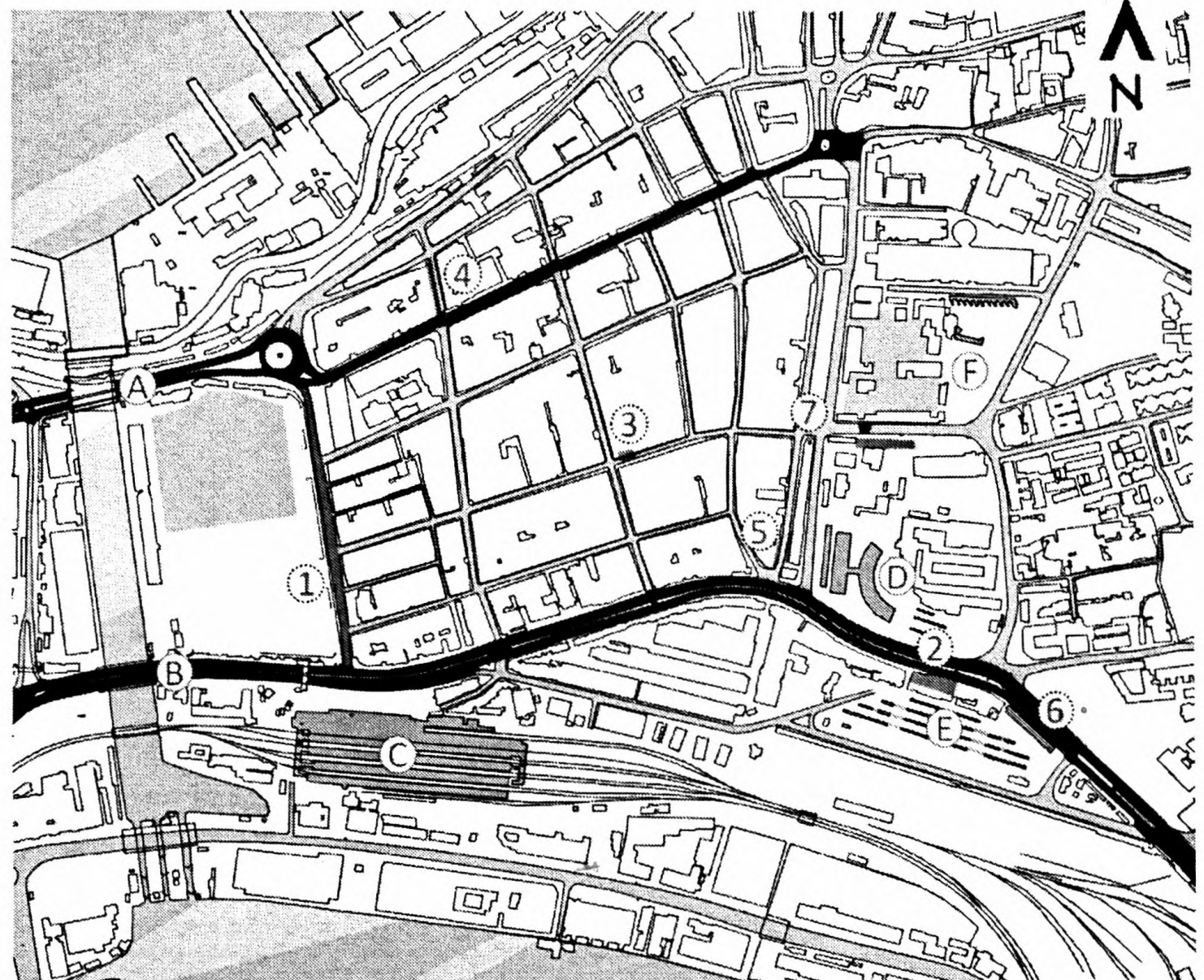
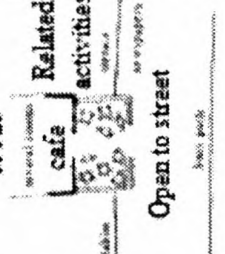
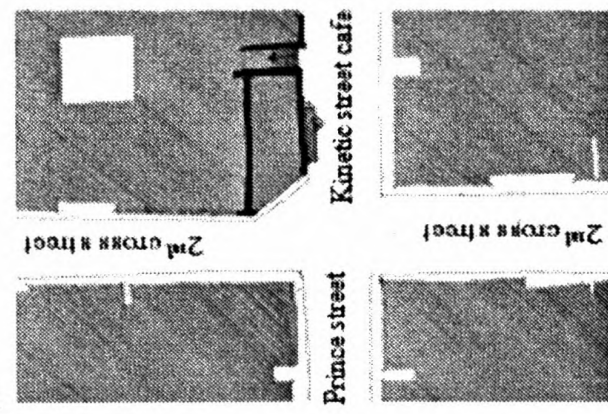
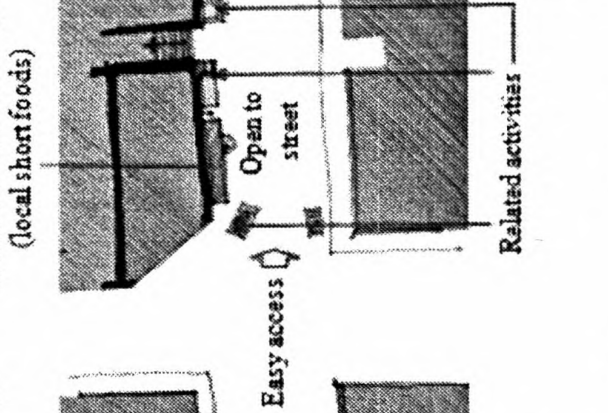
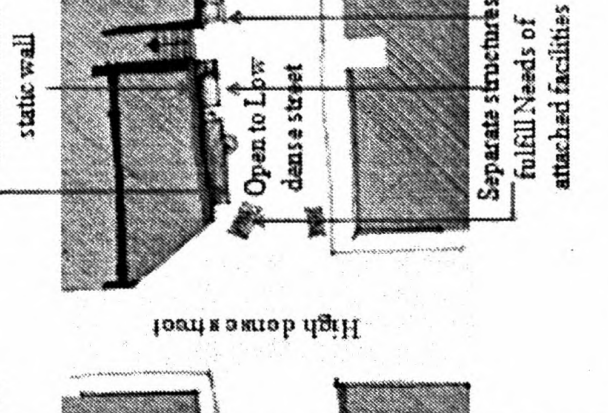
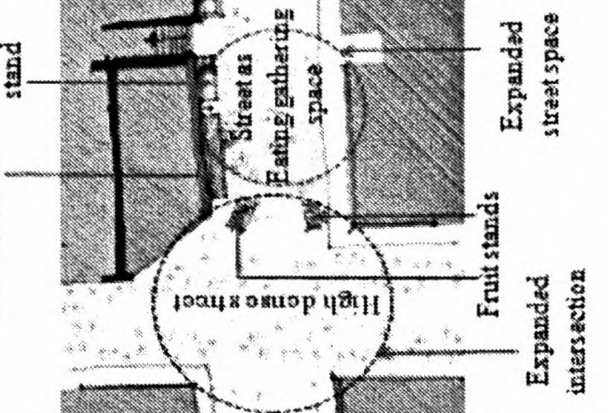
