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## **THE IMPACT OF LANDSCAPE CHARACTERISTICS OF URBAN POCKETS ON VISITORS AND RESIDENTS**

*A study with reference to Kandy City*

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### **Abstract**

The urban pockets can be identified as an important component within the city. There are two main categories of users of urban pockets; the residents and the visitors. The objective of this study is to investigate the impact of landscape characteristics of urban pockets on these two main user groups. According to the salient perceptual dimension, the individual preference of landscape is affected by three characteristics; landscape, personal and contextual. The study focuses only on the landscape characteristics, which can be divided further in to two; Content-based characteristics and spatial configuration characteristics. According to the Kaplan's information processing theory, the coherence, complexity, legibility and mystery which are components of spatial configuration characteristics, make a significant impact on the user preferences. Kandy, one of the main cities of Sri Lanka has a combination of natural, built and the historical characteristics. Three urban pockets of Kandy city were selected for the case studies; Lake round, Market front and Dalada veediya. Literature review, observation, mapping and questionnaire survey have been carried out in both pilot and field studies as data collection tools, for a sample of 15 persons for each location. The findings of the study lead to identify the patterns of user preference. The spaces of urban pockets with higher level of Coherence and legibility, communicate more with the visitor. The areas with moderate level of complexity and mystery also attract the visitor more. The extremes of high and low levels of complexity and mystery is more related to residents. The study also identifies that the separation of visitor and resident is best achieved not by geographical demarcations, but by the frequency of visits.

**Keywords:** *Landscape characteristics; Landscape preference; Individual preference; Visitors and Residents; Urban pockets.*

### **1. Introduction**

Simplest definition of Urbanization is that, it is the process of making a particular area more urban. That refers to the population shift from rural areas to the urban which gradually increases the figure of people living in urban area. This process has become the reason for the formation of towns and cities.

The development process of cities inevitably produce pocket spaces, between buildings, between ground levels, and along the streets within cities, which are defined by the placement of infrastructure in to an existing urban fabric. As these spaces are formed within the cities, the users of the cities vary from the community who live there to the visitors who visit the city from far away. This implies that the usage of the places differs from each other with respect to the community who use it. In this case they can be identified as residents and visitor. The reasons for this varied preference of landscape preference among urban pockets will be discussed and studied under this topic.

#### **1.1 NEED OF THE STUDY**

As a tourist-based city, Kandy attracts a higher number of local and foreign visitors. Apart from that the city is used by the residents of the city and the immediate sub urban areas daily for their needs. As both the above places; where the visitors attract and where the needs of the general public lays, are both connected and located near to the city centre, the urban pockets that cater for them has an importance

and needs attention. Considering the current situation in Kandy city, few urban pockets can be identified, which are formed mainly with the interests of the people. The user percentage (residents and visitors) of these places varies due to the characteristics of those particular places. Identification and the understanding of the above factor has an important role in the fields of landscape architecture and urban design.

## 1.2 RESEARCH QUESTION

The research aims to find how the landscape characteristics of urban pockets impact the footfall of visitors and residents comparatively.

Landscape characteristics with the natural, historical and religious backgrounds attracts people to the city from outside of Kandy. These users have created the current urban pockets according to their preferences, through which we identify a difference in footfall of residents and visitors. The factors which cause the above variation is very important in the process of development in such cities for formation of spaces. This connection or the relationship of the user with the landscape characteristics, with respect to the familiarity of the user is studied and analysed under this study.

## 1.3 OBJECTIVES OF THE STUDY

- To identify the landscape characteristics affecting the city user (residents and visitors) landscape preference.
- To identify the variation of the user groups (residents and visitors) footfall with the previously identified landscape characteristics.

