

# Elements of urban form in defining the elements of collective cognitive map, with special reference to Maharagama, Sri Lanka

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**Abstract**— Cities are dynamic in nature. Image and the experience of the cities are fast changing. People perceive the cities individually. But all inhabitants navigate in the city with use of a cognitive map based on individual cognitive map based on individual experiences. This study aims to derive a collective cognitive map in order to understand urban fabric of a city. Furthermore outcomes of the study are expected to be used as parameters to enhance legibility of urban environments. This study is focused on Maharagama, town as the location of study which has undergone rapid changes in recent past. Maharagama is a fast changing growth centre 15km towards west of Colombo the capital of Sri Lanka. Study uses Lynch theories as parameters to analyse the urban context. An attempt is made to figure out the Paths, Nodes, Elements, Edges and Districts of the study area physically and as per the public perception in order to recognize the features of probable cognitive map.

**Keywords**— Cognitive map, Navigation, Orientation

## 1. INTRODUCTION

Cities are dynamic in nature. Image and the experience of the cities are fast changing. People perceive the cities individually. But all inhabitants navigate in the city with use of a cognitive map based on individual cognitive map based on individual experiences. This study aims to derive a collective cognitive map in order to understand urban fabric. Furthermore outcomes of the study are expected to be used as parameters to enhance legibility of urban environments. This study is focused on *Maharagama*, town as the location of study which has undergone rapid changes in recent past. *Maharagama* is a fast changing growth centre 15km towards west of Colombo the capital of Sri Lanka. *Maharagama* went through rapid changes as a built form during past decades. Garment industry evolved from a small bazaar of to countries most sought after retail and wholesale market. Till December 2018 this city also acted as the central transportation hub connecting the country

in to the city via express roads. Urban form of *Maharagama* area clearly depicts central core which acts as a central business district and peripheral suburbia of loosely knit housing. Built form consists of distinct layers where chronological developments of recent past can be observed and studied. Interconnections of transport, transit, intersections, nodes and landscape with human activities coexist like in any typical city. City structure is radial with a commercial center extending along main arteries stretching outwards along major roads.

### A. Stimuli

Salient feature of above built form is that it is always congested at the center. Most of the peripheral arteries are often lying redundant and inactive. It is a clear indication of absence of integrated movement. Reasons for this occurrence were explored via a study on collective cognitive map of *Maharagama*.

### B. Research Question

How to improve efficiency of navigation within the urban area of *Maharagama* city? It also be understood as study of ways to improve the correctness of collective cognitive maps of *maharagama* in order to enable integrated movement via enhanced legibility of built form

### C. Research Aim

Derive the collective cognitive map of *Maharagama* in order to understand the illegible components of urban form. Furthermore, to identify means to correct legibility of study area. Use the outcome of the study to develop common guidelines to improve legibility of a urban fabric.

### D. Objectives

- I. To identify city characters of *Maharagama* which assists the sense of orientation
- II. Micro contextual analysis of the *Maharagama* streetscape to identify the elements of the legibility
- III. To identify the “mental image/Cognitive map” of the *Maharagama* context according to its users.

- IV. Identify the lapses of congestive maps which causes unavailability of integrated movements causing congestion at city center.

E. Scope and Limitations

Concept of the Legibility is an urban studies and town planning concept. These concepts are unusual for public and difficult to understand. Hence the image had to derived via indirect means such as questionnaires. This may have had an effect on the accuracy of the outcome.

F. Literature review

According to Golledge R.G. Navigation involves the planning of travel through the environment updating position and orientation during travel and in an event of loss. As a human in the event of traveling within a city require sense of navigation and the whole idea of surrounding. A complete sense of whole city, enables easy move within the city.

Animal navigates themselves place to places with use of various techniques. According to many scientific discoveries animals use environmental clues, instincts and genetic clues. According to the National geographic society some migrant birds use the genetic information of their parents. The instincts and environmental cues such as topography, radiation etc.... also are used by birds for migration.

Mental mapping based on memories and experience is also used for navigation. Animals use the metal mapping system for navigate themselves in vertical and horizontal planes. Tinbergen N. (1938) defines that mostly use of the landmarks to identify the location and next movement.

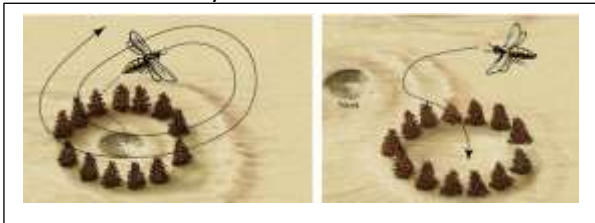


Figure Error! No text of specified style in document.-1 Insects can pinpoint locations they need to find again by learning arrangement of surrounding landmarks Source- Tinbergen N. (1938)

With these findings scientist presumed that human use the same navigation methods and later researched and elaborated that humen also use methods such as Path integration, Sun compass and Landmarks: cognitive maps. But in human navigation is much more complicated than animal navigation. As human we are able find the way even with less visibility, inexperienced locations and featureless environment. Yet the legibility of the city always improves and easiness of navigation.

Several studies suggest that (Gallistel, 1990; Whishaw and Wallace, 2003 Learning and Memory: A Comprehensive Reference, 2008) Path integration is the

method of calculating and update position by monitoring its trajectory in relation to start location. The successive position in relative to starting point is accounted by the length and directions of each segment of displacement. The length and direction calculated by the external and internal information. Early researches indicated that path integration done without forming enduring representations of the surrounding.

