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**IMPACTS OF COLOUR PERCEPTION IN KANDY
WITH SPECIAL REFERENCES TO
DALADA VEEDIYA AND D. S. SENANAYAKA
VEEDIYA**

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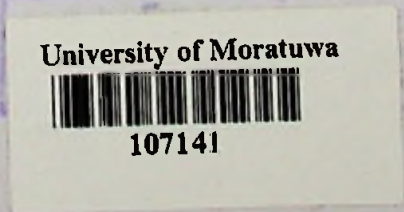
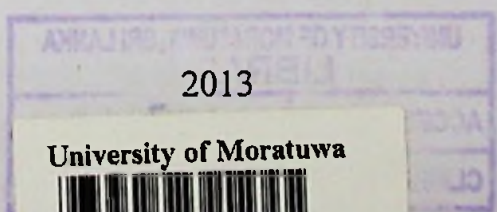
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CONTENTS

TABLE OF CONTENTS	PAGE NO
Declaration	vi
Acknowledgement	vii
Abstract	viii
List of Figures	ix

INTRODUCTION

Topic Explanation	xvii
The need for the Research	xviii
Amis and Objectives	xix
Scope and Limitations	xx
The Method of study	xxi

CHAPTER ONE

1.0 BACKGROUND OF STUDY AREA

1.1 The Location and the boundaries	01
1.2 Historic background of Kandy city	01
1.3 Development of Kandy city	02
1.3.1 Kandy during the time of the Dutch Period	02
1.3.2 Kandy during the time of British Period	07

1.3.3 Kandy during the Pre-independence Period.....	09
1.3.4 New development of the built environment of the Kandy City	10
1.4 Character of historic city of Kandy	
1.4.1 Tangible characters.....	13
1.4.2 Intangible characters	16
1.5 Social, cultural political and religious background of Kandyans.....	17

CHAPTER TWO

2.0 BACKGROUND OF COLOUR

AND IT'S USAGEIN BUILTENVIRONMENT

2.1 History of colour	20
2.2 Insight Sensations of colour towards people	21
2.2.1 Colour constancy.....	22
2.2.2 Simultaneous contrast	23
2.2.3 Optical mixture	23
2.2.4 Spatial dimension.....	23
2.3 Psychology function of colour	25
2.4 Conscious usage of colour in the built environment.....	27
2.4.1 The use of colour in Architecture.....	28
2.4.2 The use of colour in an urban context.....	29
2.5 The factors that influence in urban colour.....	30

2.5.1 Geography and climate	30
2.5.2 Historical and cultural context	30
2.5.3 Development of technology.....	31
2.6 Colour identity of model cities.....	31
2.6.1 Colorful <i>Jodhpur, Rajasthan</i> , India – Blue City	32
2.6.1.1 Street scape of <i>Jodhpur</i>	33
2.6.1.2 Activities of <i>Jodhpur</i>	33
2.6.1.3 Built fabric of <i>Jodhpur</i>	33
2.6.1.4 Colour schemes of <i>Jodhpur</i>	34
2.6.1.5 Study of the Present <i>Jodhpur</i>	36
2.6.2 Colorful <i>Jaipur, Rajasthan</i> , India – Pink City	37
2.6.2.1 Street scape of <i>Jaipur</i>	38
2.6.2.2 Activities of <i>Jaipur</i>	38
2.6.2.3 Built fabric of <i>Jaipur</i>	38
2.6.2.4 Colour schemes of <i>Jaipur</i>	40
2.6.2.5 Study of the Present <i>Jaipur</i>	42
2.6.3 <i>Guanajuato</i> , Mexico, North America – Silver City	42
2.6.3.1 Street scape of <i>Guanajuato</i>	43
2.6.3.2 Activities of <i>Guanajuato</i>	43
2.6.3.3 Colour schemes of <i>Guanajuato</i>	43
2.6.3.4 Study of the Present <i>Guanajuato</i>	46

CHAPTER THREE

3.0 CHARACTER OF COLOUR IN THE CITY OF KANDY

3.1 Use of Colour in Kandiyana Architecture	48
3.1.1 The usage of colour in the building envelope to achieve contrast against the backdrop	49
3.1.2 The usage of colour in building elements.....	52
3.2 Unique Usage of Colours in urban context of Kandy	55
3.2.1 Use of colour to enhance legibility of buildings.....	55
3.2.2 Use of Colour to define different Urban Districts, Nodes, Land makes and Edges	57
3.3 Impact of Colours on the complete visual image of Kandy	61

CHAPTER FOUR

4.1 CASE STUDY ONE – *DALADA VEEDIYA*

4.1.1 Study of the historic ward Street <i>Dalada Veediya</i>	64
4.1.1.1 Street scape of historic <i>Dalada Veediya</i>	65
4.1.1.2 Activities of historic <i>Dalada Veediya</i>	65
4.1.1.3 Built fabric of historic <i>Dalada Veediya</i>	66
4.1.1.4 Colour schemes of historic <i>Dalada Veediya</i>	67
4.1.2 Study of the present <i>Dalada Veediya</i>	71
4.1.2.1 Changing Street scape of present <i>Dalada Veediya</i>	71
4.1.2.2 Changing activities of present <i>Dalada Veediya</i>	72
4.1.2.3 Contemporary built fabric of present <i>Dalada Veediya</i>	73

4.1.2.4 Changing colour schemes of present <i>Dalada Veediya</i>	75
4.1.3 Impacts of colour perception of present <i>Dalada Veediya</i>	81