## 1.4 SCOPE AND LIMITATIONS

This study will only focus on three case studies identified by the author through the observations, which comes under the category of urban pockets formed by the users themselves, as defined above. Even though the number of factors affecting the individual landscape preference have identified through the literature review, only few factors were considered in the study including the category of spatial configuration characteristics under landscape characteristics. A random small sample of fifteen (15) people from each case study (three case studies) were taken for the questionnaire survey of the study.

## 2. Landscape preference in urban pockets

In the discussion of Landscape preference in urban pockets, the study focusses on two factors, which are the city and its landscape characteristics, and the landscape preference of people.

### 2.1 THE CITY AND LANDSCAPE CHARACTERISTICS

“A city is a multi-purpose, shifting organization, a tent for many functions, raised by many hands and with relative speed.” (Lynch, 1960)

Through the process of increasing percentage of population, or the urbanization, gradually a city is formed. Then being umbrella for the services and activities of its population the ‘form’ of the city occurs. Kevin Lynch, in his book “The image of the city” refers a city as piece of architecture, which is a production of a long time period in a large scale. In a way, it is a construction of space. He also relates the city design to a temporal art considering its process of forming.

In a broader scale, the product might look generally constant, while it changes all the time (narrower scale) in detail. Therefore, the city can be considered as a continuous succession of phrases, and which does not have a final result. The control over the above continuity of growth is partial. (Lynch, 1960)

The city is identified in two types by Christopher Alexander in his work.

“Natural cities – Arisen spontaneously over many, many years

Ex: Siena, Liverpool, Kyoto and Manhattan

Artificial cities – Cities or parts of the cities which are deliberately created by designers. Ex: Levittown, Chandigarh and the British New Towns” (Fernando, 2016)

The landscape characteristics are defined as unique aesthetic features distinguishing one scene from another in a certain time, within a defined space range by Yu in 2008. “It is the expression of the unique aesthetic features of the landscapes” (Min Wang, Bochun Yu, 2012). Within the process of forming the city, happens urban pockets within the landscape. These can be spaces between buildings, between the ground and the ground within cities, along the walkways, nodes, etc. which are defined by the placement of infrastructure in to an existing urban fabric.

## 2.2 LANDSCAPE PREFERENCE

This society has been playing a significant role in creating or forming the landscape. Each human being, as the smallest unit of the society can be simultaneously defined as, a biological organism; a person with a unique set of capabilities, experiences, and aspirations; a social being acting within various roles in various groups; and a carrier of culture (e.g. Bourassa 1991).

According to the Rachel and Stephen Kaplan, preference can be defined as an indicator of aesthetic judgement and as a complex process which involves perception of things and spaces and reacting to them in terms of their potential usefulness and supportiveness. Preference for specific landscapes is about the organization of the space, rather than the individual element.

According to the Kaplans’ Information processing theory (1979), “We gather information from our environment through our senses, mostly through visual sense. Kaplans’ theory suggests that information is derived through the contents and the organization of the environment.” (Ozyavuz, 2012). With the results of their studies Rachel and Stephan Kaplan developed a matrix for preference. It contains four informational factors which affect the Landscape preference.

Table 25 Kaplan’s preference matrix (1998)

	Understanding	Exploration
2D	Coherence	Complexity
3D	Legibility	Mystery

**Coherence:** Coherence of a setting is about the order and organization of its elements. It can be achieved through repetition of themes and unifying textures, the limited degree of contrast is also can be helpful.

**Complexity:** this factor refers to the degree of diversity of landscape elements. An environment with greater variety would encourage the exploration within people.

**Legibility:** this is basically the readability of the environment. This focuses on the orientation of people in a particular environment. Landmarks or focal points increase the legibility of places.

**Mystery:** It is about the environment’s potential of promising information and exploration related components of preference. According to Kaplan, curved path ways and vegetation that partially block the view can be considered as examples. (Ozyavuz, 2012)

How the people perceive or evaluate the landscape largely depends on their basic needs and motives. Thus, in Landscape preferences, individual differences may arise as they seek out fundamentally different experiences in the environment. (Berg, Van Den, A. E., 1999)

Individual differences in landscape preferences have been discussed under three terms.

