

SUSTAINING COLOUR IN PRESERVING URBAN CONTEXT: AN INSIGHT FROM TANGIBLE CULTURAL HERITAGE IN KANDY CITY

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Abstract

It is the obligation of architects to design buildings and places for the present, thinking about the future, yet inspired by the past. Hence, the story behind a local context's evolution should be narrated through the local heritage down the timeline to be preserved for future generations. Thus the issue identified was how the urban character and the city image of a particular context can be preserved amid current hap hazardous developments with social trends. This paper tries to address the question of how colour is a necessary attribute in preserving the local urban character because of its adaptability through various means of application. Sri Lanka is a very diverse country with a history and culture that values and imbues colour with significance and meaning. The living heritage city of Kandy was taken as the case study limiting to 2 major arterial streets which run through the city center to study the current built fabric's character. The study objectives were to find out whether the local heritage has been preserved through the built fabric, if not, to find out why and any previously imposed guidelines regarding maintaining the built fabric to preserve the local heritage down the timeline with special reference to colour while meeting with new social developments and their rationale. Therefore, interviews were conducted with local and foreign visitors, architects, and local planning authorities to get their opinion on the current state, the possible future of local heritage preservation and to get a general census on creating an applicable guideline to the city built fabric. Finally, it was concluded that through the correct application of colour the urban character would eventually result in creating a city image which will sustain an authentic city identity while preserving the local heritage and culture.

Keywords: Colour Psychology & Colour Physiology, Urban built fabric, Preserving Urban Character, Tangible Cultural Heritage

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Introduction

Colours have many effects on people, considered a timeless factor for social and humane development as an attractive attribute used for a better experience of people and the environment. Thus, since the beginning of time, colour has been used in the built and urban environment influencing society and its people to give various meanings and sensations by innovative means. With the concept of Colour Psychology, colour has been able to persuade the observer's perception in creating a particular identity through urban places and spaces covering the whole cityscape. It is revealed through previous research that colours are of immense significance in creating unifying places where it helps to distinguish them from one another. Thus correct use of colour in the built environment will result in sustainable surroundings and it is the architects' and designers' responsibility to focus on the comprehensive use of colour theories and concepts in creating spaces for the betterment of people and society.

Yet colour usage is different in every corner of the world due to local culture, traditions, and native features.

When considering the cityscape and its identity, colour highly contributes as an element that has survived as a unifying thread in creating an identity resembling historic features with a sense of time through the evolution of the urbanscape with the lifestyle and activities of local people. Thus it is noted how holistic and determinant perception of colour in built fabric influences deep-rooted cultural-social aspects throughout the city's evolution. By understanding the impacts of colours on people and the response needed, design development guidelines have been implemented as regulations to follow when new elements are added to a specific urban built fabric. It will harmonize with existing urban fabric embedding into the same contextual plane. This results in identifying the tangible built environment and its crucial elements to preserve and continue the history, culture, and tradition of a particular context where colour is a timeless aspect of the application. The knowledge of local culture, traditions, customs, perceptions, and their own interpretations of colour symbolism is critical for such application.

Research Problem

The identifying colour is used for urban planning since it had adopted to local climate, natural environmental factors while respecting to people's traditions, cultural and local history. Thus it can be said that the concept of Urban Colourscape reflects on the cultural heritage outlook and the history of a city. Thus the problem identified is that how colour is necessary as an attribute to preserve heritage through the built fabric? If any particular colour that is rooted in the local context to be changed, would the history and cultural heritage still be preserved? Therefore research question is how effective is colour in heritage conservation?

Research Objectives

- To explore the relationship between colour and heritage preservation in built environment
- To investigate present-day condition of a living heritage city in meeting with new social developments
- To understand the rationale behind preservation-conservation guidelines imposed by building-planning authorities
- To propose a new guideline to preserve tangible cultural heritage through colour

Literature Survey

Colour and People

Colour is experienced from our birth till death where all creations defined through colour to emphasize the significance as the most driven factor of human existence. Any person entering into a particular space perceive their surrounding in 3 stages. The colour, the form and the mass. The symbolic affect created by colour and massing is perceived at early stages of consciousness of a person (Gorzaldini, 2016). Supporting to Gorzaldini (2016), Nami (1992) stated that 'everything in the environment, firstly, perceived by colour and then by form'.

The human eye perceives color as a stimulus in the form of light and the brain further processes that perception resulting in feelings and emotions (Billmeyer & Saltzman, 1981). Those evoke due to symbolic associations or abstract qualities personalized by human psychology by bringing life to human soul (Mbina and Edem, 2015). The effect that colour has on people cannot be exactly pinned. Yet colour is like air, it affects our lives all the time. Colour cannot be touched, it has no weight, only can be seen; still it has the ability to lift up or shake down peoples' mind and soul.

Over the years many researches have done experiments on how different colours affect people making them to respond psychologically or physiologically. Physical influences of colour on human beings provoked by psychological reactions towards the colour which impress bodily responses (Birren, 1988). Rikard Küller summarized psycho-physiological literature on colour activation and established non - visual effects of light & colour. Biologically, it influences through activation of central and automatic nervous system; then heartbeat rate, blood pressure, electrical brain activity and respiration.

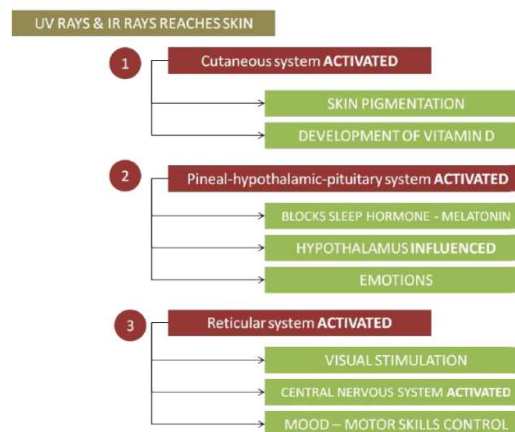


Figure 43: Process of Physiological activation through non visual effects of colour
Source: Mikellides, 2016

Those findings have used in creating urban spaces creating comfortable living environments (Kong and Dong, 2010).