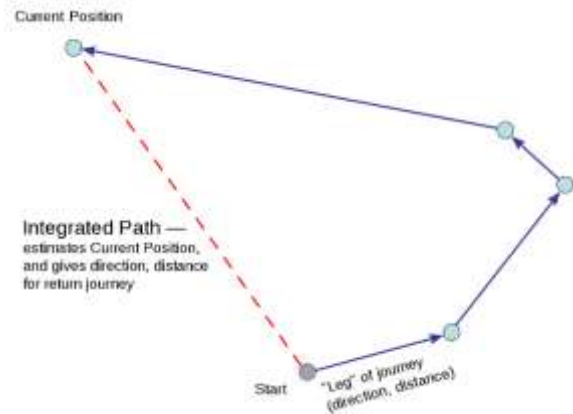


Figure Error! No text of specified style in document.-2 Path integration sums the vectors of distance and direction travelled from a start point to estimate current position start Source- Wikipedia

But later, they found that humans and some animals use the scene recognition for understand the environment and to navigate. They use the landmarks or the visual support of the surrounding to generates the dynamics of the changing locations. in the city, context of urban environment supports to provide understanding of the location for people to navigate.

The next common method of navigation is the mental mapping of the observer. Metal map is the collective data of experience, images, and instincts. Cognitive mapping was introduced by Edward Tolman in 1948. This term is used in wide range of research areas for understanding human behavioral psychology. According to the international Encyclopedia of the social & Behavioral Sciences, (2011) Cognitive mapping is an individual's knowledge about the spatial and environment relations of geographic space. Generally cognitive map is measured by the sketch drawn in a paper/ material.

Cognitive map or a model can be stretch to over an imaginable scale. In the mind cognitive map isn't just a map; it's a collection of fragmented images and memories. Generally, the idea of cognitive map is similar to a three dimensional map. Yet the fragments are described with the dynamic information. According to Protugail, Juval (1996) the cognitive principle structured with the two main questions.

- I. What properties of the environment are represented
- II. How are these properties represented?

Cognitive mapping was used by Kevin Lynch in his research on Image of the city 1960. He used this system to recognize the structure of city, and concluded that city structured with Paths, Edges, Nodes, Districts and Landmarks. This concept is supported in many ways urban researchers.

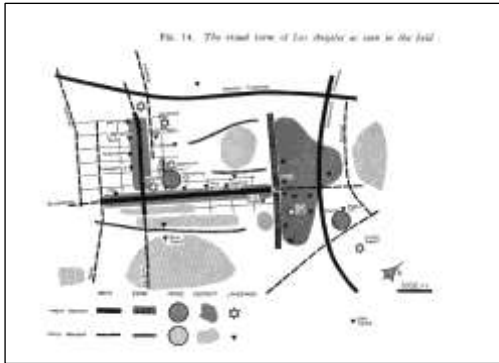


Figure Error! No text of specified style in document.-3 The Visuals from Los Angeles as seen in the field- Cognitive mapping  
Source – Lynch, Kevin (1996)

There are many definitions and concepts to understand the City. City is urban space more of a living organism of modern day culture. Definition of city is described as a large human settlement with extensive system of housing, transportation, sanitation and utilities, land use and communication Wikipedia. To understand the city, we have to overcome the evolution of urban space or so called city.

City has developed to support primary uses in villages. Small village centers developed into small bazars or market places with the development of trade economy. With this city grow into larger areas with trade, residence and utilities. With the civilizations city develop with political and administration, trade and economy and cultural hubs for over generations. Later with the industrial revolution city grow into industrial areas with the trade. After massive environmental and health issues, industrial areas moved aside on Boundaries of cities. With the modern day developments city structures has different outcome according to the ability of the city. Some cities developed onto trade cities some as historical and cultural and some into industrial cities. (Lewis Mumford, the culture of cities)

Yet, the concept of city has been changed over the time. There are some common concepts that define city. Mostly commonly used is the Kevin Lynch definition of city and image. That was city is the multi-purpose, shifting

organization, a trend for many functions, raised by many hands and with relative speed.

William H. Fery and Zachary Zimmer explain the city with the term of urban area. A definition of urban based on non-agricultural functioning captures a different dimension than those based on density and population size.

City also can be defined with the support of the elements of it. The most common dividing are lynch work and common urban study analyses. According to lynch (1960), he divided city to five elements to understand the legibility of the city. There are paths, nodes, edges, districts and landmarks. These elements support to understand the structure of the city and to navigate. Each of these elements can't be isolated and each one is overlapped within other to create the whole. In common urban study analysis, urban elements define as buildings, public spaces, streets, transports and landscapes. With these definitions city has multiple layers and they inter-acted each other.