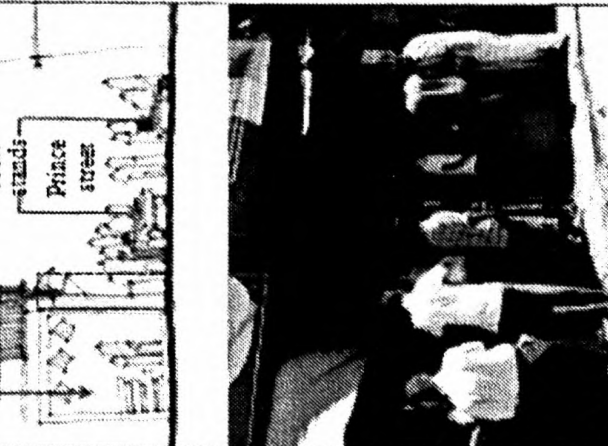
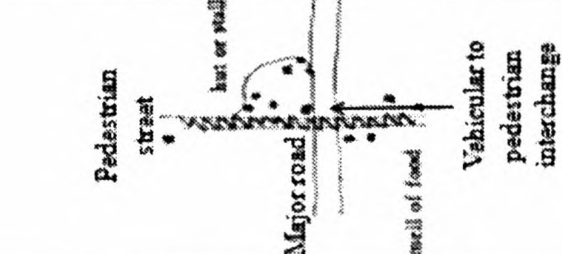
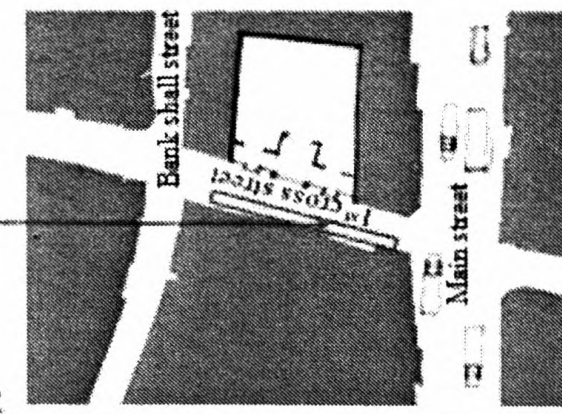
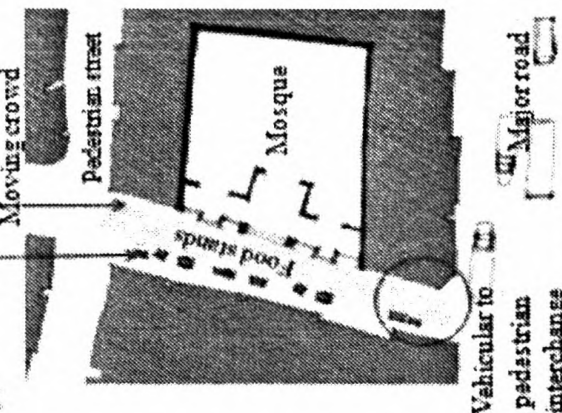
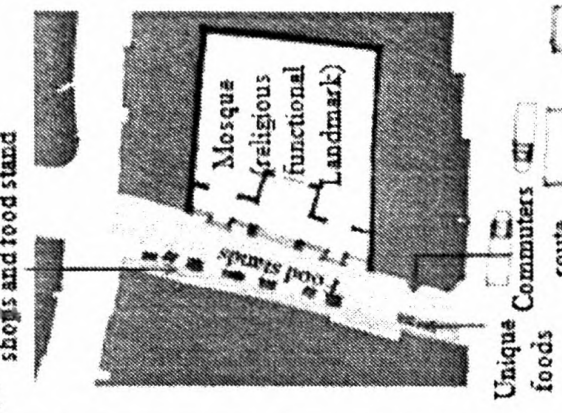
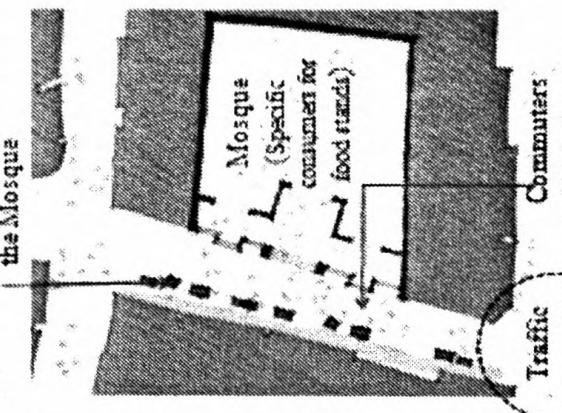