- Landscape characteristics
- Personal characteristics
- Contextual characteristics

According to the Salient Perceptual Dimensions, Landscape characteristics underlying environmental perceptions and categorization can be classified in to two major types.

- Spatial configuration characteristics

Which refers to 'the way elements are arranged in the implied space of a scene'.

- Content-based characteristics,

Which refers to 'specific objects or elements in the landscape'.

Spatial configuration characteristics can be discussed in relation to two basic informational needs.

- Understanding: comprehending or making sense of a landscape.
- Exploration: being attracted to additional source of information.

Under the above mentioned 'Understanding', degree of coherence and the degree of legibility are discussed. Under the informational need of 'Exploration', degree of complexity and the mystery, or the degree to which a particular landscape offers a promise of more information are discussed. (Berg, Van Den, A. E., 1999)

### **3. Application of theoretical framework**

#### **3.1 RELATED THEORIES**

Theoretical framework has been formed with consideration and deep study on several theories that has been proved and discussed. Referred theories are mentioned below.

#### **Figure-ground theory**

This is one way of understanding the city/space, through its classic way of spatial relationship in two-dimensional form with Nollie's map which has become an analytical. Through this, it is understood that the city with its public and private spaces (solid/void, open/closed, black/white). (Daniel Kiss, Simon Kretz, 2016)

#### **Linkage theory**

This theory is based on connections between different elements. These are like streets, pedestrian paths, riverbanks or other linear spaces that connect parts of the city (glue of the city).

#### **Place theory**

Based on cultural and human characteristics of physical space that is on its psychological dimension. 'Physical space gains additional richness through unique details that are rooted in its settings' (Genius loci) and its use.

#### **Prospect-refuge theory**

Appleton's prospect-refuge theory is about preferences for landscapes which provide "prospect" and "refuge" opportunities. According to Appleton, Prospect-refuge theory is based on human's urge to feel safe and to survive. Human being intrinsically tends to prefer environments that provide us with the ability to hide while observing surrounding.

#### **Information processing theory**

A theory of landscape preference. We gather information from our environment through senses, mostly through visual senses (Kaplan). Information is derived through the contents and the organizations of the environment. And this theory includes four informational factors, coherence and legibility under the understanding of an environment, and complexity and mystery under the exploration of the environment. (Kaymaz, 2012)

### 3.2 THEORETICAL FRAMEWORK

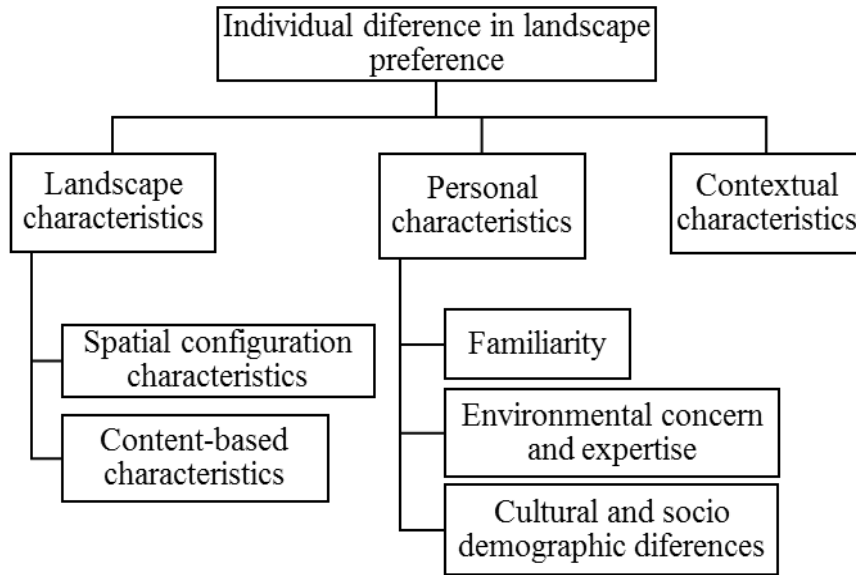


Figure 30 Individual difference in landscape preference, compiled by author

#### Landscape characteristics

Landscape characteristics can be identified as an important requirement for any systematic analysis of individual differences in landscape preference and these differences should be related to Landscape characteristics.