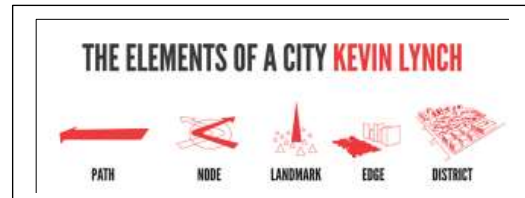


Figure Error! No text of specified style in document.-4 illustrations of City Elements  
Source - Lynch, Kevin (1996)

Kevin lynch approach to understanding the city has introduced the concept of legibility. Concept develop within the citizen's long associations with city, that soaked in memories and meaning. This is concept of visual clarity. The ease of recognizing and organized the coherent pattern, in the urban context eases of identifying the parts of city and grouping it into an overall pattern. With his research content he concludes that to create and build up the legibility, the image or the mental/cognitive map supports. With his later chapters he describes the formulations of city form in context to legibility. To over view the idea of legibility he suggestions that design the paths with support of other four elements. Creating patterns, contrasting districts, create destinations and collective points by landmarks and nodes, enhances the Boundaries to define city line were some. Idea of create legibility is to enhance the elements characteristics and image

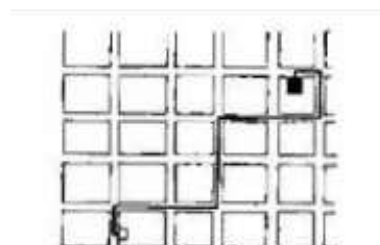


Figure Error! No text of specified style in document.-5  
 illustrations of way finding  
 Source - Lynch, Kevin (1996) Image of the city

**2. RESEARCH METHODOLOGY**

The theoretical knowledge from the literature review used as a guide to develop tools to achieve aims of the study. The urban form of study analyzed to form a potential best fir cognitive map.

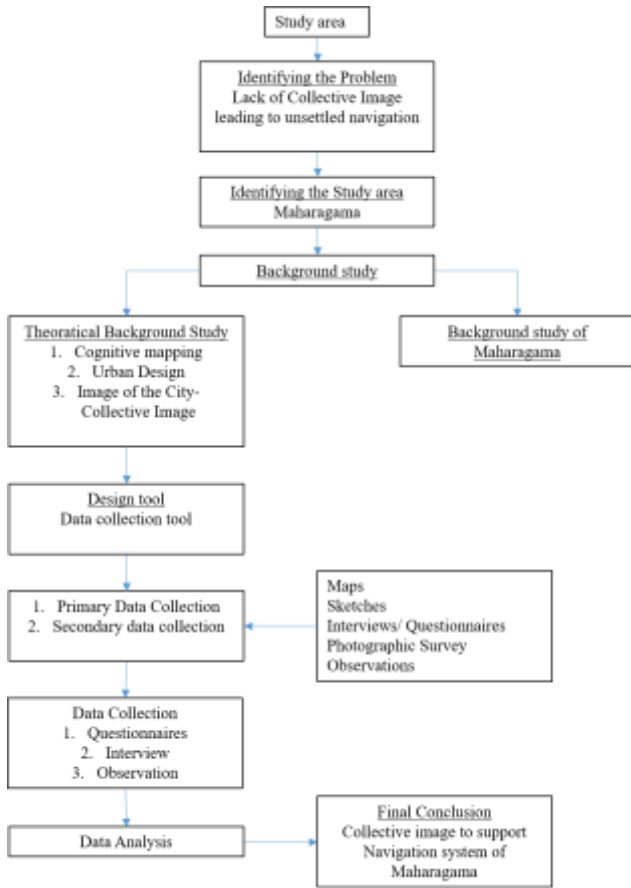


Figure 2-1 Methodology  
 Source- By Author

**A. Introduction to Location of Study**

Administrative area of *Maharagama* consists of sectors as shown in map billow.



Figure Error! No text of specified style in document.-2  
 Maharagama Divided to districts as geographical information  
 Source- Google Earth- edited by Author  
 The area is bordered by water bodies (*Meda Ela, Borelesgamuwa* Lake) and vegetation (predominantly paddy). All sectors connect to central business area. At the time of the study this city has been a transportation hub and even today functions as a hub for garment industry. Socio culture of the city is strong. Majority of population are ethnic Sinhalese with middle-income economy higher education levels.



Figure Error! No text of specified style in document.-3  
 Inward swing Vegetation pattern around Maharagama  
 Source- Google Earth- edited by Author  
 The city center is landmarked by clock tower, old supermarket and market place. Most of the significant trading companies are settled in High-Level road. Trading continues to “Delkanda, Nugegoda” to “Pannipitiya , Kottawa”. Sub-urban resident zone located away from the zones of trade.

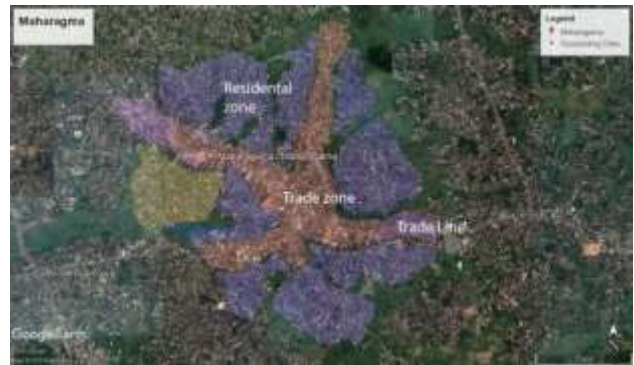


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 Zoning according to land use  
 Source- By author

**B. Method of Data Collection**

A descriptive analytical method is applied to this research. Initially, the theoretical background on the subject studied. Selected theories of cognitive mapping and navigation applied on *Maharagama* physical structure and possible cognitive structure. Questioners and observations were targeted to understand the users’ image of *Maharagama* and their navigational pateerns.

Questionnaires are structured based on Kevin Lynch's elements of city. Elements were pre identified by authors with given opportunity to participants to add.