4.2 CASE STUDY TWO - D. S. SENANAYAKA VEEDIYA

4.2.1 Study of historic <i>D. S. Senanayaka Veediya</i>	82
4.2.1.1 Street scape of historic <i>D. S. Senanayaka Veediya</i>	82
4.2.1.2 Activities of historic <i>D. S. Senanayaka Veediya</i>	82
4.2.1.3 Built fabric of historic <i>D. S. Senanayaka Veediya</i>	82
4.2.1.4 Colour schemes of historic <i>D. S. Senanayaka Veediya</i>	83
4.2.2 Study of present <i>D. S. Senanayaka Veediya</i>	87
4.2.2.1 Changing Street scape of present <i>D. S. Senanayaka Veediya</i>	88
4.2.2.2 Changing activities of present <i>D. S. Senanayake Veediya</i>	88
4.2.2.3 Built fabric of present <i>D. S. Senanayaka Veediya</i>	89
4.2.2.4 Changing colour scheme of present <i>D. S. Senanayaka Veediya</i>	89
4.2.3 Impacts of colour perception of present <i>D. S. Senanayaka Veediya</i>	93

CONCLUSION	95
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BIBLIOGRAPHY	99
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DECLARATION

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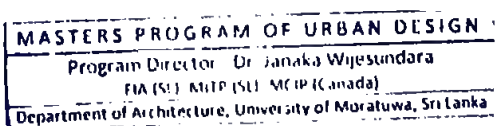
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Abstract

Colour plays a significant role in elements in the built fabric, where by it can enable a symbolic relationship between the people who comes in contact with the spaces. Thus colour can stimulate the minds of the people. Hence the effects on the perception of colour are interesting phenomena on the perception of spatial quality and human response to it, by those who come in contact with the spaces.

Nevertheless colour in built fabric can be a unifying thread in urban design where it can resemble the historic features, with a sense of time, and the evolution of the urban forms and street scopes depicting the life style and the activity pattern of the people in relationship to the townscapes in cities.

A holistic perception of colour can be the determinant factor in the street facades and the deep rooted socio cultural aspects in the evolution of cities. In modern planning of cities it is important to respond to the effects of colour in the design development guidelines and regularizing the planning trends where by the evolution of new building and structures can be done in an orderly fashion in harmony with the historicism embedded in the built fabric.

This dissertation intends to carry out an in-depth study, of the impacts of the perception of Colour in the city of Kandy, which is geographically located in a plateau surrounded by lush green mountain ridges, in the central hill of Sri Lanka. Where it was the bastion of the last reins, of the Sinhalese Kings, where it is a naturally fortified city which was a necessity to protect from the foreign invasions. Afterwards the city was under colonial rule. The city contains a deep rooted tradition, with the relationship of the users. The time period is reflected by the, symbolic relationship between the people and the urban spaces in the city, and the built fabric. The use of different colour shades, with its materials and textures resembling the identity of the subcultures in the region. The intensity of the colour used with the materials and elements stands out amongst the backdrop of the lush green mountain ridges and sky forming a horizon amongst the built fabric.

The usage of Natural, Cool and Warm colours in different blends in the Kandyan region with varying intensities resembles the deep-rooted tradition and culture creating a sense of place and a scene of identity.

The inappropriate usage of colour can create a dilemma of style and threaten to dilute the meaning and identity of the place and thus the importance of the appropriate colours in relations to the inferences of the case studies are then dealt upon. Thereby the appropriate usage of colour and thus augur in creating meaningful and aesthetically pleasing urban forms with the built fabric which inevitably will be a catalyzer in creating a sensory perception in cities with a sense of place with a unique identity.

Key words: Colour, Urban Colour, Building Fabric, Urban Fabric, Urban street scape

LIST OF FIGURES**PAGE NO**

Fig. 01	<i>Bahirawakanda</i> Mountain Range	03
Fig. 02	<i>Hanthana</i> Mountain Range	03
Fig. 03	<i>Udawatthakelle</i> Mountain Range	03
Fig. 04	<i>Gadaladeniya</i> Shrine	04
Fig. 05	<i>Embakke</i> Shrine	04
Fig. 06	<i>Lankatilake</i> Shrine	04
Fig. 07	<i>Natha Devala</i> Shrine	04
Fig. 08	Palace with the great Audience hall and the Temple of the Tooth	05
Fig. 09	Temple of the Sacred Tooth Relic	06
Fig. 10	Map of Kandy in 1700	06
Fig. 11	Map of Kandy in 1815	07
Fig. 12	Satinwood Bridge over the <i>Mahaweli</i> River near <i>Peradeniya</i>	08
Fig. 13	Prince Wales Ceylon <i>Gregory</i> Kandy Railway Station 1876	08
Fig. 14	<i>Peradeniya</i> Railway Station	08
Fig. 15	Queens Hotel Kandy Ceylon	09
Fig. 16	<i>Bogambara</i> Lake 1883	09
Fig. 17	View of Kandy, Ceylon 1894	09
Fig. 18	City of Kandy, Ceylon	09
Fig. 19	<i>Bogambara</i> Prison	09
Fig. 20	Nolli Map of Kandy in 1883	10
Fig. 21	Nolli Map of Kandy in 2000	11

Fig. 22	Classification of buildings by year of construction	11
Fig. 23	Kandy City haphazard developments	12
Fig. 24	New Bank of Ceylon Building Complex	12
Fig. 25	Kandy City Center shopping	12
Fig. 26	Object in the nature	14
Fig. 27	Clock Tower	14
Fig. 28	Temple of the Tooth Relic	14
Fig. 29	Historical building fabrics of <i>Dalada Veediya</i>	14
Fig. 30	Railway Station	15
Fig. 31	Good shed bus stand	15
Fig. 32	Pathway in-between lake and greenery	15
Fig. 33	Pathway through Queen's Hotel	15
Fig. 34	Pathway from <i>George De Silva</i> Park	15
Fig. 35	Kandy City views from mountains	17
Fig. 36	The Great Pyramids, Mask of Pharaoh and Egyptian Tapestry	20
Fig. 37	Stained glass window young Jesus teaching temple Mary Basilica	21
Fig. 38	Colour Constancy in nature	22
Fig. 39	Equinox, Hans Hofmann	23
Fig. 40	Row of colourful houses in <i>Burano</i>	23
Fig. 41	Colour wheel	23
Fig. 42	Warm colours	24