- Spatial configuration characteristics: the way elements are arranged in the implied space of a scene.
- Content-based characteristics: presence of a specific object or an element in the landscape.

#### Personal characteristics

Personal characteristics respond to the three main classes of characteristics as they are typically distinguished in discussions of individual differences in landscape preference.

- Familiarity
- Environmental concern and expertise
- Cultural and socio demographic difference

#### Contextual Characteristics

In general, contextual characteristics may be defined as all variations among judgmental context that influence people’s perception and evaluations.

##### 3.2.1 Landscape characteristics

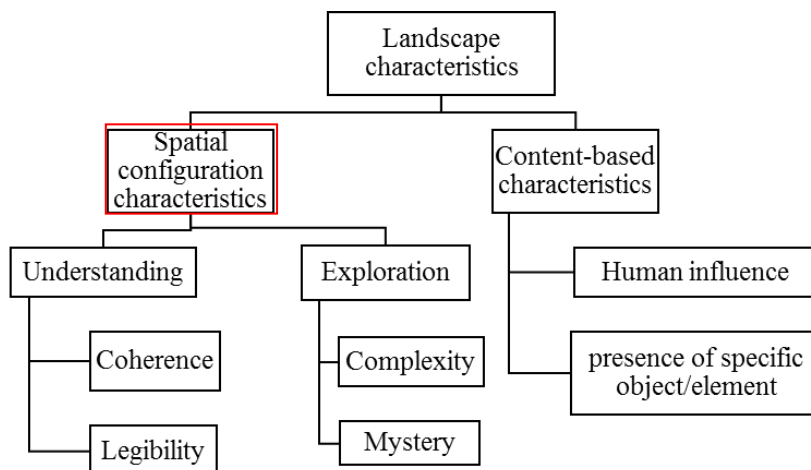


Figure 31 Landscape characteristics categorization, compiled by author

Coherence	→	Repetition of elements Order of elements Fragmentation of elements Presence of water
Complexity	→	Diversity of land use Diversity of shapes of elements Diversity of the sizes of elements
Legibility	→	Presence of landmark elements
Mystery	→	Curved pathways and blocked views (Asa Ode, Mari S. Tveit, Gary Fry, 2008)

#### 4. Methodology

The methodology used for the study is a mixed method and it will have two folds, namely a literature survey and case study survey. Literature survey has been carried out to gather data on theories and arguments related to this matter, including urban pockets, landscape characteristics and individual landscape preference. In this literature survey, factors which affect for effective landscape designs given by different scholars will be listed out and the common factors have been taken for the formation of the theoretical framework of the study. Then these factors will be further discussed on how they affect the individual landscape preference.

The above-mentioned case study survey has been carried out in two stages; Pilot study and the Field study. Pilot study has been completed using methods of observations, interviews and cognitive maps prepared by two colleagues who represent the residents and visitors by geographical demarcations. The field study has been completed by using research tools of observations, mapping and questionnaire surveys which has been carried out using 15 respondents (randomly selected users) from each case study. These collected data has been analysed separately and discussed together to extract the conclusion of the study.

#### 5. Case studies

Three case studies are being selected from Kandy city, which is a natural city located in the central province of Sri Lanka. This is a heritage city that has been developed preserving the natural environmental background as well as its' historical and religious background. The selected case studies are Lake round, Dalada veediya and Market front which are located within the city boundary and proximity to important land uses of the city.