Colour and theories:

'Colour psychology' is a complex field having many variables of affecting factors. In a broad range of influence, areas of psychological, physiological, physical, and sociological reactions are

connected to colour perception. Many interpretations have been identified across cultures known as 'Colour symbolism'. The concept of colour symbolism, is inborn, intuitive, and universal while some depend on one's learnt meanings within a particular society, time and place (Pile, 1997). From there, some qualities and certain responses have been identified as universal reactions (Senaviratna, 2013). When a space is created focusing on architectural elements and intangible factors as colour - the designer must first understand the context, user, time and other relevant variables (Mikellides, 2016).

Use of colour in different cultures connects with great diversity. A particular culture, their traditions, norms, rules and time, differentiate the same colour into different meanings. Hence, these perceptions are more subjective, yet universal. A ride around the world allow us to see how a person perceive colour depending on their culture.

Colour and built environment:

Colour is the first feature or the character that gives away the image or the charisma of a certain environment - finding its way into built environment and architecture of the context (Kong and Dong, 2010). The visage of the context can be positively affected to all people if theories are correctly applied - as an example Hoseinion (2001) stated that increased colour density in boulevards/intersections let people know that they are more populated than other spaces (Gorzaldini, 2016). In present day, colour is used in built environment as a means of communication. Spaces are designed considering human psychological connections and considering one's perception of a particular space. Hence sense of beauty and sense of belonging will create a more pleasing, secured, comfortable environment to result in visual, mental and physical well-being (Mikellides, 2016).

For centuries people have experienced colour and down the timeline human responses to those colours have evolved, changed and tend to continue to date and will keep changing in future. Taking this to advantage, colours have become a powerful tool in designing to experience built space for its users intentionally hoping to direct actions. Therefore it is certain, colour is a tool in architecture and built environment influencing people to interpret the spatial experience in very different ways (Mbina and Edem, 2015). Not only catering to functional needs, but also requirements of people in the city. A properly designed city will have the power to give them psychological, spiritual, aesthetical, cultural needs that they require through suitable applications. Colour is such main factor in cityscape contributing to the betterment of people by bringing balance and comfort to people.

Colour and Cityscape:

Each city has a unique colour tone, either intentional or not due to its own natural-cultural history resulting in a particular urban style. There are main factors that affect for a particular urban colour such as climate, cultural-traditional context, geography and location of the city and its history. Using such factors many cities across the world have been influenced in aesthetic tastes to mark the city with its own identity in colour as a language that results in creating a place of their own. There are many outstanding cities in the world rich with colour by activities, built fabric and streetscape (Senaviratna, 2013).

According to Liu et al (2016), In urban spaces colourscape provides a service to the context by protecting the psychological health of the public. Thus colourscape can be defined as a specific environmental factor relating to the urban population aiding in recognizing the city from

another. Taking care of city peoples' moods and visual pressure, colourscape is mainly created by colour of the city buildings. That is due to, in urban fabric when colours are applied, special concern is given to the primary colour of the built environment and then colour in decorative elements, identifying between permanent and temporary coloured elements. The urban colourscape should determine on the scope and tone of 3 applying colours.

- Basic colour (primary colour)
- Auxiliary colour (secondary colour)
- Decorative colour

Basic colour mainly applies in walls covering up to 75%, the secondary colour compliments the primary colour with certain value/saturation changes (20%) while the decorative colour emphasize details balancing out aesthetic against the primary colour (Kong and Dong, 2010). Yet according to McLellan and Guaralda (2018), core elements of environmental colour composition in a urban context are taken as factors that would influence the perception of city context and has been categorize into 6 groups.

Therefore, it is evident that urban beauty rises through colour and results in urban life quality impacting peoples' mental and physical conditions. Thus, it can be said that colour in a way constitute itself as an elegant and more essential part of civilized life. Therefore it is vital that architects pay attention to urban fabric and colourscape to result in great urban life quality (Kong and Dong, 2010).

Table 6: Core elements of Environmental colour
 Source: McLellan and Guaralda, 2018

Colour of natural elements	Colour of the built form	Spatial urban parameters	Colour of urban elements	Patterns of human activities	Symbolic & cultural colour association
Geographical location (latitude)	Material colour	Urban geometry	Infrastructure	Colour of moving & parked vehicles	
Climate	Application of colour (paint)	Narrow/wide street	Colour of the urban floor	Colour of the clothes people wear	
Natural landscape	Innovative colour changing materials	Urban density	Colour of urban furniture	Social gathering	
Vegetation	Media architecture	Urban patterns	Urban art installations	Public events	
Weather	Interactive envelope	Continuing facades	Advertising boards		
Seasonal changes	Building typology		Signage		
Time of the day	Functional use		Artificial lighting		
Solar orientation	Diversity or unification of the built form within a setting				
Intensity of daylight					

Colour as a Carrier of Urban History and Culture:

The term 'Identity' refers to a special unique character of a place when compared with other spaces or characters which distinguish that particular place from the rest. Therefore concept of creating an identity though urban fabric is a new approach with increased attention in the field.

Rezghi (2013) states that identity of any urban fabric directly affects from nature, culture and man-made elements.

According to UNESCO (2020), 'Heritage is the cultural legacy which we receive from the past, which we live in the present and which we will pass on to future generations'. Despite of the tangible heritage, intangible or living heritage is what important in maintaining the cultural heritage. Thus, it can be said that if an intangible element/s to be applied with the tangible elements, a sense of collective belonging with social cohesion can be bought upon a particular context thus helping in the process of preservation and conservation.

"Let me see your city, and I will be able to tell you what the city's residents are in the pursuit of culture."