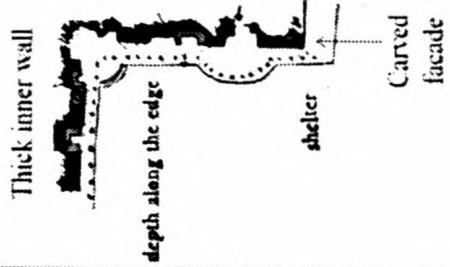
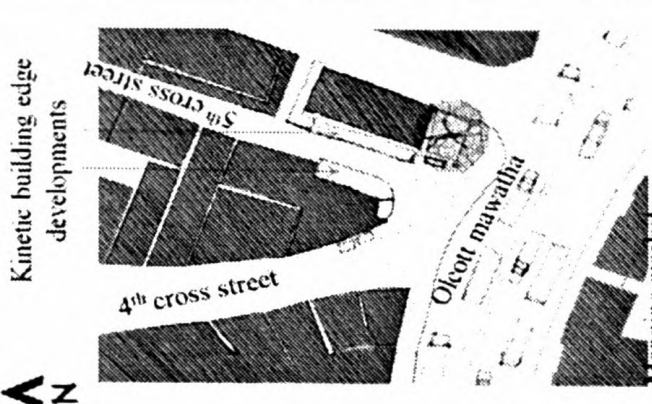
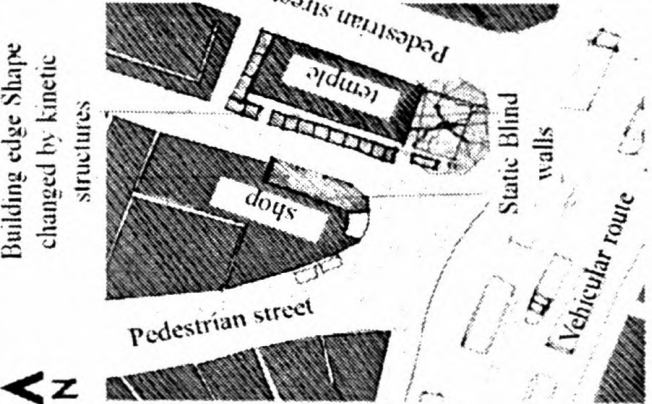
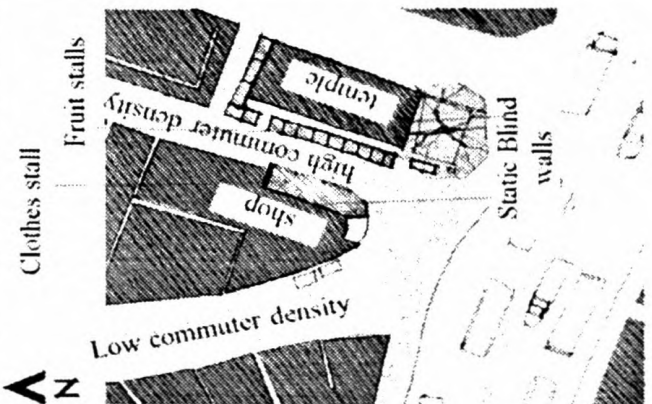
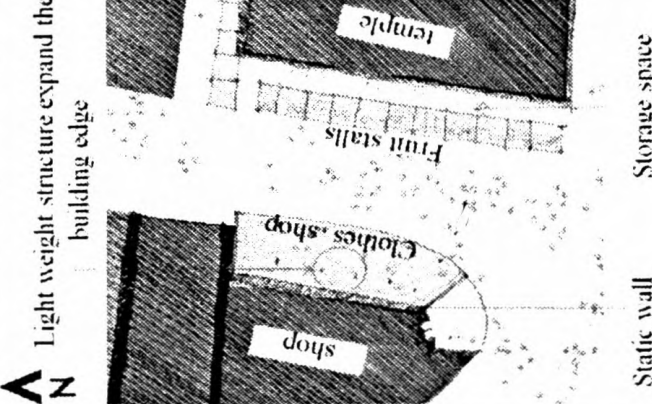
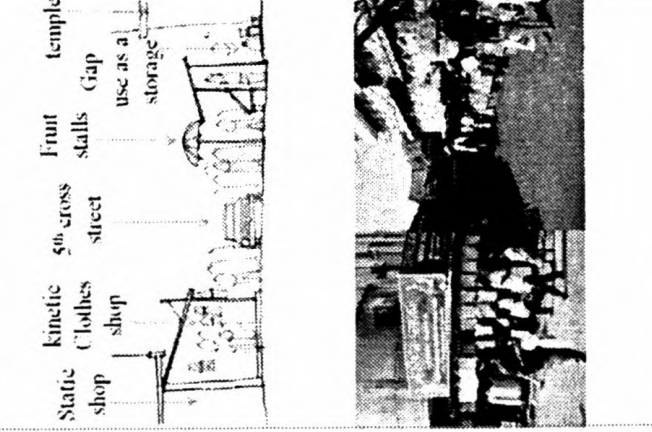
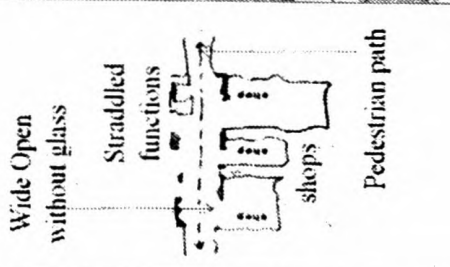
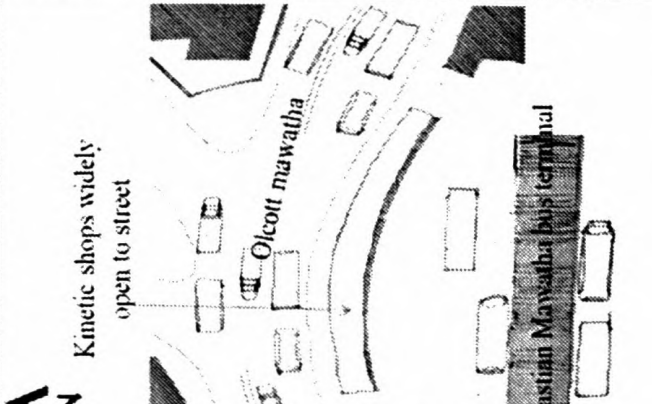
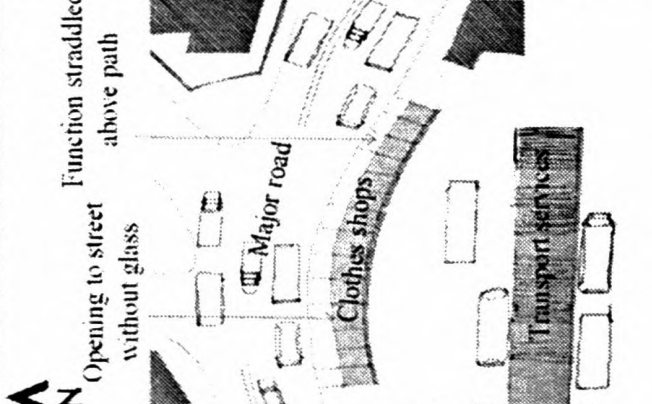
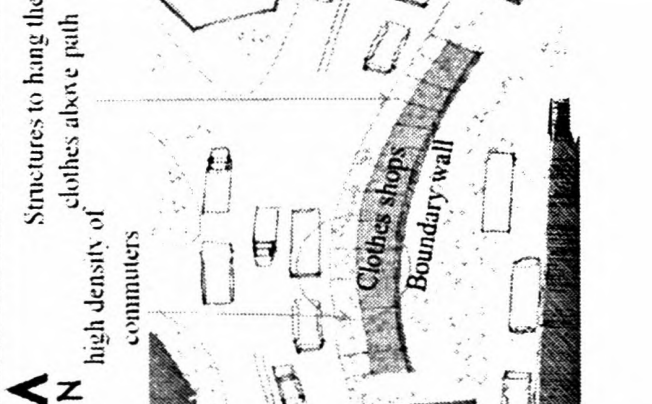
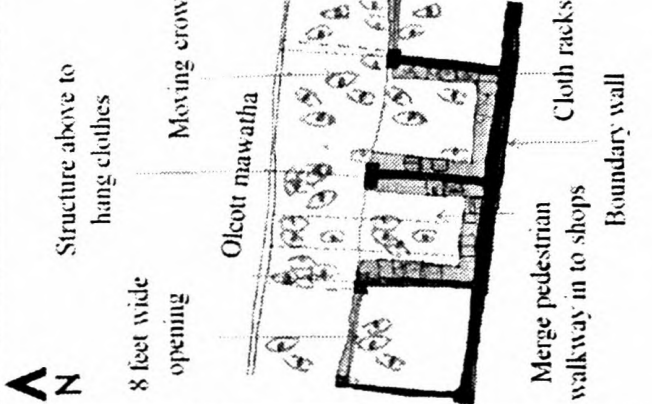
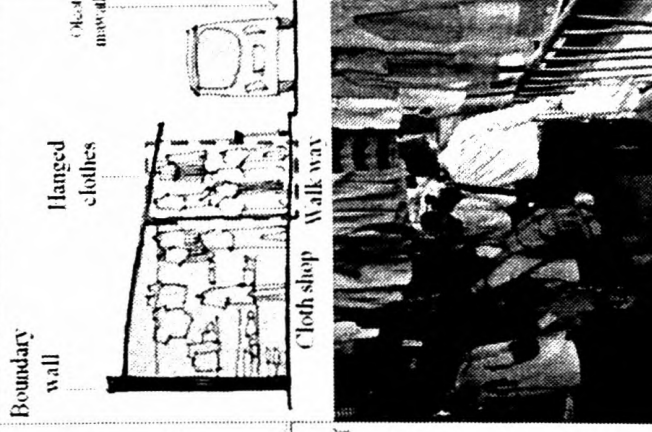
Fig.11 location of selected kinetic pattern in Pettah.