##### 5.1 CASE STUDY 01- LAKE ROUND



Figure 32 Lake round

One side of the site's boundary is the Dalada veediya, which is a one-way street running from the entrance of the Temple of the tooth to the city centre. And the Queens hotel building facing the street becomes the building façade for the site. Other boundary of the site is the Kandy Lake. This side of the site open up the view to a vista which includes the mountainous back drop. The 'waluka bemma' around the lake increases the aesthetical value of the lake as well as giving a cultural value.

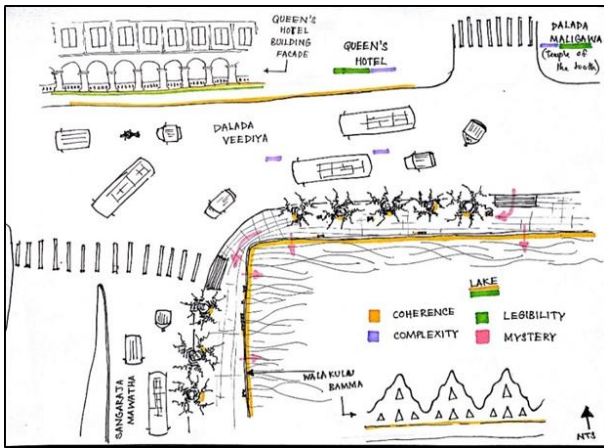


Figure 33 Lake round layout by author (presence of spatial configuration characteristics)

“Waluka bemma” around the lake runs along linier site repeating its form. Apart from that main element that follows the repetition, the tree line, the paving stone and even the Queens Hotel building façade has a glimpse of repetition affecting the site. The composition of the elements seems to be done in an order, with tree line, paving stones, edges and even the vendors are occupied forming an order within the site. Any fragmentation of order or a character is not identified within the space. The presence of water covers the most of the site than the others with the presence of the Kandy Lake. Altogether, Lake Round can be identified as space with high Coherence.

When it comes to the Complexity of the site, the diversity of the land usage is comparatively low. The main land use of the site is the walk way (recreational), which has now joined with very little commercialized vendors, ‘Joy boat’ boat service, one-way road (Dalada veediya) and religious activities. Even though the Temple of the tooth is a huge attraction of people, it does not create any complexity within the space. Apart from that, the variation of the size and shapes of the elements generate a certain level of complexity within the site. Therefore, the Complexity of the space can be identified as comparatively less.

Considering the landmark elements within the site, Kandy Lake can be identified as a natural, landmark element. Then the Temple of the tooth which is a historical and a religious landmark element and the Queens Hotel building a historical and architectural landmark takes the courtesy.



Figure 34 Visual accessibility above the waluka bemma

Curiosity of the space is shaped with blocked views and curved pathways. Even though the walk way curves up around the Lake, within the site creating a very little curiosity on the users’ mind. The low built waluka bamma and the other unblocked views towards every side terminate the curiosity within the site, reducing the level of mystery of the site. Nevertheless, the hidden views of the water level and fish, along with the street vendors who are there after the bend (organic forms) of walkway manage to maintain the curiosity in a moderate level.

- Coherence - Very High
- Complexity- Low
- Legibility - Very High
- Mystery - Moderate

Comparison of the effect of spatial configuration characteristics on the visitor’s and resident’s preference is identified through the questionnaire survey.

The order in mean ratings by the visitor and resident on the effects of coherence, complexity, legibility and mystery are common. Nevertheless, the value of the rating varies. The two characteristics that focus on the understanding of a place, coherence and the legibility is highly rated by the visitors than the residents, but the variation of the other two characteristics which focus on the exploration of a space is different. The complexity has affected for the preference of the residents than the visitors. However, when it comes to the mystery, the mean rating by the visitors’ is higher than the residents’. In other

words, even though the mystery at the space is Moderate and both mean ratings by the visitors and residents are low, the curiosity of the place has an impact on visitor preference than the resident.