(Eliel Saarinen)

With the first impression, story of a city can be read with visual perception. Each city having its own unique colour tones with natural and artificial factors convincing that colour itself is a urban historical heritage. Therefore to protect tangible cultural heritage and urban features and to pass down the intangible narration of history, colour can be used to preserve cultural heritage.

'Colour Geography' is a concept brought forward by Jean-Philippe Lenclos (1997) studying colour from geographical and cultural perspectives and established behind cultural interpretations. That is due to realizing that in different geographical contexts, different climatic conditions can be experienced paving its way into human race, customs, tradition, faith and cultures. Therefore he explains that architectural colour, local natural environment and humanities geographical environment have a close relationship in means of protecting and preserving local culture, which is known as cultural conservation. Therefore it can be established that protecting the local architectural colour would result in preserving local culture. Kong and Dong (2010) confirms this fact stating that, colour is an important factor to be considered in the built fabric. Basic colour being identified and applied history and culture will be sustained. Otherwise if the traditional colour of the city is changed, it will cut off the urban history and culture.

Thus, colour conservation in contemporary cities are needed due to many reasons.

- Commercialization of the urban fabric has caused disordered colour patterns through streetscapes
- Hegemonic activities blindsiding significance of important buildings amongst urban fabric
- Fashion inclination cause negligence of colour order of built environment

Therefore if measures can be taken to fix the issues, gradually it would result in preserving local history and cultural heritage through colour. Thereafter the rest of fabric planning should be people-oriented without creating restlessness and chaotic visual factors. Thus, in many contexts for boosting such mentality and spirituality among people, regulations have been imposed based on social-cultural aspects hoping for wellbeing of citizens and the city itself regarding urban fabric colourscape (Gorzaldini, 2016).

Research Design:

Initially, secondary data were gathered through literature sources on colour theories' impacts on built fabric in different cultures to understand variety and dynamic application. Thereafter learnt concepts were revised with Sri Lanka's living heritage city - Kandy - which was taken as the case study. Primary data were obtained by consulting and interviewing local planning and building authorities on city developments aligning with cultural conservation such as Kandy Urban Development Authority (UDA), Archeological Department and Central Cultural Fund (CCF).

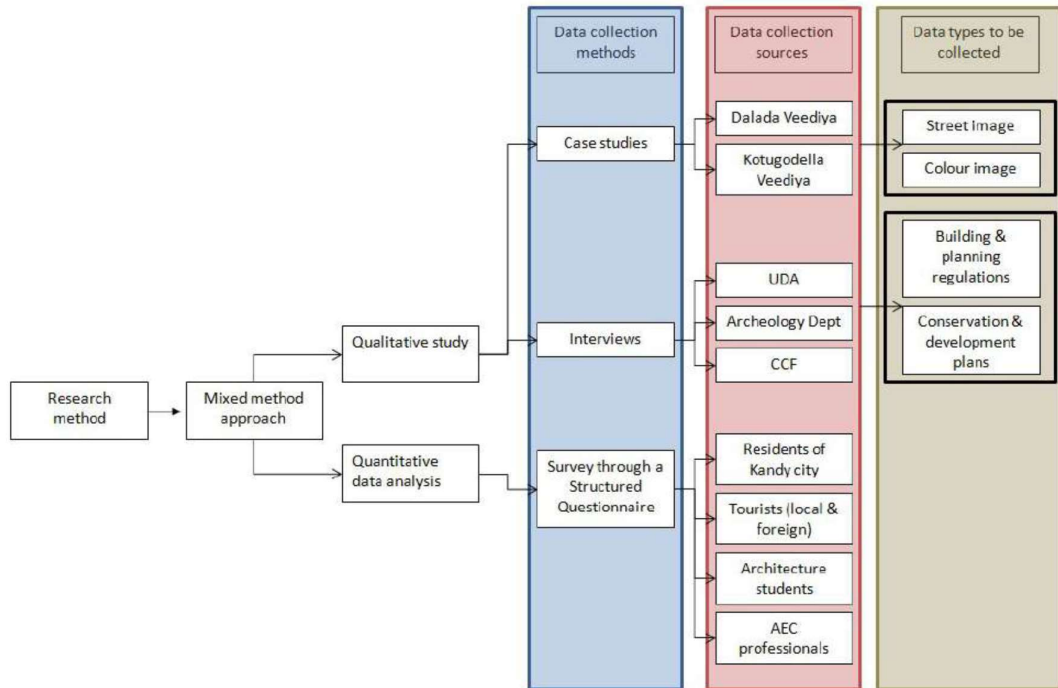


Figure 44: Research Design
 Source: author

With the perfect equilibrium with natural environment, tangible city elements contributed to the unique character is experienced today in Kandy. Thus, the scope of the study took Kandy as the only living heritage city in Sri Lanka and analysis was limited to 2 streets considering the timeline given and availability of resources. Since built environment is such a influential factor on carrying the local culture and history and aids to give a defined urban identity, the study focuses on colour of the built environment where the most intangible building element telling a story on tangible buildings. Out of the colour strategies that are used in the urban colourscape, the selected 2 streets were chosen where the colour has been a part of the building description.

According to Lynch (1960), out of the 5 elements that contribute to the 'image of the city', the study looks into paths, namely 2 streets within context trying to identify element of colour of the streetscape which enables to create a sense of time and place. The use of different colour tones in different streetscapes aids to define and distinguish one from another. The built fabric in those specific streetscapes directly affect to city function and urban lifestyle of people.

Along with provided data, the study focused on 2 streets in the city core - Dalada Veediya & Kotugodella Veediya to see how conservation of building elements along with colour has been contributing to act as a carrier of urban history and cultural heritage. Dalada Veediya was selected due to its distinguished white coloured street character starting from Queen's Hotel to Kandy clock tower keeping the same impression on façades trying to continue the architectural style of the Temple of Tooth Relic where it is represented as a unique element of the city. Kotugodella Veediya is chosen because of its rich culture; particularly since this street houses Kataragama Devalaya and Kandy Red Mosque presenting cultural symbiosis merging with a commercial ambience. The cultural diversity of the street was the distinguished character.