Physical structure was studied by the observations and geographical information, which includes roads, buildings, public and common spaces, vegetation and water bodies. Commonly used areas, pathways and limits of the city were identified to figure out the navigation system. Analyses of questioners narrowed down the legible elements of *Maharagama* that can be support the navigations.

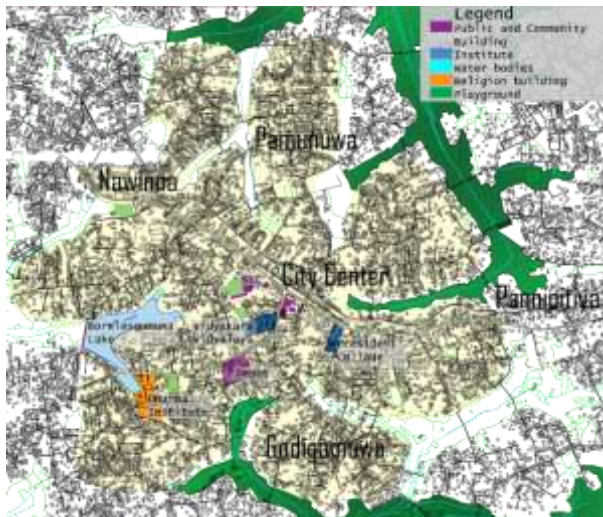


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Physical layout of the Maharagama Including Community, Public, institute buildings and water Bodies, Green areas  
Source – By author

To build the cognitive map of *Maharagama*, effective social factor were also considered. People use many urban elements to support their movements in their everyday life. Analyzing the social factor helps to understand the habitual usage urban elements by society.

Social Factors		
Grouping	Purpose of data collection	Selective method of research/data collection
People (Community)	Population density Precise values/ interests of city	Interviews Questionnaires Observations
Activity patterns	Population density over activity hierarchy	Density maps Activity maps Behaviour observation)

Table Error! No text of specified style in document.-1  
Measuring Social Factors

Social Factors		
Legibility	Paths Nodes Edges Districts Landmarks	Mapping Observation Questionnaires and interviews
Visual Appropriateness	Elevations and Facades Support to open spaces Composition with other	Sketches Photographs

Table Error! No text of specified style in document.-2  
Measuring Responsive Theories

Residents	1. Ancestral residents 2. Temporary residents
Traders	1. Daily consuming products suppliers 2. Garments suppliers 3. Food suppliers
Travellers/ passengers via city	1. Daily travels 2. Occasional visitors
Customers/ consumers	1. Daily consumers 2. Others

Table Error! No text of specified style in document.-3  
Community Grouping

Study area is spontaneously developed in to dormitory town and a satellite city. Because of un-planned nature of development, city congests with diverse needs of its occupants.

### 3. ANALYSIS PHYSICAL FORM

For the analysis, Lynch's Theories of Image of the city, Alexcender C, (1977) of A Pattern language, R.G. Golledge (Ed), Way finding Behavior: Cognitive Mapping were used. Questionnaires were distributed among casual observers. Observations were made at selected times of the day. Finally based on final narrated factors I analyzing the Maharagama city.

A. *Identification of edges of the city and portals*  
Cognitive understanding on city limits and the connections of paths and to next city or town.

1. Borlesgamuwa lake: Majority identified *Borlesgamuwa* lake as one of the limits which is a dominant water body visually permeable.

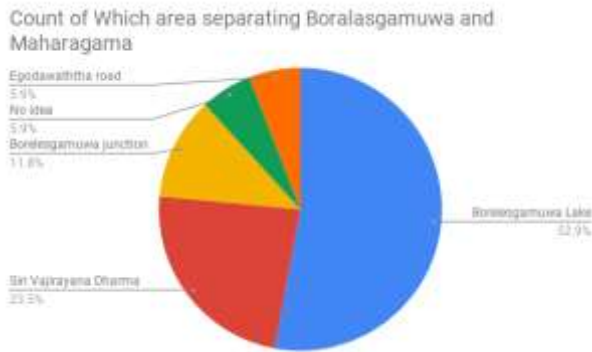


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Questionnaire and Interview Response for the edge of  
*Borelesgamuwa to Maharagama*  
Source- By Author

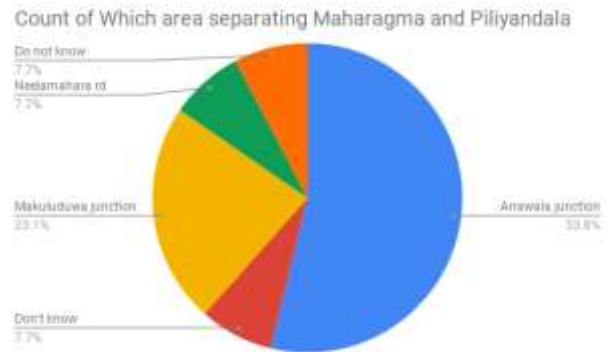


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Questionnaire and Interview Response for the edge of  
*Piliyandala to Maharagama*  
Source- by Author

The building density is declining towards *Borelesgamuwa* from *Maharagama*. lake stands as the only prominent landmark demarcating a cognitive boundary. According to Lynch (1960), edge is liner element which is not a path that breaks continuity. paths define two regions on either side. An edge is commonly perceived easily when there is water, wetland, terrain change or a wall. *Borelesgamuwa Lake* is big in scale, visible and by the side of the road. Though it is not contain qualities of an edge it is a easily identifiable symbolical element



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*Borelesgamuwa Lake and Siri Vajirayana Dharma institute*  
Source- By Author