Fig. 43	Cool Colours	24
Fig. 44	Nutreal Colours	24
Fig. 45	The Colours of the visible light spectrum	25
Fig. 46	Colour Psychologies	26
Fig. 47	Panorama view of <i>Jodhpur, Rajasthan, India</i>	32
Fig. 48	Blue city Jodhpur, Rajasthan, India, with Mehrangharh Fort and <i>Jaswant Thada</i> mausoleum, <i>Rajasthan, India</i>	32
Fig.49	Building elements and street scape of Blue city <i>Jodhpur, Rajasthan, India</i>	35
Fig. 50	Natural colour analysis of <i>Jodhpur, Rajasthan ,India</i>	36
Fig. 51	Artificial colour analysis of <i>Jodhpur, Rajasthan ,India</i>	36
Fig. 52	Panoramic view from the hills surrounding <i>Jaipur, Rajasthan, India</i>	37
Fig. 53	"Pink City Palace", <i>Jaipur, Rajasthan, India</i>	37
Fig. 54	<i>Hawa Mahal</i> , or "Palace of the Winds", <i>Jaipur, Rajasthan, India</i>	37
Fig. 55	Pink buildings, Pink city, <i>Jaipur, Rajasthan, India</i>	39
Fig. 56	<i>Jaigarh</i> fort, <i>Jaipur, Rajasthan, India</i>	39
Fig. 57	Downtown <i>Jaipur, Rajasthan, India</i>	39
Fig. 58	Steve <i>Goldthorp</i> , <i>Jaipur, Rajasthan, India</i>	39
Fig. 59	Ajmeri Gate, <i>Jaipur, Rajasthan ,India</i>	40
Fig. 60	The City Palace of <i>Jaipur, India</i>	40
Fig. 61	Natural colour analysis of <i>Jaipur, Rajasthan ,India</i>	42

Fig: 62	Artificial colour analysis of Jaipur, Rajasthan ,India	42
Fig. 63	<i>Guanajuato</i> city image	44
Fig. 64	Basilica of our Lady of <i>Guanajuato</i>	44
Fig. 65	Plaza San Fernando, in <i>Guanajuato</i>	44
Fig. 66	Colourful streetscape, <i>Guanajuato</i>	45
Fig. 67	Purple blossoms of the <i>jacaranda</i> trees in spring add to an already colourful city	46
Fig. 68	Natural colour analysis of <i>Guanajuato</i> , Mexico	46
Fig. 69	Artificial colour analysis of <i>Guanajuato</i> , Mexico	46
Fig. 70	Temple of the Tooth , <i>Lankatilaka</i> Temple, <i>Gadaladeniya</i>	48
Fig. 71	<i>Natha Devalaya</i> ,The Royal palace, Audience hall	48
Fig. 72	Colour analysis of walls and other elements of <i>Kandiyan</i> Architecture	49
Fig. 73	Temple of the Tooth ,Royal Palace of Kandy, Old Street of Kandy	51
Fig. 74	Queens Hotel	51
Fig. 75	Colour analysis of Building Envelop of historic city	51
Fig. 76	Colour analysis of Building Envelop of Present city	52
Fig. 77	Historic use of colour in Building Elements	53
Fig. 78	Present use of colour in Building Elements	54

Fig.79	Canopies, name boards and text colour analysis of present <i>Dalada Veediya</i>	54
Fig. 80	Tempel of the Scared Tooth, <i>Ulpan ge</i>	55
Fig. 81	Temple of the Tooth ,Audience hall, Trinity Chapel	56
Fig. 82	St. Paul's Church, St.Anthoney's Cathedral, <i>Natha Devala Shrine</i>	56
Fig. 83	Temple of the Tooth Royal Palace of Kandy, Old Street of Kandy	59
Fig. 84	Market, Railway Station, Good shed bus stand	59
Fig. 85	Temple of the Tooth,Queen's Hotel,Old Police Station	60
Fig. 86	Clock Tower Temple of the Tooth, Water Fountain Near <i>mahamaluva</i>	60
Fig. 87	Lake Edge	61
Fig. 88	Wared Street (<i>Dalada Veediya</i>)	65
Fig. 89	Baptist Church	65
Fig. 90	Natural Colour analysis of historic <i>Dalada Veediya</i>	68
Fig. 91	Buildings in <i>Dalada Veediya</i>	68

Fig. 92	Decorative window designs in historic <i>Dalada Veediya</i>	69
Fig. 93	Door and Window colour analysis of historic <i>Dalada Veediya</i>	69
Fig. 94	Decorative Hand rail designs of historic <i>Dalada Veediya</i>	70
Fig. 95	Hand rails colour analysis of historic <i>Dalada Veediya</i>	70
Fig. 96	Moldings, columns and arches designs of historic <i>Dalada Veediya</i>	70
Fig. 97	Moldings, Columns and Arches colour analysis of <i>historic Dalada Veediya</i>	71
Fig. 98	Decorative Valance board designs of historic <i>Dalda Veediya</i>	71
Fig. 99	Decorated Valance board colour analysis of historic <i>Dalda Veediya</i>	71
Fig. 100	Map of percent <i>Dlada Veediya</i>	71
Fig. 101	Peoples Bank building	74
Fig. 102	City Center shopping complex	74
Fig. 103	<i>Gorge E.De. Silva</i> Park as remarkable space	75
Fig. 104	Natural colour analysis of present <i>Dalada Veediya</i>	76
Fig. 105	External wall and roof colure analysis of present <i>Dalada Veediya</i>	76
Fig. 106	Bank of Ceylon building façade colour analysis	77
Fig. 107	Bank of Ceylon building	77
Fig. 108	People Bank building	77
Fig. 109	City Center shopping complex	77
Fig. 110	City Center shopping complex building façade colour analysis	78
Fig. 111	Cargill's Building	79