Along with the case study, a questionnaire was prepared to get public's opinion on the matter who were chosen in accord with their relationship with the city. Residents of Kandy, local and foreign tourists were mainly targeted since they have a better impression of the city along with local cultural bond. Also, Architecture-Engineering-Construction (AEC) students and professionals were chosen regarding aesthetical appeal and practical methods to align preservation of the world heritage city of Kandy.

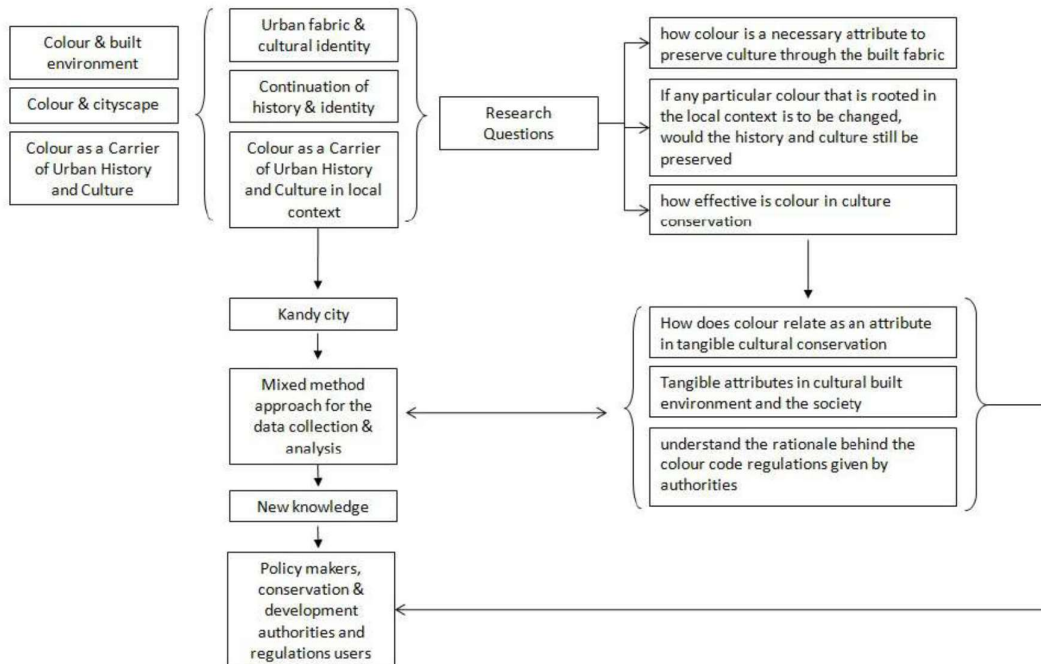


Figure 45: Research framework
 Source: author

For better comprehension of the study, the street was divided into zones and colourscape was observed (refer Fig 5 and Fig 6).

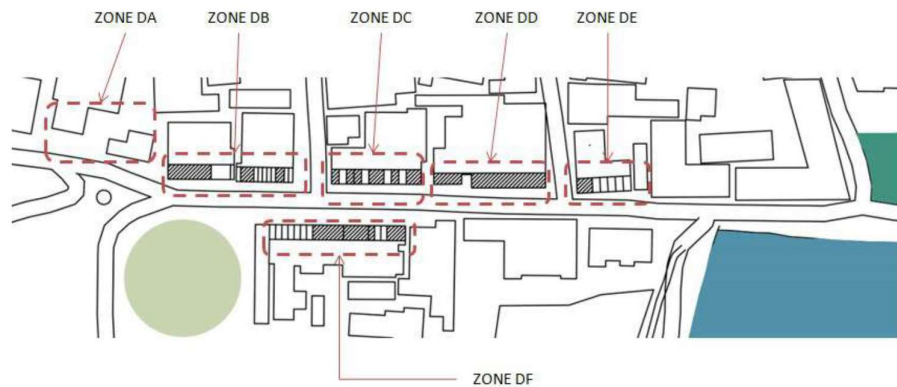


Figure 46: Zoning of Dalada Veediya
Source: author

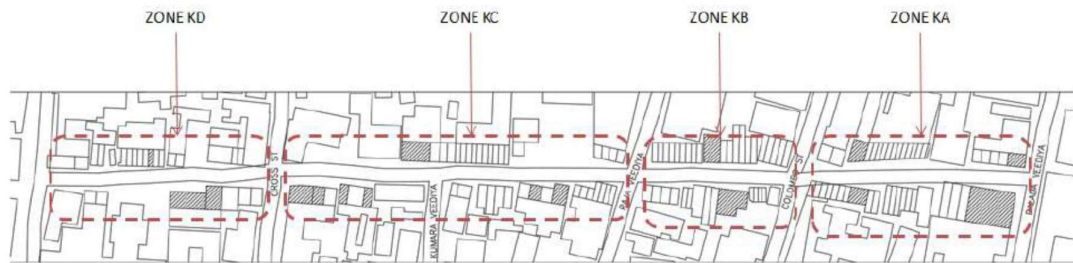


Figure 47: Zoning of Kotugodalla Veediya
Source: author

World Heritage City of Kandy:

Kandy city is the capital of Central province of the island, a narrow valley surrounded by mountain ranges with a central artificial lake. Kandy is mainly represented by many elements where the built environment and the society are seen as the main tangible attributes of the city. Within Kandy city core, most significant buildings are scattered over varying in every aspect representing different cultures and stories over time. The history, the culture, the story of the valley surrounded with mountain ranges is told by maroon and yellow Kandyan art, music of the drummers and steps of dancers in the prestigious festival that holds in every August (Seneviratna and De Silva, 1999). These all define Kandy city in past and present including the buildings in built environment having its own character which comes down from juxtaposition of many architectural types throughout the timeline.