REINTERPRETATION OF CHRISTOPHER ALEXANDER'S PATTERNS IN THE KINETIC CONTEXT OF PETTAH.						
Pattern	Alexander's graphic pattern and essentials	Pettah - generic map of kinetic pattern	Primary elements of kinetic pattern	Secondary elements specific to kinetic pattern	Details of kinetic pattern	Section and image of pattern
01 - Shopping streets.	<p>Major roads Shopping Street Parking facilities</p>	<p>Vehicle parking space Shopping Street Major road Major road Major road Olcott Mawatha Bus stop Railway station</p>	<p>Parking entry Vehicle park Chalmers granaries boundary wall Transport services Railway station</p>	<p>Pedestrian flow vehicular flow Vehicle park Sub roads (pedestrian flow) Bus stop Railway station</p>	<p>Chalmers granaries boundary wall Pedestrians along kinetic edge Vehicular lane Static structures Sub road open to shopping street</p>	<p>Kinetic structures Boundary wall Static building edge Pedestrians Mobile structures Olcott Mawatha</p>
02 - Market of many shops by individual owners.	<p>Market under one roof Columns define inner walkways Basic Column structure Individually developed shop</p>	<p>Pedestrian walkways Kinetic marketplace Olcott Mawatha Bastian Mawatha Bus Terminal Building connect to "manning" market</p>	<p>Basic Column structure Major transport road Bastian Mawatha Bus Terminal Individually developed shops</p>	<p>Inner walkway connect to pedestrian path Major transport road Bastian Mawatha Bus Terminal Pedestrian paths connect : bus terminal and road</p>	<p>opening to inner walkway Boundary wall Inner walkway act as a commuter route Pedestrian path connect : market, bus terminal and road</p>	<p>Olcott Mawatha Bastian Mawatha Boundary wall Lesser pathway Permanent storage Trading space Pedestrian bus terminal</p>