Fig. 112	Devon Bakery	79
Fig. 113	Canopies, name boards and text colour analysis of present <i>Dalada Veediya</i>	79
Fig.114	Proposed door and window designs of present <i>Dalada Veediya</i>	79
Fig.115	Proposed Doors and Window colour analysis of present <i>Dalada Veediya</i>	79
Fig.116	Proposed Hand rails details of present <i>Dalada Veediya</i>	80
Fig.117	Proposed Hand rails colour analysis of present <i>Dalada Veediya</i>	80
Fig.118	Proposed façade elements of present <i>Dalada Veediya</i>	80
Fig.119	Natural colour analysis of present <i>Dalada Veediya</i>	81
Fig.120	Natural colour analysis of historic <i>Dalada Veediya</i>	81
Fig.121	Artificial colour analysis of historic <i>Dalada Veediya</i>	81
Fig.122	Artificial colour analysis of present <i>Dalada Veediya</i>	81
Fig.123	Natureal colour analysis of present <i>D. S. Veediya</i>	84
Fig.124	Decorative Doors of historic <i>D. S. Senanayaka Veediya</i>	85
Fig.125	Decorative Windows of historic <i>D. S. Senanayaka Veediya</i>	85
Fig.126	Decorative Door and window colour analysis of historic <i>D. S. Senanayaka Veediya</i>	86
Fig.127	Decorative Hand rail designs of historic <i>D. S. Senanayaka Veediya</i>	86
Fig.128	Decorative Hand rails colour analysis of historic <i>D. S. Senanayaka Veediya</i>	86
Fig.129	Decorative Moldings, Columns and Arches designs of historic <i>D. S. Senanayaka</i>	86
Fig.130	Decorative Moldings, Columns and arches colour analysis of historic <i>D. S. Senanayaka Veediya</i>	86

Fig.131	Decorative Valance board designs of historic <i>D. S. Senanayaka Veediya</i>	87
Fig.132	Decorative valance board colour analysis of historic <i>D. S. Senanayaka Veediya</i>	87
Fig.133	Map of <i>D. S. Senanayaka Veediya</i>	87
Fig.134	Natural Colour analysis of Present <i>D.S. Senanayake Veediya</i>	90
Fig.135	Altered Building facades of Present <i>D.S. Senanayake Veediya</i>	91
Fig.136	External walls and roof colure analysis of Present <i>D.S. Senanayake Veediya</i>	91
Fig.137	Altered Building facades with name boards, displays of Present <i>D.S. Senanayake Veediya</i>	91
Fig.138	Facades with name boards, displays Colour analysis of Present <i>D.S. Senanayake Veediya</i>	92
Fig.139	Altered Windows designs with new materials and colour of Present <i>D.S. Senanayake Veediya</i>	92
Fig.140	Altered door and window colour analysis of Present <i>D.S. Senanayake Veediya</i>	92
Fig.141	Altered decorative hand rail designs of Present <i>D.S. Senanayake Veediya</i>	92
Fig.142	Natural colour analysis of Historical <i>D.S. Senayake Veediya</i>	93
Fig.143	Natural and artificial Colour analysis of Present <i>D.S. Senayake Veediya</i>	93
Fig.144	Artificial colour analysis of walls and other elements of Historical <i>D.S. Senayake</i>	94
Fig.145	Artificial colour analysis of walls and other elements of Present <i>D.S. Senayake</i>	94



INTRODUCTION

Topic Explanation

Impact of colour perfection has a direct impact on human behavioral patterns and the urban character and creates a sense of place and a sense of identity. Therefore, the image of colour in an urban context directly results as a response to the sub-cultural elements prevalent in the area or the other as a response to the context.

The built fabric and the streetscapes of a city resemble the historicism of urban form and the evolution of the city where the dwelling and the public space resembles the human behavior pattern of the place.

The perception of colour has a psychological impact on the users of a city. Thus the resemblance of the colour perception has a symbolic relationship between the users of the urban fabric and the built fabric.

In the present era it can often be seen that the colour scheme used in the cities is done in an unplanned manner, they do not harmonize with the vernacular elements and built fabric of the city. This results in a delusion of the cultural character of the place which inevitably creates placeless, senseless spaces in the urban context.

This has resulted in ugly unplanned cities with haphazard development. The identity and character of a city can be maintained by the presence and usage of colour with the elements and textures. Thus, colour plays a very significant role in the process of the place making instead of mere space making. The ambiance of a space has a strong impact on the composition of colour presence in the space.

The city of Kandy the last capital of the Sinhala Kingdom plays a significant role in the history of Sri Lanka. The continuous South Indian invasions forced the ancient kingdoms to be shifted to the center of the island from the Dry Zone.

The Natural fortification of the Kandy's geographic setting with its physical barriers has made the Kandy City a secured location. The presence of Forest cover (*Udawatta Kelle*) and Mountain ranges (*Hantana* and *Bahirawakanda*) and the water features (*Dunbara valley*) protects the city from all sides. Which in local terms referred are as follows,

- Wana Durga* - Forest barriers
- Giri Durga* - Mountain barriers.
- Jala Durga* - Water (Hydro) barriers

The indigenous and authentic arts and craftsman-ships enriched the cultural heritage of the city. The indigenous timber architecture and other elements that are authentic to the region such as the Kandyan roof, excessively prominence in the built forms.

All materials and elements that are used have a texture and colour that is indigenous to the area. Hence the sense of place and sense of identity of the area that is created has a coherent relationship between the elements and the composition of the scales and proportion that are orchestrated.

Range of tools in urban designing to uplift the quality of the urban built form headed for users. The colour is one of the important tool uses in such process to elevate ultimate overall coziness of the city. It has been known to humankind from ancient times that colour has strong impact towards our emotions, moods, and behavior. Colour significance is relevant to every place that is significant about a city or region. Cities are urban settlements for people, in which natural environment is dominated by man-made structures. Nevertheless colour in natural environment and man made structures were harmonizing among them soothing in urban context and the living and the visiting publics in an urban setting. Thus such addition will be vibrant to the urban setting were directly and indirectly result the mood and behavior of people living in urban settings.

This dissertation is based on the Impacts of Colour Perception in relation to Kandy city. The study is mainly focused on the tangible and intangible characters along the two main streets such as *Dalada veediya* and *D. S. Senanayaka veediya*, which incorporates the positive and negative effects with the changes which are taking place in the recent past.