The criticality lies with identifying the importance of Kandy and its heritage as it is the last link to indigenous culture. The heritage on art, architecture, customs, religion and literature coming down generations and such enriched culture and history paved the way to inscribe Kandy city as a World Heritage City by UNESCO in 1986. According to Seneviratna and De Silva (1999), after independence despite all changes that made by British, Kandy managed to remain as the same cultural and religious center. Christianity and Islamic influences bought churches and mosques along with existing Devalas within close proximity to the Temple of Tooth Relic, which characterizes as a unique feature of inter-religious dialogue. UNESCO has given the attention to this scenic city not only for local people but also for the world community as it aids to understand the chronology of much impressive human civilization. Being one of 83 Heritage sites in the

world, Kandy city needs the attention to preserve and conserve the history and culture that fits to its unique value and significance.

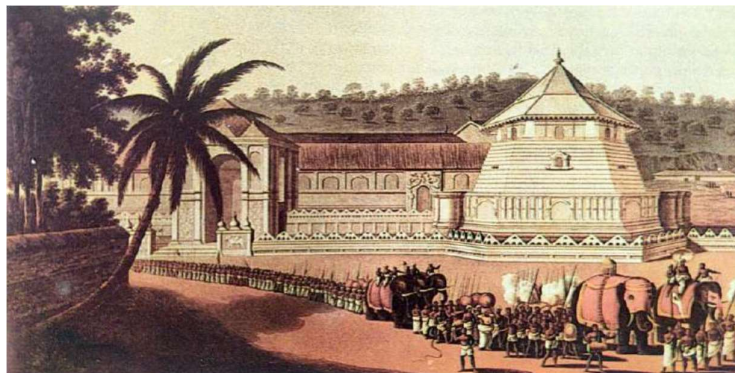


Figure 48: Tangible character of Kandy - Temple of Tooth Relic and Esala Perahera,
Source: Seneviratna and De Silva, 1999

Since 1988 this heritage city falls under criteria IV and VI in UNESCO inscription where Kandy includes 490 of World Heritage buildings and according to UDA (2019) 40% of architectural characteristics have already vanished and the rest partly destroyed. In all 9 streets of Kandy city, deterioration caused by application of incompatible colours, informal hoardings and use of raw materials. Thus, city planning parameters and development plan considerations have been set in accordance with "World Heritage City" concepts and focus on the main key problem which is depleting Kandyan Heritage Image and how to reform the heritage image.

In UDA proposals for 2019 - 2030, the main goal is to enhance the Kandyan Heritage image to protect the uniqueness of the city. Thus guidelines mainly focus in building height, façade and development density where the city is categorized into 4 zones and the study area falls under the Core Area / Sacred Area. Detailed guidelines on signage, commercial advertisements, building materials, renovations and repairs as well as other general regulations have introduced to uplift the historical and cultural heritage value of the city. The Central Cultural Fund have identified those buildings in the core area and considering their existing features, they are categorized into 4 groups to impose specific conservation guidelines.

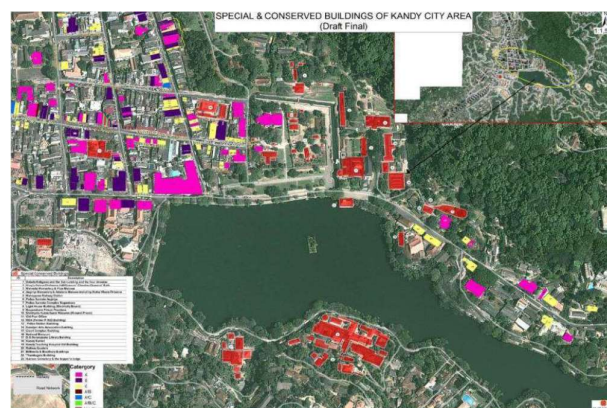


Figure 49: Conserved buildings in Kandy
Source: UDA, 2019

street. A commercial street with up to 4 storeyed buildings horizontally segmented to adhere to visual height; this street owns a rhythm in the built fabric with all main historic buildings. Yet the most valuable character is owning all historical, cultural, religious, economic and geographical settings creating in a certain colour palette across the street. Natural environment colour palette of the street is much evidently exposed due to the natural elements with the artificial lake.

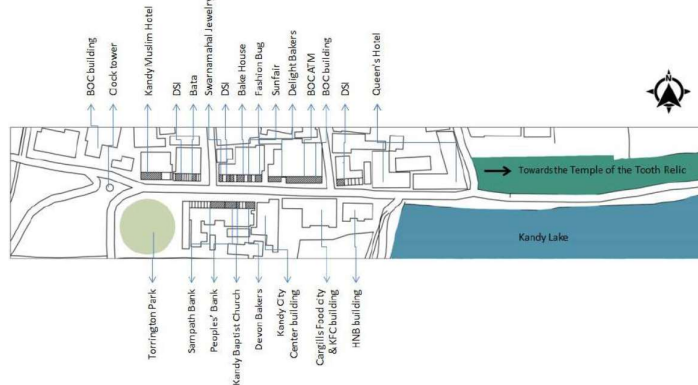


Figure 51: Landmarks in Dalada Veediya
Source: compiled by author

When it comes to the built environment, the focus is on all building façade details including building envelope. Generating the city image, built environment shows the main colour across a larger surface giving the longest experience to pedestrians in time. Buildings along the street act as a linear building mass characterizing an identical quality of the street built fabric. Continuing facades of historical urban fabric bring out the urban culture. The colour of the building envelope, roof and other building elements take the colour of materials - timber, pre cast cement panels, cast iron - and nature makes the entire façade as a single element in the streetscape harmonizing with others as well.