### 5.2 CASE STUDY 02- DALADA VEEDIYA WALKWAY

This space is formed along the Dalada veediya walkway with the building façade facing the road side, basically the pedestrian way. Dalada veediya runs towards the clock tower junction and the city centre from the side of Temple of the tooth. Considering the building façade that has the largest contribution for the formation of the space, it includes retail shops and street vendors who sell fancy stuff, clothes as well as cosmetics. Other side façade of the building is also another building façade facing the Dalada veediya and the site.



Figure 35 Dalada Veediya

Repetition and order can be identified through the handrail, light posts along the pavement, pavement as well as the tree line. Handrail carry the same language and the character of all the handrails within the context assisting the city to be identified as one system. Even the repeating light posts has a character which is unique and harmonious to the traditional city of Kandy. There is no identifiable fragmentation of contextual character within the space. In fact, this space can be considered as a part which contributes to the continuity of the contextual character. Moreover, the presence of water is one factor which cannot be identified within the space.

Considering the factors affecting the complexity, there is a comparatively moderate diversity of land use with the commercial buildings, pedestrian way, the road, moving people both ways and gathering people present at the space. Even the variation of the size and shapes are hardly noticed. Therefore, the complexity within the space can be rated moderate.

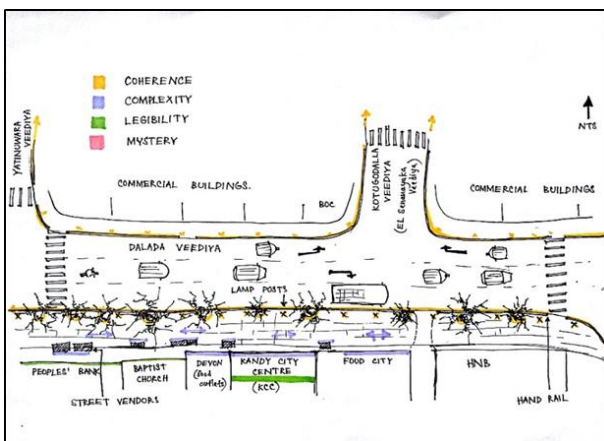


Figure 36 Dalada Veediya layout by author (presence of spatial configuration characteristics)

There is also a lack of landmark elements within the space. Kandy city centre entrance is one of the Landmarks. Few other spaces are known with the names of retail shops, which cannot be considered as landmarks for both visitors and residents equally. Therefore, the Legibility of the space can be rated comparatively low.

Mystery is measured with blocked views and curved pathways which is hardly identified within the space. This marks the space to be a low curious, or very low in mystery.

- Coherence - High
- Complexity - Moderate
- Legibility - Low
- Mystery - Very Low



Comparison of the effect of spatial configuration characteristics on the visitor's and resident's preference is identified through the questionnaire survey.

The impact of spatial configuration characteristics is discussed with reference to coherence, complexity, legibility and Mystery. The impact of coherence within the space for the individual preference of Dalada veediya is practically equal according to the mean effectiveness on preference level rated by both visitors and residents. The impact of complexity on visitors is identified to be higher than on residents. Moving on to the legibility, the mean preference level rated by visitors is lower than the residents'. When it comes to Mystery, both mean effectiveness levels on preference are very low. Although the effect on residents is comparatively higher than visitors.

### 5.3 CASE STUDY 03- MARKET FRONT

This is a space formed with the main entrance of the Market complex, Kandy. On the opposite side is the park and the vehicular parking. Therefore, the two facades of the side can be identified as the Market complex entrance and the park with the improper parking in front.



Figure 37 Market front

Repetition of elements or character is hardly present at Market front, except for the street vendors in a row and the pillars at the entrance of Market building. Considering the order within the site, order of vehicular parking, established locations of street vendors and the tree line in middle contributes for the coherence. Nevertheless, one lacking factor is the presence of water within the space.