2. *Edge of Arawwala to Maharagama*– *The paddy field and Arawwala junction*: *Maragama- Piliyandala road* crosses *Arawwala paddy field* which large in scale. It is notable, legible and defines an edge. Yet it is not recorded as an edge by participators of survey. 50%+ declared *Arawwala junction* as the edge of town. This node is significantly popular and possesses a historical importance in socio political landscape



Figure Error! No text of specified style in document.-10 *Paddy Fields around Arawwala and Maharagama South*  
Source- Google Earth Edited by Author

3. *Edge of Pannipitiya to Maharagama- junction of bypass road and high-level road*: Large “Bo” tree dominates as an element at the node. These tree is culturally significant due it’s sacredness to Buddhists who are the majority of the neighborhood. On either side of the node building morphology changes from moderately fine grain to coarse grain.



Figure Error! No text of specified style in document.-11 *By Pass road to Pannipitiya and Colombo- Batticaloa road*  
Source- By Author

4. *Edge of Pamunuwa to Maharagama*: There are two edges that can be found in this area. One is physically significant and other is sociocultural. The physical Boundary is the wetland alongside *Thalawathugoda to Maharagama road*. In addition an apartment building is placed as a landmark element at this node.



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Pamunuwa- Thalawathugoda Junction and wetland.  
Source- by author

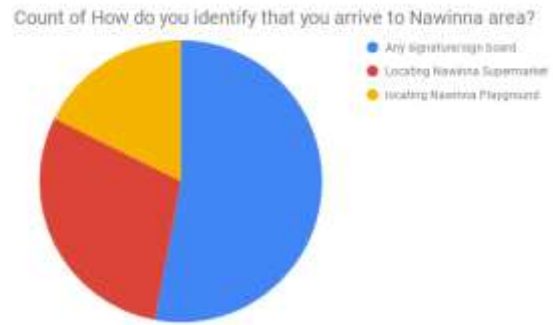


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Questionnaire and interview response on identification of the edge at Nawinna to Maharagama  
Source- By Author

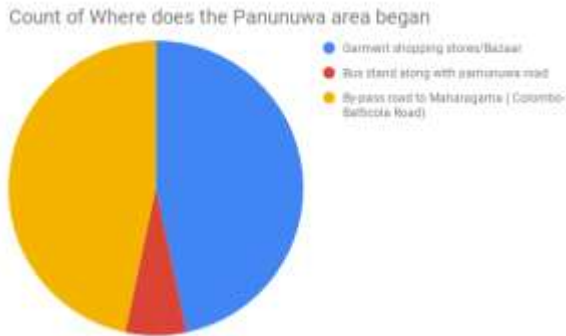


Figure Error! No text of specified style in document.-13  
Questionnaire and interview response for identification edge at Pamunuwa  
Source- By Author

Bazar activities at street stretch along Pamunuwa road and diminishes towards *Thalawathugoda*. Pamunuwa garment bazar start with bypass road that has been the main road previously. Commerce thrives at these streets. The present Boundary stands in junction of Thalawathugoda – Maharagama and it was described as part of maharagama.



Figure Error! No text of specified style in document.-14  
Pamunuwa Garment Bazar  
Source by Author

This edge cannot be defined clearly by the means of change in character or pattern. Yet the pattern growth towards the Colombo can be identified along the way.

This edge is defined by the locals based on folklore. On either side of the node building morphology changes from fine grain to coarse grain . “Arpico” Super market is considered the last building of Maharagama. This building is low rise, large scale occupying at least 500 meters of street front making it noteworthy. On the other side of the road a playground (*Nawinna Ground*) is placed visible to the road. People agreed to the pose of the built mass as an edge.



Figure Error! No text of specified style in document.-16  
Nawinna Arpico super market and Play ground.  
Source- by author

##### 5. Edge of Nawinna to Maharagama:

###### B. Identification of paths the Paths of Maharagama

- Configuration of next movement
- Understand pattern, structure of the city

Maharagama is connected to nearby cities of Colombo through the as discussed above via four main roads. They are High-level road, Dehiwala road, Piliyandala road and Pamunuwa road. At the time of the study central bus terminal of highway busses going to outskirts of the country were also placed at this city. High-level road is the main artery housing low-rise commercial buildings. Pamunuwa road has developed to a garment-bazar. This area has many alleys low in scale but active. Some are interconnected while other interconnects creating a network. At the interviews these alleys are found out to be not familiar. Yet the concentration of the commerce at this

bazar is making it possible to be stretched outwards, expanding the area.

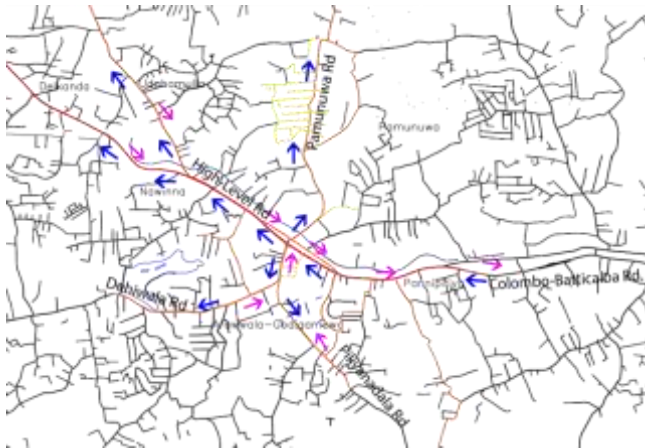


Figure Error! No text of specified style in document.-17  
Basic Road Connection and Vehicular Movement (not for scale)  
Source- by author