Present Dalada Veediya has been changed and evolved with new developments to the city mainly with commercial activities changing the existing urban fabric with in-fills. Yet it is obviously noted that most of these in-fills and haphazardous developments along the street have violated the existing rhythm of the streetscape with new materials and textures resulting in new colourscaapes in the city image. Contemporary built fabric has continued with a defined building edge along the street yet a different character has been created with modern renovations. It can be easily noticed how those buildings have isolated themselves.

Dalada Veediya starts at DA zone with BOC building near the clock tower which is strikingly noticed for the red colour building façade. The contrast against the natural colour is highlighted and caused for isolation. In Zone DB, a vivid colour palette is observed. Zone DC have been able to maintain the rhythm by colour from Bake House to Sun Fair building. Yet red coloured signage disturbs the streetscape. The other part is cladded with evocative advertisement boards. In Zone DD, Delight Bakers and BOC building adheres to existing colourscape with building elements trying to carry on the character of the context through tangible built fabric where façade, signage all done enhancing the character within urban built environment. Zone DE holds another critical node allowing the nature to blend with street's colourscape. The vibrancy on building facades gradually fades towards the Queen's building resulting in a more white built fabric. Also it is observed that Zone DF had tried to maintain the colourscape of the street with building materials, façade colour and even with branding the spaces. Starting from HNB building towards

the Torrington Park, the white colour along with earth bound colour is maintained giving a unique quality to the character of the street.



Figure 52: Listed buildings in Dalada Veediya and their grading compared with current state
 Source: Compiled by author

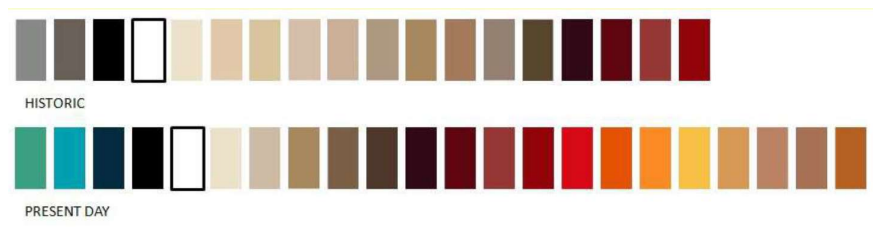


Figure 53: Comparison of the historic and present day colour palette of Dalada Veediya
 Source: Compiled by author

Thus, it can be noted that public and banking buildings have adhered to the tradition of the character of the city where as being commercialized suppress any existing rhythm that the street is building upon. The street colourscape lean towards more bright-warm colours than the historic colour palette as shown.

Kotugodella Veediya, during the reign of the Kandyan kingdom known as Kavikara Veediya, then as Castle Hill street during British occupation and presently known as Kotugodella Veediya. It hosted 6 walawwas in the Kandyan period, yet today only one has survived in this commercialized urban fabric. Further, it is as hectic as a commercial street of Pettah recreating the vibrancy from facade colours and hoardings. But diversity of building types including Kataragama Devalaya, Red Mosque and St. Anthony's church marks the street as a significant urban fabric blessed with cultural & heritage value. Thus, the colourscape of the street only depicts through the built environment having less of a natural territory.

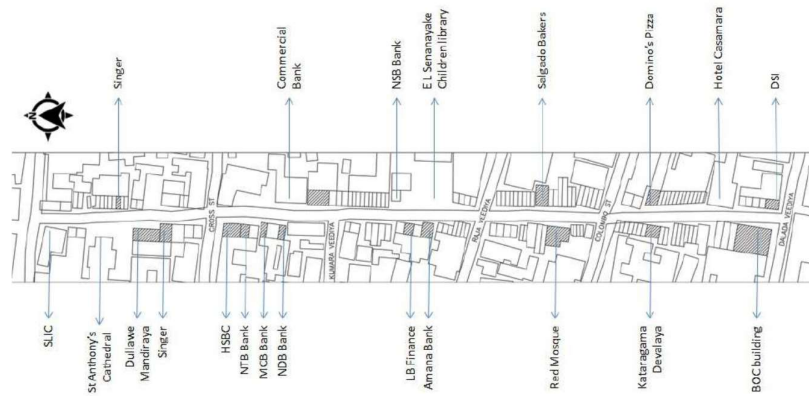


Figure 54: Landmarks in Kotugodalla Veediya
Source: compiled by author

Within the built fabric, many walawwa buildings and houses have been converted or demolished for bringing up commercial activities and where previously the construction materials that used for the built environment solely created the historic colour palette of Kotugodella Veediya. At Present, the built fabric entirely differs being a commercial street having no regulations/restrictions or any pattern on building height, façade colour, construction materials. This have resulted in hap hazardous developments along the street causing visual pollution. Here because of that any kind of a pattern or a character cannot be observed.

It was observed that in Zone KA houses a vibrant colourscape along the strip as it was not connected to a maintained street as Dalada Veediya. Only a turn from the Dalada Veediya, it is observed as a Pettah street due to grasping of high intensive colour palette. Only Hotel Casamara and Kataragama Devalaya had maintain the correct colourscape and every other shop reflects off vibrant shades evidently. Zone KB continues the visual disturbing street elevation through a very intensive colour palette. The remarkable element within the fabric is the Red Mosque, also which has been neglected by contrasting colours in nearby building. The used heights and materials strike the pedestrian eye in a harmful manner in city image perception. Yet when the street goes into Zone KC, the vibrancy tones down and return back to earthen colours leaving only few buildings (NSB, Commercial Bank) striking the pedestrian eye. Zone KD however tones down bright colour palette and neutrally blends in with earth colours giving the most highlighted building to be the St. Anthony's Cathedral. Only hoardings to a lesser amount adds the vibrancy yet cannot take into note comparatively.