The Need for the Research

“Kandy was a small but independent medieval kingdom with its own traditions and way of life base on earlier and much larger kingdom in the island. This unique civilization has stamped its originality on the world’s culture and the history”

Robert Knox

Every city has a specific urban character of its own just as distinct as it is language and identity. Each succeeding century has a very distinct character of its own. But modified by the different cities by buildings and planning with different urban tools.

Colour is the one of the most outstanding urban tool used in practice and which directly or indirectly affects for the perception of the city as a complete entity.

Study about urban colour identity prototypes are the very greatest example to revision about existing colour pattern and colour character of a city. By study of prototypes during the early period one can notice precisely that there is a significant change from one period to another. Old buildings have much to demonstrate to us about the values and the attitude of the ancestors.

The very reasons for successes of designing in the ancient times were that the complete manifestation in architecture and urban design and well awareness of their culture, social, climate and religious surroundings, which is not considered in to a greater extent in present day context. Therefore the study focused on basic traditional concepts would be reminder for new generation enhanced as a guide lines in the research. Subsequently that would be created the expected social harmony within the City of Kandy.

A descriptive study of the Kandy colour comfort towards general public would leave and individual with sufficient identify the era but confused as to which path is appropriate. Therefore it is necessary to carry out a critical analysis of the prototypes which would discuss merits and the demerits. Thus this study is colour impact in emotion, moods and behavior of general publics, with special references to most outstanding main two (*veediya*) streets as *Dalada veediya* and *D.S. Senanayaka veediya* in Kandy. What ways artificial colour applications effects on people such as moods, emotion and behavior patterns etc. And also the better manner and how we could further improve the positive conditions of people emotions, moods and behavior through introducing appropriate colour palette to the urban fabric.

Amis and Objectives

The aim to research the relationship of colour in the urban fabric is to study colour history in the urban built environment and the present state, and to analyze the impacts on the urban character, scale and cultural factors through confirming the

present colour combinations and relationships of the city. Accordingly, it is important to understand the characteristics of the city scape. This will be very much vital to abstract the urban chromatogram and provide a real foundation to protection and the development of the urban landscape into a sustainable, friendly and livable one, thus these are basis for further planning.

It is significant to identify inappropriate colour pattern as a cause to deterioration of historic city. Lack of sensitivity in the construction industry, colour incompatibility can identify in contemporary urban context, such resulted a deterioration of the character of historic city. Therefore it is essential to study and identify the colour guideline to remain the existence colour pattern to stand and enhance the character of historic city.

The Impacts of colour perception will be studying mainly in the building's facade or prototypes by different periods and surrounding context of the urban fabric. And the relationship between the settings will be studying in order to responses, research inquiries data will be collected as records of old existing buildings. Accordingly furthermore, the existing buildings, photographs and visual surveyors of the building façade, street scape and immediate context will be considered.

To identify distinct colour pattern taken in to consider as case studies most outstanding streets in Kandy as *Dalada Veediya* and *D.S.Senanayeka Veediya*. Finally, the outcome of the study leads to prepare a guide line for the development of historic city of Kandy, which could be incorporated with the urban design and architecture for new developments to uplift the character of the Kandy city.

This study focused on change of colour and impacts, perception towards the people, as one of the most important factor in the urban built fabric.

Scope and Limitations

The contemporary task is different due to numerous changes of urban patterns, increased of standards living, available of different materials, colour and greater choice of design possibilities, the necessity to build economically demand considerable knowledge. Therefore for an urban designer has greater potential to use immense range of tools in urban design and due to variations identified in urban

context .Which directly or indirectly affect for the comfort of user within the urban settings.

Accordingly with the limited period of time the study is limited to analyze colour as a tool in urban design with selected street scape and in relation to the immediate context with most wonderful streets as *Dalada veediya* and the *D. S. Senanayaka veediya* in Kandy.

The Method of Study

Basically the study is comprises in four chapters including an Introduction and a Conclusion. The First chapter was carried out as a secondary research of background of the study, which is almost base on the literature survey, was done about formation and evaluation of Kandy city and history of Kandy city using most of the written material and articles states in the bibliography, and the changes were taken through the centuries were studied using the ancient maps, town sheets, engravings, records and photographs which are available.

In the second chapter was carried out as a secondary research of comprehensive background of colours and its usage in the urban built environment and identity of model cities, with comprehensive literature survey was done using most of the written material and articles states in the bibliography.

The third chapter extensively discusses character of colour in the Kandy city; mainly the history and the initial function of the building should be recognized. When particular prototype selected main function and the construction specialties the concepts behind that, the reasons to construct them in that manner and what type of social and cultural background was there, in relation to the era, is established. Also materials and colour the used and how effective they are on particular photography and to suit the climate condition. To realize the above findings this study will initially concentrate on identifying the main prototypes used by our ancestors. Then few prototypes would be critically analyzed and the merits and demerits the impact on urban built fabric. The study intents to make suggestions on each prototype as how and when to be used in design and the present day urban context to further more uplift comfort of user with relation to social, physical and climate conditions, how

relevant that is in to present day context and the possibilities of developing them to present day context and for the future.

In the final chapter or fourth chapters of the study comprises with case studies, the collected information and data through literature and filed was organize in a logical manner and has presented in the form of written dissertation.

The research was based on existing buildings applied colour. The Impacts of colour perception will be studying the buildings or prototypes by different periods. And the relationship between the locations will be studding in order to answers research inquiries, three type of data will be collected, records of old existing buildings, existing buildings photographs and visual surveyors.

Data analysis will be taking place, simultaneously with the data collection as to refine the urban experience, which is an important mode to research about the relationship of colour in the urban built environment.

This gathered data will be evaluated, seeking comprehensible patterns and interpreted to answer the research inquiries as a conclusion remark.