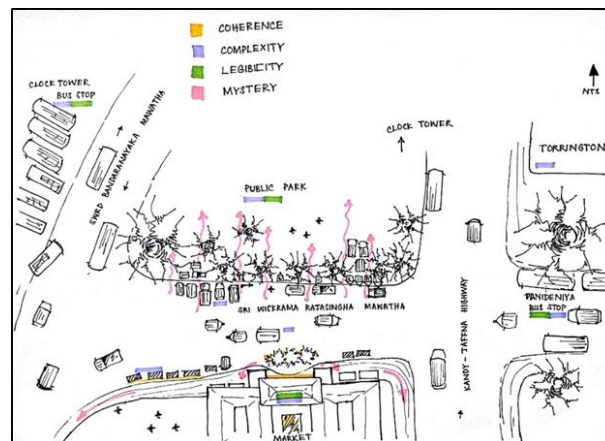


Figure 38 Market front layout by author (presence of spatial configuration characteristics)

Considering the Complexity within the space, it has a comparatively large diversity of land use within the site. The Market building, street vendors, market activities, vehicular parking, both vehicle and people's movements, nearby bus stops in both sides (services) and even the park in front altogether creates its micro level diversity of land use. Considering the shapes and sizes, the scale of the building

façade and its details are diverse comparing to the other elements like vendors’ spaces and lottery spots. There isn’t much diversity in vegetation scales and shapes.

There are also Landmark elements within and around the site including mainly the Market building. Apart from that, the bus stops in both sides and the Torrington complex stands as landmark elements which enhances the Legibility of the space.

The other factor of the spatial configuration, Mystery is measured by the blocked views from the site and its curved pathways. The bends towards both sides from the site create curiosity to a certain extent. Although the blocked view of the park by the parked vehicles and the blocked view of the clock tower area and the road (space beyond the park) by the park create more curiosity within the site.

- Coherence - Low
- Complexity - Very High
- Legibility - High
- Mystery - High

Comparison of the effect of spatial configuration characteristics on the visitor’s and resident’s preference is identified through the questionnaire survey.

Considering the effect of coherence within the space, visitors’ ratings are comparatively low than the residents’. It is also identified that the presence of coherence (repetition, order, fragmentation and the presence of water) is low, through the observations. When it comes to the effect of complexity, it is also rated comparatively low by the visitors than residents. Considering the diversity of the land use which is a strong factor that indicates the level of complexity, residents define this space as a centre of facilities or services. This easy access for the services does have a considerable impact on the residents, which can be identified through the open-ended questions which were asked at the questionnaire survey. Unlike the above two characteristics, the effect of legibility on the preference of the Market front is rated comparatively high by the visitors than the residents. This shows the visitors’ focus on the landmark elements to read the space, other than the residents. When it comes to the effect of Mystery, there is a considerable difference between the ratings of visitors’ and residents’. Visitors mean effectivity rating of mystery for preference is low while the residents’ ratings are higher.

## 6. Findings and discussion

The presence of spatial configuration characteristics and its impacts are discussed here. The summary of the data collected through the study on this category of landscape characteristics and its analysis are given below to support the discussion.

Table 26 Comparative summary of spatial configuration characteristics

Case study	Coherence		Complexity		Legibility		Mystery	
	Presence at the space	Category that is affected more	Presence at the space	Category that is affected more	Presence at the space	Category that is affected more	Presence at the space	Category that is affected more
Lake round	Very high	Visitors	Low	Residents	Very high	Visitors	Moderate	Visitors
Market front	Low	Residents	Very high	Residents	High	Visitors	high	Residents
Dalada veediya	High	Visitors	Moderate	Visitors	Low	Residents	Very low	Residents

Considering the coherence, the coherence of spaces with higher presence of it, has a higher impact on the visitor; as in Lake round and Dalada veediya. Moving to the complexity, in spaces where either higher or lower presence of complexity is present, its effect on the residents is higher. Moderately presence of complexity has affected on the individual landscape preference of visitors more than residents. When it comes to the legibility, it follows a similar pattern like the coherence, where the presence of legibility is higher, the effect of it on the visitor is higher than the residents. The final

characteristic, Mystery's situation is similar to the complexity, where either higher or lower presence of mystery is affected on visitors comparatively low than the residents. Furthermore, it effected highly on the visitor by the moderately presence of mystery.