Figure Error! No text of specified style in document.-18  
Questionnaires responses -Popularity of Roads/Paths around Maharagama  
Source- By Author

### 1. Pamunuwa Road

Pamunuwa road is one of the oldest functioning roads in Maharagama area, that is popular for garments. This road developed into a street bazar over the time. It's still developing and expanding further outwards. Road and its 'façade is defined by two components. At the edge of the road small scale temporary structured commercial kiosks are eating in the road in front of formal medium and low-rise buildings. These formal buildings are occupied by small scale garment factories, branded outlets and large scale garment shops. Path is almost liner, yet there are some nodes located without disturbing the flow of the main path. This also affect the users since legibility of nodes are less evident. dis-orientation of connections are also noted. Interface between street edge and the façade fusing together gobbling the pavement. This transforms the road to a busy congested arcade. Most of the users expressed that they are feel uncomfortable moving along this path. A permanent traffic-jam is noted at functioning ours of bazar .



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Pamunuwa road its' Surrounding  
Source- by author

### 2. High-level Road

High-level road was developed in early 1950s. Subsequently it has become one of the significant commercial arteries of Colombo. Around Maharagama city area, façade is predominantly low rise and vivid . Most of the users use commercial local landmarks to identify their special orientation. The path is almost straight and liner. Most of them define the road with low rise large vivid facades and large width road.



Figure Error! No text of specified style in document.-20  
High-Level road its' Surrounding  
Source- by author

### 3. Dehiwala- Piliyandala road

Users mostly define this as suburban road with small vivid façades. Connection between façade and road continues and the characteristically calm compared to other roads.



Figure Error! No text of specified style in document.-21  
Dehiwala-Piliyandala road its' Surrounding  
Source- by author

Close to city center pedestrians are prohibited from crossing the roads in order to avoid traffic congestion. Pedestrians expressed the discomfort on this issue. Because of this permeability and legibility of the city center is diminished considerably. This phenomenon is one of character that determines the legibility of the city that most of the people tend to create crossways near a landmarks and physically underlined areas.





Figure Error! No text of specified style in document.-22  
Basic Road Connection and Pedestrian movement and  
Crossways in Central City area (not for scale)  
Source- By Author

Crossways ,shortcuts and alleys are established over the years in this area. Most of the crossways connected to the main road were established in between side spaces of buildings. No specific landmark can be found in this road nether claimed by the participants of the study .

#### C. Identification of The Landmarks

Landmarks are helpful in

- Identify the current location
- Enhance the appearance and identity of location or city character.

Landmarks are the most common aids in navigation. Landmarks can be identifying as point reference where the observer can't access, external and commonly defined as a physical object. Landmarks are used in navigation as a points of reference while moving from space to space. Sometimes spaces also are referred as landmarks.

Identified landmarks of the Maharagama are mostly the popular commercial buildings. In addition there are huge old trees alongside the roads such as Bo trees at junctions. Clock towers also are dominant landmarks at *Maharagama*. They stand in the center of the main junctions. Tall linier clock towers contrast from surrounding buildings. Yet outcome of the surveys proved that this dominance over the surrounding isn't high as expected.

Other significance landmark is the Sambundha Jayathi Pillar located in Dehiwala -Piliyandala junction. This Landmark defines the location. Structure is identifiable yet less noticeable in the disorderly context. Hence the impact is proven less as anticipated



Figure Error! No text of specified style in document.-23  
Landmarks in Maharagama  
Source- By Author

According to the survey and observations most of the people tend to identify buildings than monuments. According to feedbacks popular name and genres are easily remembered. Furthermore facades are claimed contrasting to one another making them easily identifiable. NOLIMIT shopping sign, ARPICO shopping complex are explained as examples. Landmarks were mostly preferred based on colour and contrasting nature of the facades.



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Local Landmarks around Maharagama  
Source-By Author

#### D. Identifying the Nodes

Nodes are intersection or junctions of the city. Nodes mostly identify as junctions in the common context.

- To understand the next movement and direction
- Understand the paths and its direction

In this context also junctions are the only nodes that could be found. Most popular junction is the clock tower junction connecting Dehiwala road to high-level road. At this Junction clock tower is the most significant landmark. On either side of the city two main junctions are placed at high-level road where it meets Colombo – Batticaloa old road. These junctions function as directional nodes along the high-level road. The next significance junction is the Dehiwala- Piliyandala junction. This junction is also highlighted with the monumental structure. So the directions and identifying the areas are considerably easy. Some of the junctions like Pamunuwa Road-Colombo Batticaloa highway road junction mostly defined by the two character of both directions/road that are connecting. Pamunuwa side junction emphasizes the garment bazar while the main road consisting with busy heavy traffic. Those were the four main nodes that function in central area of the Maharagama.



Figure Error! No text of specified style in document.-25  
Nodes in Maharagama(not to scale)  
Source- by author

1. Analysis of Central junction of Maharagama.



Figure Error! No text of specified style in document.-26  
Central Junction of Maharagama with the traffic pattern  
Source- by author

Central junction is surrounded by the high density population and compact buildings. Most of the buildings are up to 3-4 floors. Central Junction has the highest traffic compared to other junctions due to movement overlapping. The land mark built feature of this junction the Clock tower. Around clock tower neighborhood can be divided to three main areas according to their built character.