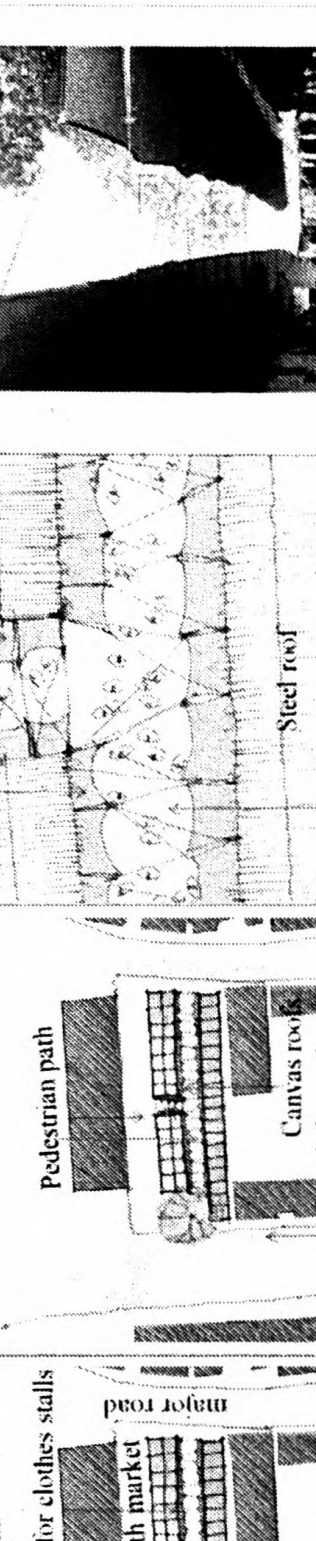
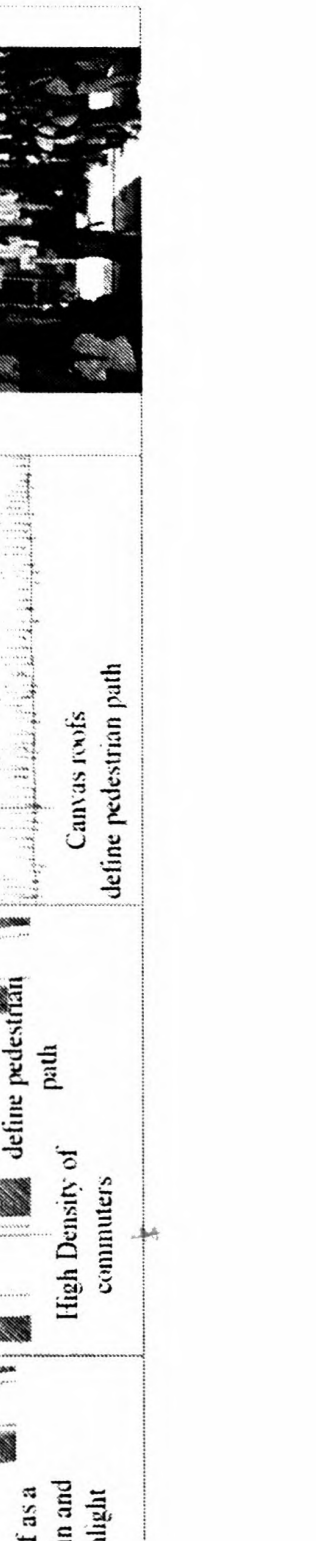