CHAPTER ONE

1.0 BACKGROUND OF STUDY AREA

1.1 The Location and the Boundaries

Kandy the capital of the Central Province is located 1526 feet above the mean sea level. The Central Province comprise of the districts of Kandy, *Matale* and *Nuwaraeliya*. The city of Kandy is located in a valley range of mountains. Kandy, the last seat of royal power, was the capital of the Kandyan Kingdom from the reign of *Vimala Dharma Suriya* (1591–1604) to *Sri Wickrama Rajasinghe* (1798-1815). The Kandyan Kingdom comprised of five highland areas and thus it was known as “*Kanda Uda Pas Rata*”. According to *Mahawansa*, the great chronicle of Sri Lankan history, the hill country was known as *Malaya Desa*. Later it was known as “*Kanda Uda Pasrata*” or the city of *Senkadagala Siriwardhanapura*.

Starting from the early kingdom period, Kandy was not more than an average village by comparing with great cities like *Anuradhapura* and *Polonnaruwa*. Kandy being the hill capital, was founded on a low lying ground besides a river, overlooked by nearby hills, and often hidden within a wooded surrounding that occupied a large area.

1.2 Historical Background of Kandy City

“The last capital of the Sinhala kings, Kandy is remarkable for the natural beauty of its setting in a peaceful wooded valley overlooking a vast artificial lake. The palace buildings, shrines and the British period buildings give it a special character, while the religious importance of the Tooth Relic and the annual precession of the Dalada Perahara contribute a dynamism and unique cultural importance to the historic hill capital.”

Nihal Karunaratna, 1999, p01

According to the chronicles, *King Wickramabahu IV* of *Gangasiripura (Gampola)* desirous of founding a new city selected the location currently occupied by the *Dalada Maligawa* (The Temple of the Tooth Relic on the advice of the royal astrologers.) The city was founded by the king *Sena Sammatha Wickramabahu* as a defended city in the year 1469-1511 A.D. to prevent invasions from the kingdom of *Kotte* in the west of the country, which was occupied by the Dutch during this period.

The hill capital, located on a low lying ground besides the river *Mahaweli* on its West, North and East and surrounded by hills was often hidden within the surrounding large wooded large area. Huge water and high security of its location in a hilly environment with the river *Mahaweli* on its west, north and east made it a successful capital and a unique place. The natural setting confined the city's horizontal growth and shaped it into a triangular basin. The city rises to an altitude of 600m from the mean sea level and drops to a basin surrounded with hills on one side and a river on the other. Ultimately, incorporated with a forest reserve and a man – made lake, it gained a more naturalized setting.

Kandy has played an important role in Sri Lankan history, not only as the last capital of Sri Lanka, but also as the last bastion of the Sinhala culture that flourished for more than two thousand years. Several times Dutch invaders burnt the city but could not retain the city for a long period.

"The city could never again acquire the magnificence it possessed under King Vimala Dharma Sooriya. Wave after wave of the fresh invaders trampled and ground the city to dust beginning with de sag in 1629" *Return to Kandy, Page 03*

The long tradition of values, arts, architecture and literature ended in Kandy with the handing over of the city by the Sinhala king to the British in 1815. This was the last link in a long continues chain, but fortunately Kandy has preserved certain important aspect of the performing arts, architecture and religious practices of the by-gone civilization, providing an opportunity for present and future generations to identify the roots of their past.

1.3 Development of Kandy City

1.3.1 Kandy during the time of Dutch period

Kandy became the capital of the kingdom in 1592. It was a turbulent period in history with European powers fighting to gain control over the coastal areas of the country making the islanders flee to the interior. Although taken several times, Kandy remained the bastions of Sinhalese independence until the British troops entered it on 14 February 1815.

Kandy was the capital from the reign of King *Vimaladharmasuriya I* (1590–1604) to King *Sri Vikrama Rajasinha* (1798-1815) - the last seat of royal power. Enshrined in the

Dalada Maligawa is the tooth relic of Lord Buddha venerated by Buddhists. Kandy remains the religious capital of Buddhism and a sacred city of millions of believers. Initially the city, known as Senkadagala Nuwara, was a capital of little political importance.

Mountains as a defense strategic principles evolved as methods of defense in planning cities in the east were fulfilled by the natural barriers of mountains (*giri durga*), water (*Jala durga*), forest (*Vana Durga*) and marshes (*Panka Durga*). The Kandyan Kingdom was self sufficient in the basic requirements of food and water. They needed protection from invaders. The rulers maintained a thick forest cover around the city to make the approach difficult as a defense strategy. The geographical location of Kandy was also a natural defense strategy. The city was located in a valley surrounded by three mountain ranges. To the east *Udawaththa Kele*, the *Hanthane* range on one side and the *Bhirawa Kanda* range on the other. The river *Mahaveli* flowing towards the north-west turns back on itself towards the south-west, forming a triangular boundary. This natural system of defense was very useful in protecting the city from many attempted invasions by the Portuguese, Dutch and British.



Fig. 01, 02, 03 Respectively, *Bahirawakanda* Mountain Range| *Hanthana* Mountain Range
Udawathakelle Mountain Range

Source: https://www.google.lk/search?q=kandy+images&source=inms&sa=X&ei=-hATU5HhNYiTiqfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1

First stage of development of the city, when the Royal seat moved to *Gampola* in the 14th century attention was paid to establishing religious shrines and settlements in the central hills. In this development processes a special type of planned village settlements were noticed in association with these Temple shrines. The Temple was located on a main street with regularly placed housing these streets became the path for the annual religious procession held in honor of the gods to whom the shrines were dedicated. This settlement plan can be seen even today at *Gadaladeniya*, *Embakke*, *Lankatilake*, *Vegiriya* etc.



Fig. 04 *Gadaladeniya* shrine Fig.05 *Embakke*
Source. *Lankapura* historic images of Sri Lanka

Fig.06 *Lankatilake* shrine



Fig.07 *Natha Devala* Shrine
Source. *Lankapura* historic images of Sri Lanka

Natha Devala in Kandy is a contemporary shrine with excellent architecture well built in stone enshrining a beautiful seated large bronze statue of God *Natha*. The statue is an Image of *Bodhisathwa Avalokitheshwara* who is venerated and respected by the Buddhists. The Northern *Wahalkada* or the ceremonial gate way entrance from the main street is still intact. Thus, it can

be surmised that the *Natha Devala* Shrine also would have followed the same village planning system related to the shrine as in the other temples. However, the original village plan would have totally changed due to the establishment of the royal palace and the city by subsequent kings. King *Senasammatha Vikramabahu* (1473-1511AD) established Kandy as his royal residence and the city was known as *Senkadagala Nuwara*.