Thus, it can be noted the beginning of street wrecks with striking vibrancy due to hap-hazardous development resulted by many trying to promote their businesses showing off branded colours in massive elements. Though this tones down along the street neither any character or a pattern cannot be distinguished with the way of new developments. The street colourscape lean towards more bright colours than the historic colour palette as shown.

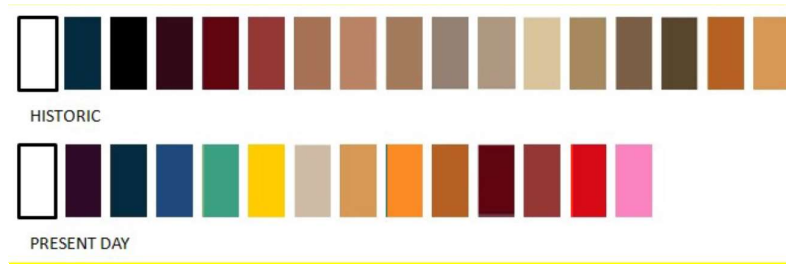


Figure 55: Comparison of the historic and present day colour palette of Kotugodalla Veediya
 Source: Compiled by author

Locations of the Buildings	Color Categories								Total Buildings	Amount of Declined Buildings and %
	A	A	B	B	C	C	D	D		
Colombo Street	33	21	30	25	33	30	12	12	109	88 (80%)
Kotugodalla Veediya	12	8	23	15	11	10	3	3	49	36 (73%)
Yatinuwara Veediya	4	3	16	10	5	3	2	2	27	18 (66%)
Kande Veediya	1	1	4	2	3	1	2	2	10	6 (60%)
Cross Street	2	2	7	7	3	2	1	1	13	12 (92%)
Deva Veediya	13	8	3	2	2	1	0	0	18	11 (61%)

Quantity of World Heritage Buildings	Quantity of Changing Buildings

Figure 56: Listed buildings in the Kotugodella veediya and percentage of declination
 Source: UDA, 2018

Thereafter, the questionnaire was distributed to gain the public opinion on how new social-economical developments could be a negative effect on Kandy city and to ensure that this current state can remedy by focusing on the rooted colourscape of the Kandy city to preserve the world cultural heritage. After gaining an idea of their relationship with the city, they were asked regarding the 1st thing and 1st colour that comes to mind when hear about Kandy city. 74.4% agreed on picturing Temple of Tooth Relic and 69.4% agreed on White colour. Thus, it is noted the rooted colour of Kandy city is white and 65.6% stated that is due to Temple of Tooth Relic and the built environment of the city. This strengthens with the fact that 81.1% agreed that colour is a crucial factor for the 1st impression of the city where 75.5% agreed that a city can be successfully identified through a certain rooted colour.

Though 85% agreed that Kandy city has a city image, only 8.8% stated that this legibility is grasped by building colour. 40% argued that their 1st impression lies with the building façade elements rather than colourscape of the city where only 31.1% agreed. But 42.7% agrees that there is a pattern to be found in building colours and it is 60.5% contributed as a core elements for city perception.

Focusing on the case study areas, when asked the colourscape of Dalada Veediya and Kotugodella Veediya and it was noted that a majority answer cannot be gained in both streets and 70.5% agreed on that visual pollution has been caused on those streets and 73.9% agreed that currently Kandy city image with its colour has been changing with social developments. 62.2% stated that if this current condition continues it would result in chaining of the rooted colour which gradually result in damaging the local historical-cultural heritage. Also 53.3%

agreed that built fabric of a city act as a carrier of the local historical-cultural heritage where 75.5% agreed that colour on this tangible city elements can preserve cultural heritage and 76.6% stated that the same concept can be applied to protect the world heritage city of Kandy.

Therefore it can be concluded that the society's opinion keep hold of the research question and objectives which suggests that proper guidelines and recommendations through the study.

Conclusion:

The great Roman architect Vitruvius stated that the purpose of architecture is to model and reach quality of life through creating a link between comfort, health, needs and beauty along with architecture in a specific cultural context (Boschi and Pagliughi, 2002).

Colour strategies that have used in similar contexts can be seen and considering about Jaipur - they have identified that colour is critical for the city heritage, hence it is enforced under the local law.



Figure 57: Pink city, Blue city, Golden city of Rajasthan - India
Source: RTP123, 2020

Yet when considered about urban colourscape, it was noted during the study that it is a complex subject to be grasped with natural and social sciences - where the solution for the identified issues force a combination of both academic and technical rationales in designing. It was highlighted in the study how correct application of colour could strengthen the visual quality and city image reducing negative psychological affects through visual pollution. Not to over do and destroy the harmony by neon signs and advertisements, but to be considerate in how to develop as a crucial factor in sustainable development of the built environment. Thus, architects, urban designers and users must get together for contemporary city master planning to define their city image.

Kandy is considered to be one of the most iconic cities of Sri Lanka due to its heritage value and scenic beauty. Unique urban beauty of the area is experienced and visual perception plays a vital role in it. It was finally noted how colour itself is an urban historical intangible heritage which complements the tangible built environment. Thus the study emphasizes on the fact that urban planning should go along with cultural heritage, so it would be more applicable to impose new preservation guidelines with contemporary urban built fabric to uplift the identity of Kandy city through colour perception.

As 2 case studies were carried out in Dalada Veediya and Kotugodella Veediya which are at the heart of the city, it was noted how present-day situation of the only remaining living heritage city of Sri Lanka is on its way of value decaying and critically noted how more awareness is needed as a prime need for preservation and conservation of heritage against development trends. For this static approach would not work thus dynamic approaches must be taken to go with ever-changing social developments. Space perception with meaning and identity should be reinstated.