REINTERPRETATION OF CHRISTOPHER ALEXANDER'S PATTERNS IN THE KINETIC CONTEXT OF PETTAH.

Patterns	Alexander's graphic pattern and essentials	Pettah - generic map of kinetic pattern	Primary elements of kinetic pattern	Secondary elements specific to kinetic pattern	Details of kinetic pattern	Section and image of pattern
03 - Street cafe.	<p>Consist short foods</p>  <p>Open to street</p> <p>Cafe fulfills the needs of neighborhood</p>	 <p>Prince street</p> <p>Kinetic street cafe</p> <p>2nd cross street</p>	 <p>Kinetic Street cafe generate to fulfill commuters needs (local short foods)</p> <p>Open to street</p> <p>Easy access</p> <p>Related activities</p>	 <p>Kinetic Street cafe</p> <p>Cushion store static wall</p> <p>Open to Low dense street</p> <p>Separate structures fulfill Needs of attached facilities</p>	 <p>Structure anchor to blank wall of Cushion store</p> <p>Tobacco stand</p> <p>Street as Eating gathering space</p> <p>High dome & tree</p> <p>Fruit stands</p> <p>Expanded street space</p>	 <p>Cushion Attached shop</p> <p>Kinetic cafe</p> <p>Fruit stands</p> <p>Prince street</p>
04 - Food stands.	 <p>Pedestrian street</p> <p>Major road</p> <p>hat or wall</p> <p>smell of food</p> <p>Vehicular to pedestrian interchange</p>	 <p>Food stands</p> <p>Bank shall street</p> <p>Main street</p> <p>Major road</p>	 <p>Easy visible portable Food stands</p> <p>Moving crowd</p> <p>Pedestrian street</p> <p>Mosque</p> <p>Vehicular to pedestrian interchange</p>	 <p>Gap between shops and food stand</p> <p>Mosque (religious functional landmark)</p> <p>Unique foods</p> <p>Commuters route</p>	 <p>Unique foods targeting religious worshippers of the Mosque</p> <p>Mosque (Specific consumer for food stands)</p> <p>Traffic intersection and high density of worshippers</p>	 <p>Food stands</p> <p>Entry to the mosque</p> <p>Retail shops</p> <p>mosque</p>