The Kandy city map in 1765 clearly shows the development of the city as a defensive town. There were no approach roads to the city. What one can see are only the lush green mountain ranges and the *Maha Waluka* River protecting the city from the invaders. But the development of the city core area was already started.

Kandy as Regal city does not possess the monumental wealth of the first two capitals of the island, *Anuradhapura* and *Polonnaruwa*. It is built in a small wooded valley deep in the hills. The monumental zone on the northern shores of the lake include the remains of the Royal Palace with the great Audience hall, the Temple of the Tooth, the Palace of King *Sri Wickrama*, the Queen's apartments and bathing house, the *Palle Wahala*, the *Ran Ayuda Maduwa*. Three other monumental groups, those are *Dewala*, *Malwatte Vihara* and *Asgiriya Vihara*, the three other monumental final elements of this important complex.



Fig. 08 Palace with the great Audience hall and the Temple of the Tooth
Source. *Lankapura* historic images of Sri Lanka

The existing Royal Palace and the Temple of the Tooth date from the reign of King *Keerti Sri Rajasinghe* (1747-1782). However a temple built in 1603, was destroyed by the Portuguese in 1637, and rebuilt in 1697. As a reference to the great Architecture of *Anuradhapura*, the first historic capital, the present grander edifice was built upon a granite substructure. In addition to granite a wide variety of material were used for this extraordinarily rich building: limestone, marble, sculpted décor and include purely decorative motifs as well as different series of figures (dancers, acrobats, animals) on the beams and ceilings.

"The best are those that do belong to their idols, wherein stand their devales or temples. They do not care to make streets by building their houses together in towns, but each man lives by himself in his own plantation being a hedge it may be and a ditch round about his to keep out cattle... .."

Robert Knox

According to Knox the town is placed some distance from the access ways, they thought that their towns should not be an accessed by all but only by those that have business with them. They are not very big, in some maybe forty, and some fifty houses, and in some above a hundred and in some again not above eight or ten. The character of the medieval city was preserved when Kandy was established as the capital of the hill country. The hierarchy was emphasized by the privileged location of the royal palace and the temple of the scared tooth relic high up on the terraces of the eastern hill, overlooking the residential area with its roads laid out on regular grid oriented to the cardinal points. The palace was physically separated from the sanctuary area by a moat, an open esplanade and a group of religious buildings.





Fig. 09 Temple of the Tooth
 Source. *Lankapura* historic images of Sri Lanka

The temples dedicated to *Natha*, *Vishnu* and Goddess *Pathhini* were planned as sacred precincts surrounded by stone walls with entrance gateways. The temple of the God *Kataragama* was located within the residential area, but close to the palace.

The most significant cultural procession, “the *Perahera*” starts from the Temple of the Tooth Relic and proceeds along the selected routes within the city. According to



Fig. 09 Map of Kandy in 1700
 Source. Author

available evidence and comparison with the present situation, it is observed that the *perahera* influenced to mostly to form city and its activities. Because normally other than the Royal tusker who carries’ the Relic Casket is flanked by two guardian tuskers. Therefore, the width of the streets may have taken the length of three Elephants when placed in a row. The houses on either side of the street were built to respond to the great pageant. Therefore, according to available evidence and comparison with the present situation, it is observed that the *perahera* influenced to mostly to form city and its activities.

1.3.2 Kandy during the time of British Period

Kandy was the capital for over 300 years. The power of the king flowed out of the capital, while the people came to the city not only to see the splendor of the palace, *maligawa* and important building but also to view the spectacular *perehara* and other

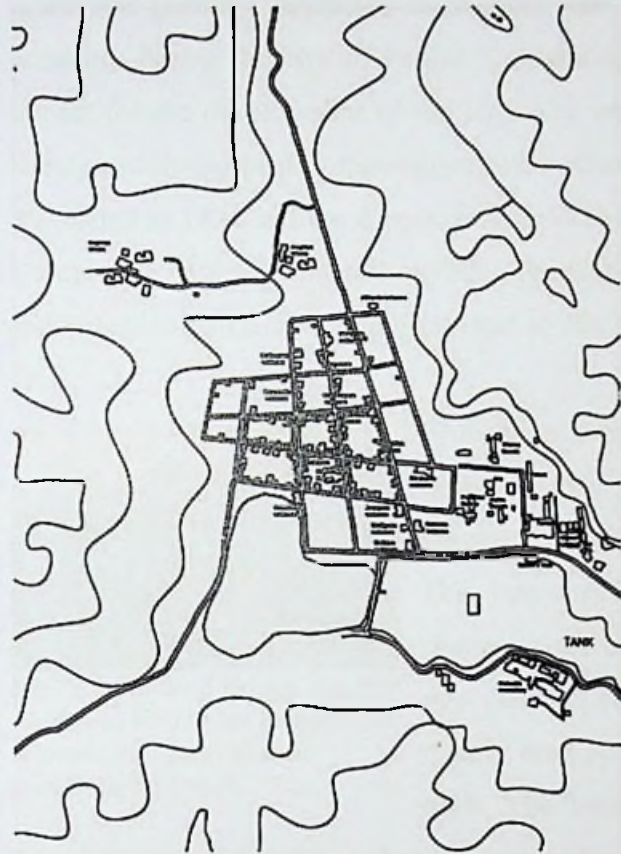


Fig.11 Map of Kandy in 1815

Source. Author

festivals. After the British conquest, this capital of the kingdom was gradually reduced to an administrative center of a province over a several years.