2. *The Bo tree junction* : It creates two-point directions along high-level road. To right high-level road connecting to the clock tower junction, that navigator will determine his next move by the landmark- Clock tower. Divided to left road connects to next Pamunuwa road junction. Both directions have different built characters that can be identified clearly. The Colombo- Batticaloa highway road connecting to the Pamunuwa junction which characterized by the fine grain pattern and diverse facades. These characters assist onlookers to identify paths

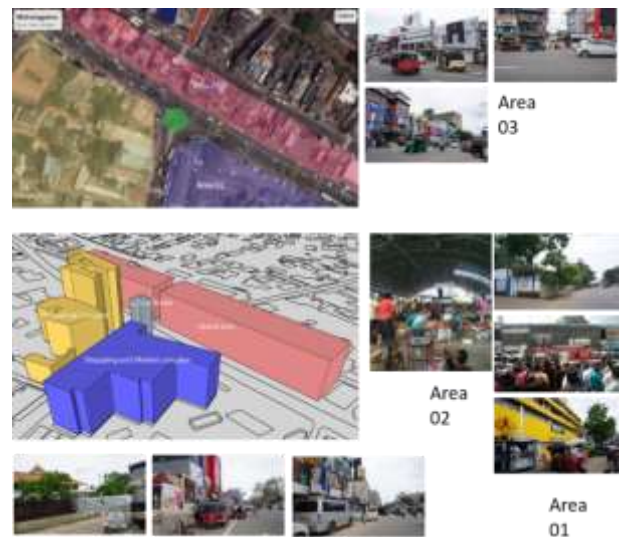


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Central Junction of Maharagama divided to areas  
Source- By Author



Figure Error! No text of specified style in document.-28  
Junction 1 in Island area with the traffic pattern  
Source- by author

3. *Junction connecting high-level road and Colombo Batticaloa road*: The two roads mostly share same charters yet the high-level road can be determining with landmark of Sathara building, which is 6-7 floor height and President College long façade wall.



Figure Error! No text of specified style in document.-29  
Junction 2 in Island area with the traffic pattern

Source- by author

4. Pamunuwa junction, Maharagama: Pamunuwa junction located with the Colombo -Batticaloa highway road and Pamunuwa road. At the junction two roads shares fine grain character in built pattern along with high density population and vivid façade of one floor height. Street bazaar end continually streeches towards the Thalawathugoda . At the junctions two nides can be identified. Both nodes are having a constant traffic because of movement along the street bazaar. Second is more significant with a railway crossing. Because the node 1 is the main junction it doesn't shows different characters towards different directions. With the traffic movement there are only two paths, one leading to Pamunuwa road and other one leads to to High- level road. Both path shares the street bazaar.

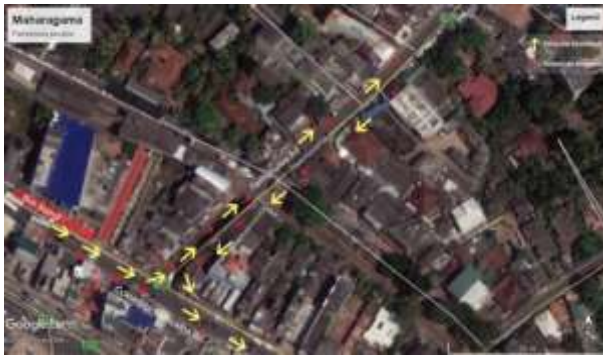


Figure Error! No text of specified style in document.-30  
Pamunuwa junction in Island area with the traffic pattern  
Source- by author



Figure Error! No text of specified style in document.-31  
Pamunuwa junction in Island area with identified Nodes  
Source- by author

5. *Conclusion on Legibility of Nodes and its Surrounding:* From the analysis the junctions and its 'surrounding, the area between Udahamulla-High level road, surround of island area and some junctions along the Pamunuwa road require more enhanced legibility. Island area is much characterized area, but compared with it and to its supporting areas their

charters mush of the same. Most of the characters are high density compacted building facades with vivid facades. This charter only defines the high-level road. Because of these situation areas around high level road don't contrast from one to another. The question is how to separate these areas from one to another without only using clock tower as a landmark. Island area in central, is already defined with the isolated building facades and its location

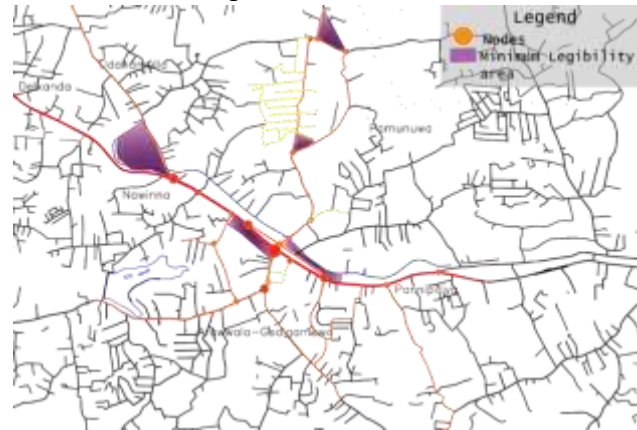


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Identified Minimum Legibility areas around Maharagama  
Source- by author

#### 6. . Analysis of Questionable Nodes and Areas

*Clock tower junction :* Clock tower junction is an active node without a proper identifiable action, yet this node can be understood as the central public service node due to public shopping, market complex and Municipal council of Maharagama