Thus, the following recommendations are made based on the fact that urban aesthetics have to be done in a way that the existing built fabric is not threatened, where urban in-fills are not diluting the city character. Thus importance of regularizing new development should be taken into consideration. For this colourscape of the city formed along with natural landscape and artificial elements should be reflected and concerns should be as follows,

- Built fabric should harmonize with the backdrop of green mountainous landscape
- Instead of white contrast on the buildings, earth-bound colours should be applied for the harmony within natural and built environment.
- Warm colours should be used in small scales in blended proportions to highlight the sense of place

These proposed guidelines can be explained in colour theory. The building façade's main colour should be earth-bound since it should be a act in contrast state in harmonizing with the cool coloured natural backdrop. Usage of warm colours comes to enhance, intensify and activate the spaces and minds of users within the ambience.



Figure 58: Proposed guideline for the zone DC in Dalada Veediya
Source: author

In right tones and proportions along with selected neutral colours as the major component it is clearly understood how same colours that cause visual pollution in modern developments can bring harmony into a city when correctly applied. Hence colour is a metaphor, a basic factor and a guideline to regulate in city planning. The symbiotic relationship between artificial and natural colour in a context will cause in a pleasant memory of the place either intentionally or unintentionally.

Finally it is understood that forced incompatible cool ours and materials from new social developments in the those street facades can be converted into authentic meaningful architecture by right application of colours along with material sand textures and through it to preserve urban heritage and archaeological significance of the city by sustainable colour perception .

References:

- Anon, (2017). *Project Maha Nuwara; The Great City*. [online] Available at: <https://ashwinjayalath.wordpress.com/gallery/maha-nuwara/> [Accessed 17 Mar. 2022].
- Billmeyer, F.W. and Saltzman, M. (1981). *Principles of color technology*. New York ; Chichester: Wiley.
- Faber Birren (1988). *Light, color & environment : presenting a wealth of data on the biological and psychological effects of color, with detailed recommendations for practical color use, special attention to computer facilities, and a historic review of period styles*. West Chester, Pa: Schiffer Pub.

- Gerhard Meerwein, Rodeck, B., Mahnke, F.H., Bruce, L., Gaskins, M.D. and Cohen, P. (2007). *Color : communication in architectural space*. Basel ; Boston: Birkhauser Verlag.
- Gorzaldini, M.N. (2016). The Effects of Colors on the Quality of Urban Appearance. *Mediterranean Journal of Social Sciences*, [online] 7(5). Available at: <https://www.semanticscholar.org/paper/The-Effects-of-Colors-on-the-Quality-of-Urban-Gorzaldini/c82d4ae6c3e10a16da48971ec752436d6b18cf88> [Accessed 25 Oct. 2020].
- Izard, C.E. (1989). *Human emotions*. New York Plenum.
- Kong, Y. and Dong, X. (2010). *Urban colourscape planning : a colour study of the architecture of Karlskrona*. [online] Saarbrücken, Germany: Lap Lambert Academic Publishing. Available at: <https://www.diva-portal.org/smash/get/diva2:832038/FULLTEXT01.pdf>.
- Liu, Y., Kang, J., Zhang, Y., Wang, D. and Mao, L. (2016). Visual comfort is affected by urban colorscape tones in hazy weather. *Frontiers of Architectural Research*, [online] 5(4), pp.453–465. Available at: <https://www.sciencedirect.com/science/article/pii/S2095263516300528>
- Lynch, K. (1960). *The image of the city*. Cambridge, Mass.: The M.I.T. Press.
- Mapio.net. (n.d.). *Kandy. Dalada Veediya*. [online] Available at: <https://mapio.net/pic/p-22454053/> [Accessed 17 Mar. 2022].
- Mbina, A.A. and Edem, E.E. (2015). THE ROLE OF COLOURS IN THE HEALTH AND WELLBEING OF THE BUILT ENVIRONMENT IN THE TROPICS. *European Journal of Research in Social Sciences*, [online] 3(3). Available at: <https://www.idpublications.org/wp-content/uploads/2015/04/THE-ROLE-OF-COLOURS-IN-THE-HEALTH-AND-WELLBEING-OF-THE-BUILT-ENVIRONMENT-IN-THE-TROPICS.pdf>.
- McLellan, G. and Guaralda, M. (2018). Exploring Environmental Colour Design in Urban Contexts. *The Journal of Public Space*, [online] 3(1), pp.93–102. Available at: <https://www.journalpublicspace.org/index.php/jps/article/view/320/308> [Accessed 3 Dec. 2019].
- Mikellides, B. (2016). *The effect of colour in the built environment - the scientific evidence - DesignCurial*. [online] www.designcurial.com. Available at: <https://www.designcurial.com/news/the-effect-of-colour-in-the-built-environment---the-scientific-evidence-4845049> [Accessed 8 Dec. 2021].
- Nami, G. (1992). *Fundamentals of Visual Arts*. Tehran: Toos.
- O'Connor, Z. (n.d.). *Colour in the built environment: Beyond aesthetics*. [online] Resene. Available at: <https://www.resene.co.nz/pdf/Zena-OConnor-Colour-for-Architects.pdf>.
- Pile, J.F. (1997). *Color in interior design*. New York: Mcgraw-Hill.
- Senaviratna, W.M.J.S.K. (2013). *IMPACTS OF COLOUR PERCEPTION IN KANDY WITH SPECIAL REFERENCES TO DALADA VEEDIYA AND D. S. SENANAYAKA VEEDIYA*. MSc Dissertation.
- Seneviratna, A. and De Silva, N. (1999). *World heritage city of Kandy, Sri Lanka : conservation and development plan*. Kandy: Central Cultural Fund.
- UNESCO (2020). *Cultural heritage*. [online] UNESCO. Available at: <https://en.unesco.org/fieldoffice/santiago/cultura/patrimonio> [Accessed 5 Apr. 2022].
- www.google.com. (n.d.). *ward street kandy old photos - Google Search*. [online] Available at: <https://www.google.com/search?q=ward+street+kandy+old+photos&tbm=isch&chips=q:ward+street+kandy+old+photos> [Accessed 17 Mar. 2022].