REINTERPRETATION OF CHRISTOPHER ALEXANDER'S PATTERNS IN THE KINETIC CONTEXT OF PETTAH.

Pattern	Alexander's graphic pattern and essentials	Pettah - generic map of kinetic pattern	Primary elements of kinetic pattern	Secondary elements specific to kinetic pattern	Details of kinetic pattern	Section and image of pattern
05 - Building edge.						
06- Opening to street.						

REINTERPRETATION OF CHRISTOPHER ALEXANDER'S PATTERNS IN THE KINETIC CONTEXT OF PETTAH.

<p>07-Canvas roofs . Alexander's graphic pattern and essentials</p>		<p>Pettah - generic map of kinetic pattern</p> 	<p>Primary elements of kinetic pattern</p> 	<p>Secondary elements specific to kinetic pattern</p> 	<p>Details of kinetic pattern</p> 	<p>Section and image of pattern</p> 
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FINDINGS

A web of seven kinetic patterns was established in the study from macro to micro scale along with the generators of those patterns. Some of these pattern relationships are context, function and culture specific, especially in a commercial context where there is heavy pedestrian movement related primarily to the activity of trading and shopping supported by a strong public transport network. The kinetic patterns respond to the dynamism of the function of the context. Like the most obvious characteristics that define kinetic spaces such as their temporary nature and minimalism in form, the strength in kinetic spaces and patterns is in their locational characteristics and their affect in numbers. The continuity of kinetic spaces in numbers adds colour, dynamism, variety and the specific human scale to the context. These patterns have humanized the city by creating an interesting layer that links the static city with the public realm. They have enabled a dynamic, transformable, convertible layer that is synchronized with natural human behaviour. Though these spaces lack formal aesthetic, and not consciously designed, they have a functional significance to the city and city dweller in terms of the proximity to amenities, scale rhythm and variety in terms of the items sold. The colours, textures and variety enable a dynamic layer breaking the monotony of the static functions.

Shopping in the urban and rural context of Sri Lanka is commonly done in weekly bazaars and fairs in a convenient and accessible location within the town. The convenience of being able to select from a variety of goods at the lowest price lure people to these locations and is a reason for the success of these bazaars. Pettah follows a similar trend in trading goods where a majority of the middle and lower income category of population feels comfortable shopping. Thus, these makeshift structures of kinetic spaces function successfully in the context of Pettah.

The major generators of all patterns from macro to micro scale have more or less been the same, indicating their functional significance in the evolution and stabilization of kinetic patterns in a commercial context. The common generators of the kinetic development in Pettah can be stated as follows,

The transport nodes (Railway station, 3 main bus terminals and scattered bus stops)

Transport nodes- connectivity of the nodes- distance between the nodes- closest access between the nodes

Connectivity to major vehicular streets

The grid network of streets provides easy access to major vehicular streets- access to secondary vehicular and pedestrian streets- Connection to transport nodes

Position of traffic/commuter Interchanges

Mixed vehicular and pedestrian cross roads within the interlocking street network- Land use around interchange (commercial activities)

Specific functional landmarks of the city

(Religious buildings- Mosque, Market places both wholesale and retail, Educational buildings- schools)- Connectivity of the landmarks to transport nodes- connectivity to main vehicular streets encourages a supportive web of informal kinetic activities.

Physical edges-

To prop the kinetic structures- position between main transport nodes, along predominantly pedestrian territory, proximity to traffic/ commuter interchanges etc.

CONCLUSION

The identity and image of Pettah is strongly linked to the kinetic development of the informal commercial spaces along streets of Pettah. The static component appears as a backdrop that directs this development.