Apart from the above analysed data, a few factors can be opened up for the discussion with the individual study of the questionnaires of each case study, one by one. One is the residents' strong need or the routine of using spaces focusing on the services they get from the space overwriting the quality and the presence of landscape characteristics within the particular space. Another factor identified is that, the 'Familiarity' does not reside with the geographical location of the user residence, but with the frequency of their visits to the particular space. Situations were identified where the frequently visited visitor behaves and responds more similar to a resident, where the rarely visited resident responds more similar to a visitor, supporting the above statement/ situation. Moreover, the fact that a space can be more legible for a resident than visitors, as their number of identified landmarks are high with familiarity.

## 7. Conclusion

Current cities of Sri Lanka are formed with the urbanization process that occurred with the development of the country. The simplest definition for the urbanization is that a place getting urban, which includes the population shift from the rural areas to the urban areas, looking for the services and similar reasons. As a result of that, the city becomes a centre of service. This has made the cities more congested, inevitably creating urban pockets between buildings, between ground levels and along the streets which are defined by the placement of infrastructure of the city. These pockets were generally shaped and used by the people altogether. These users include both residents of the city as well as the visitors that come to the city for various reasons. Considering the landscape preference, the same space that is used by the residents can be perceived by the visitor in a different manner, depending on the landscape characteristics of the space.

According to the salient perceptual dimensions, landscape characteristics is one of the three factors that affect the individual preference in landscape (Other two being the personal characteristics and contextual characteristics) and can be identified in two ways; content-based landscape characteristics and spatial configuration characteristics. For the study of the impact of landscape characteristics on the visitor and the residents separately, the spatial configuration landscape characteristics are addressed using three case studies selected from Kandy city; Lake round, Market front and Dalada veediya pedestrian way.

When comparing the effect of spatial configuration characteristics on the visitor and the residents in Lake round, the coherence, legibility and mystery are rated higher by the visitors than the residents. The ratings for the effect of complexity is vice versa. Although the presence of coherence and legibility are identified very highly within the space, while the complexity and the mystery are identified low.

At the Market Front, the responds to the effect of spatial configuration characteristics are different from the Lake round, as only the effect of Legibility is rated highly by the visitors than the residents. The coherence, complexity and mystery have affected comparatively high on the residents. However, the observations of the spaces have identified that the presence of legibility and the mystery is high within the space while the complexity is observed to be very high. Coherence is identified to be low within the site.

Unlike in previous case studies, effect of legibility and mystery is rated comparatively low by the visitors than the residents in Dalada veediya walk way when responding for the effect of spatial configuration characteristics on the preference. Coherence and the complexity are rated comparatively higher by the visitor than the residents. Nevertheless, the presence of complexity and the legibility are identified to be low at the space. However, the mystery is identified very low, while the presence of coherence is high.

To conclude the analysis regarding spatial configuration landscape characteristics, it is vibrant that at spaces where the coherence and legibility highly exist, the effect of those characteristics are rated

comparatively higher by the visitors than residents. The higher and low presence of complexity and mystery within the space have resulted in lower effect on the visitor than the residents, making the moderately presence of complexity affects the visitor comparatively higher than the residents.

This study contributes for the new thinking under the landscape architecture and urban design, making the designers focus on both the residents and visitors landscape preference in urban design. This study also opens up new research needs and potential areas of research that are related to the other characteristics effecting the individual preference in landscape, directing the thinking pattern of the people in the field of Landscape architecture and urban design.

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