Theory of creating Patterns in urban spaces is discussed by the Pattern Language by Alexander, Christopher (1977)

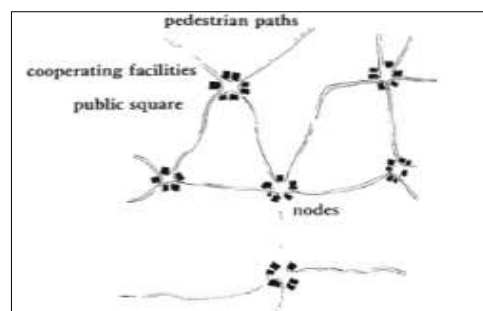


Figure Error! No text of specified style in document.-33  
Theoretical Diagram on Activity nodes and its 'Function  
Source- Alexander, Christopher, at all (1977)

Area with Bo tree and old shopping complex – defined charter is the similar façade and open veranda free space in between road and building.

Later the street marketing has invaded the space in between buildings and road. subsequently these are

developed to fine grain spaces. it's worth studying following options to resolve the issues

- Clearing the street market from the pedestrian pavement
- Develop the shopping and old market complex with the veranda
- Clear out open space and develop the pedestrian movement

Area with the Youth center: defined character is the youth center only. Yet Low-rise building doesn't interact with the pedestrian movement.

*Udahamulla- Nawinna Junction:* This junction leads to Delkanda and Udahamulla. The junction can be identifying with the large Bo tree in the middle of the junction yet the path leading to Udahamulla is less emphasized. Udahamulla is mostly popular for its railway station and as a short cut to Nudogoda.

To resolve the contextual issues following can be considered.

- Clear the façade of node and give a clear distinctive destinational orientation towards the Udahamulla

As per Lynch's path designing in the Image of the city.

- a. The path should support this perceptually by strong termini, and by a gradient or a directional differentiation,
- b. A straight path has clear direction, of course, but so does one with a few well-defined turns close to 90 degrees, or another of many slight turns which yet never loses its basic direction.
- c. Any visual exposure of the path, or its goal, heightens its image. A great bridge may do this, an axial avenue, a concave profile, or the distant silhouette of the final destination.
- d. Intersection itself makes a vivid image and if the lie of the two paths with respect to each other is clearly expressed, then the observer can build a satisfactory structure.

According to Image of the city, for increase of the navigation and sense of whole, path can be design along with some significance landmarks that help the users for clear their orientation. Also this road has residential background which can be enhance as it is. Most of the turning points in the road are unexpected which can develop into clear turning point almost angle of 90°.

#### E. Identifying Maharagama Districts and its Boundaries

Purpose of Understanding Districts is

- Generated physical and mental Boundaries for small scale organizations/neighborhood
- Creation of neighborhoods for physical and mental health

- Identify the city dividing patterns to set some Boundaries for developing taking place in residential areas.

When considering Maharagama city there are two main districts dividing sub districts. They are the commercial district at the central area of the city and residential area are outer ring of the city.

There are two sub shopping districts, one is the popular shopping brand shops and other one is the low cost garment and goods centers along the Pamunuwa and Colombo- Batticaloa road.

Next commercial district is located along the high-level road. Building pattern has the course grain pattern with compacted building formulation, yet some of the lands are left behind unengaged overlooking the potentials. Creating a shopping web in this area will continue the character of commercial attire. Pattern Language suggests identifying the existing shopping web and the movement of potential consumers and finding the gaps of the shopping web. Suggestion leads to develop these gaps with support of strong commercial catchment basin spaces.



Figure Error! No text of specified style in document.-34  
Catch Basins and Potential sites around Maharagama  
Source- by author

Some of the developers has understood this potential and already began to develop. E.g.: Cool Planet and Ximi Voguge shopping centers. Even though, the island area of central city is under develop causing scattered unattractive façade.

The outer ring of the Maharagama is developed as a residential district. These districts share the same common problem, which is less organization. Most of the observers had claimed their ability identify the residential area due to absence of commerce. Yet, claimed the spaces felt like they belong to main road. Mostly this may cause by the heavy traffic flow. Moving further from the center, residential space mostly defined by the 1-2 storied building height houses, low traffic, vegetation and some public gathering spaces. It was further noted that the

paths around residential areas are dead end roads with no interconnections.



Figure Error! No text of specified style in document.-35  
Dead end paths around Maharagama  
Source- By Author



Figure Error! No text of specified style in document.-36  
Built-up short-cuts and alleyways around Maharagama  
Source- by author

### CONCLUSION

Maharagama is city on liner development connecting surrounding cities. Paths at connects in circular manner creating circular grid. As example, Pamunuwa road connecting to high-Level road with Waththegedara road and Udahamulla road, High- Level road connecting to Dehiwala road by Elhena road. In Maharagama Pamunuwa is only one high characteristic district. But the area between Nawinna to Pannipitiya along High-Level road also has the quality of city center, like public building, community and college building and commercial buildings.

Mostly the building facades dominate over the paths. As per the outcomes of the study, paths area less visible and architecturally unappealing to public. Users can't identify the path as it is example like Dehiwala- Piliyandala road and building façade of Market. Nodes are identified, yet the directions of most nodes are characterless. One of the significant findings is Maharagama lacks Legibility of built-form due to lack of landmarks. Existing landmarks are less

visible. Users of Maharagama mostly use commercial buildings to define their locations. Therefor the contribution from the built-form to assist navigation is less.

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