The graphic reinterpretation of the working patterns of Alexander's *Pattern Language* is unique to the kinetic context of Pettah. However, though not consciously planned, the framework follows the connections established by Alexander, strengthening their functional and socio-economic success. In the context of Pettah, Alexander's patterns and a derivation of them support the viability and desirability of kinetic developments not only for their functional success but for the character they add to the city and fulfilment of a socio-economic need. As the study suggests, there are other supportive patterns that strengthen the established primary pattern of a place. These are culture specific elements and aspects unique to the exact situation.

Alexander's *Pattern Language* predominantly provides a guide to a design process through identification of a "problem", in a given "context" to provide a "solution". This study looked at the evolved "solution", analysed the "context" in terms of the major generators of the solution, not necessarily to identify a "problem" but ascertain the implicit/embedded logic behind its establishment.

The study introduced a framework specific to a commercial setting in a specific cultural and environmental context. The framework was a development of the generic graphic representation by Alexander, to a place specific, local pattern in the Kinetic context. What was done in this study was to filter through the generic universal pattern matrix established by Alexander to understand the particular kinetic patterns of Pettah. The *Pattern Language* follows a natural law that encourages functional efficiency and natural behavioural patterns. The patterns offer a template to understand and develop specific patterns of specific towns/ cities. This study provides a basic analytical framework that helps develop the place specific patterns of a given context.

It is not possible to establish definitive pattern relationships in a specific place to be replicated in a completely different socio-cultural, climatic and economic context. In the context of "Kinetic developments" identifying the generators (physical/functional) can predict where the kinetic patterns are likely to take place in a city of a similar socio-cultural and economic context. Understanding the patterns that link these generators predict possible ways that the kinetic patterns can evolve and transform within the various parts of the city. Although the *Pattern Language* is about the static city, as Alexander (1977: xvii) states they are deeply rooted in the

nature of things and part of human nature and actions and thus has definite parallels with the kinetic patterns of a city. City/Town design endeavours could understand the parameters/elements /connections that establish kinetic patterns and accommodate them in the city to add colour and dynamism to the context.

What is obvious from Alexander's Patterns is that they are not fixed but set out a methodological framework that could be re-used in a specific context. The *Pattern Language* is not conclusive, but need modification and additional understanding in the applicability in specific contexts. Each context will have its own unique language.

More research by way of case studies on other similar sectors of towns/cities need to be done to establish definitive pattern relationships to permit a common archetypal structure to enable the generic working patterns to develop into something more place specific. The study offers a framework to that end. More research using the framework will enable a discussion on the pros and cons of the framework to develop it to draw meaningful conclusions.

REFERENCES

- Alexander, C. (1977) *A Pattern Language*, New York: Oxford university press.
- Anderson, J .G, (Eds.).(1997). *Sri Lanka. Insight Guides*. 6th ed. Hong Kong: Apa Productions.
1995.Reprint, Hong Kong: Apa Productions.
- Beltrano, V. (2009) Canadian architect, viewed 24 February 2013, <http://www.canadianarchitect.com>
- Broadbent, G.(1990) *Emerging Concepts in Urban Space Design*, London: Van Nostrand Reinhold
- De Silva, R. K. and W. G. M Beumer (1988) *Illustrations and Views of Ancient Dutch Ceylon 1602-1796*.
London: Serendib Publications.
- Greig, D. (1987) *The Reluctant Colonists – Netherlanders abroad in the 17th 18th Centuries*. Netherlands:
Van Gorcum, Assen/Maastricht
- Lubell, H. (1991) *The Informal Sector in the 1980s and 1990s*. Paris: OECD.
- Mehrotra, R. (2006).*Mapping Mumbai :Michigan Studios, Spring and Fall 2005*. Michigan: Urban Design
Research Institute.
- Mehrotra, R. (2008) *Negotiating the Static and Kinetic Cities, Emergent urbanism in Mumbai*. In A.
Huysen(Eds), *Other cities, Other worlds: Urban Imaginaries in a Globalizing Age*. Duke university
press.
- Pearsall, J. (Eds.). (2013). Oxford Dictionaries, viewed 24 February 2013, [http://
www.oxforddictionaries.com](http://www.oxforddictionaries.com)
- Rajapakse, A (2001) *Study of the Urban Environment of Pettah, Sri Lanka, with reference to the Notion of
Place* . [Unpublished Master of Arts (Architecture) Thesis],Department of Architecture, National
University of Singapore.
- Bhatt,R and Brand,J. (2008). Christopher Alexander: A Review Essay. The Nature of Order: An Essay on the
Art of Building and the Nature of the Universe, v. 1: The Phenomenon of Life, *Design Issues*, vol. 24,
no. 2 Spring, pp.93-102.