This reduction in status inevitably affected the development of the city. During the 130 years of British occupation in Kandy, the city grew in scale, particularly the residential areas, and many hotels and commercial, residential and administrative building were built. In addition many conceptual changes were imposed in Kandy immediately after its occupation by the British who cut down the thick forest surrounding the city

for reasons of security. The town had its origin during the British captivation, which brought forth a vast change in the topography and the landscape. The city is in fact made up of two segments vis-à-vis. Those are the old town to the north of the *Dalada veediya* and the new town to the south of the *Dalada veediya*. The regal city lies in the higher level and the grid city in a descending manner on one site. Each depicts a different pattern of architecture, built form, and culture; for instance the regal city with its Kandyan art and architectural elements, the grid city with colonial buildings and Kandyan chieftain's houses and the new section with a mixture of colonial and post-colonial fabrics arranged in a haphazard manner. The story height of the old town buildings did not exceed more than two levels. The humble scale of the building

in this respect, contributes to highlight the visual contrast of the prevailing landscape. Still, the traditional distinction of civil and religious buildings by their styles and prominence is static in the cityscape. The boundaries of a regal city signify isolation and protection, and bear possible the prevention of contact. This concept in the traditional political landscape of Kandy was diverted to a different concept of boundary during the British Period. Construction of new roads made a significant impact for the development of the city. The great military roads from Colombo to Kandy and *Ambepussa* to *Kurunegala* were commenced in 1820. The Kandy road was completed in 1831 and the *Kurunegala* in 1825. The road from *Kurunegala* over the *Galagedara* pass was finished in 1821. The Kandy *Matale* road was opened in 1831, and extended to Dambulla in 1832 and to the boundary of the Eastern province in 1833.



Fig.12 Satinwood Bridge over the *Mahaweli* River near Peradeniya
Source. *Lankapura* historic images of Sri Lanka

With the construction of a railway line linking Kandy to Colombo communications and transportation of goods became very much easier. The introduction of a railway caused a drastic change in the urban form of the city. This created a new demand, accommodation for visitors and guests mainly coming from Colombo. Grand Hotels were built. The impact created by the Construction of

these large colonial buildings brought a new dimension to the overall scale of the city.



Fig.13 Prince Wales Ceylon *Gregory* Kandy Railway Station 1876 Fig.14 Peradeniya Railway Station Source. *Lankapura* historic images of Sri Lanka

Development of Kandy created a demand for commercial buildings and housing. Due to the restricted geographical location the land available within the city for construction was limited.



Fig.15 Queens Hotel Kandy Ceylon
Source. *Lankapura* historic images of Sri Lanka

Around 1885 the British drained a large part of the *Bogambara* Lake and filled a large area by draining of *Bogambara* Lake, filling a major portion of it, and extending *Dalada veediya* up to *Katu kele*. This drastic change to the city created a new land within the city for housing and other buildings. This resulted in a major alternation in land use and the construction

of *Bogambara* prisons within the city created a substantial change in the configuration of the city.

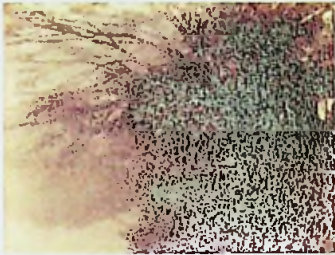


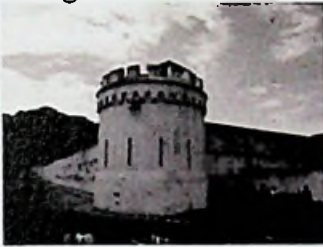
Fig.16 *Bogambara* Lake 1883
Source. *Lankapura* historic images of Sri Lanka



Fig.18 City of Kandy, Ceylon



Fig. 19 *Bogambara* Prison ,Kandy
Source. *Lankapura* historic images of Sri Lanka



1.3.3 Kandy during the time of Pre Independent Period

With the independence, the new wave of architectural style attracted the country restricting the use of timber and tiles in buildings, and introducing reinforced concrete. Instead of timber molding and columns they used concrete columns and cement moldings. This type architecture was identified as pseudo architecture. The use of the land within the core area was regulated and controlled.

Only the development of land for the preservation of places and structures of religious worship or places of architectural, archaeological or artistic nature was permitted. On other hand there are several types of new buildings that have come up in the core area. Due to the limited availability of land the city started to expand along mountains

at the boundaries of the city. Another aspect of the deterioration of the character of the city commenced with the introduction of the open economy. Building materials which

contributed to rapid construction were made available and the use of glass and



aluminum framework with concrete construction, were made use of for commercial and administrative buildings. The use of glass with aluminum framework with the concrete began to fade the character of the urban center. Unauthorized construction of buildings has created buildings that do not respond to or respect the historical values. Development of the city has occurred in several historical layers with the building buildings in each "layer identifiable by its unique characters. However the new constructions ignore this unique aspect of the development of the city of Kandy.

Fig.20 Noll map of Kandy in 1883
Source. Author

1.3.4 New Development of the Built Environment of the Kandy City

Kandy city is unique with physical and qualitative characters. It is formed with uniqueness of object, fabric, paths, district and all elements of the city. Clearly defined grid-iron pattern of road system has helped to create a significant character in the city of Kandy.

The city is divided into separate districts according to the activities contained in the area mainly as religious and commercial. The area is becoming totally commercialized. Construction of new buildings in the old context is happening more

rapidly than ever. Main reason for the deterioration of the character of the City of Kandy is because the city has tried to develop too rapidly.



Fig: 21. Nolli Map of Kandy in 2000
Source. Author



Fig. 22 Classification of buildings by year of Construction
Source. Author

Kandy city is located in a valley with limited flat land area. Hills at each boundaries of the city guaranteed protection in the past. However it physically obstructs the extension of the city. Limited land availability causes drastic changes to the urban settlements. Thus today the core area of the city is mostly filled with buildings. Settlements are trying to spread towards the western range of *Hanthana* Mountain, toward *Lewella* at the eastern side has taken place. In other hand people are trying to settle along *D. S. Senanayka Veediya* to *Katugasthota* in northern side. But due to the haphazard development the contextual response to new construction are questionable due to the destruction of the natural environment and panoramic view. As an example, *bahirava kanda* is a beautiful mountain. Natural beauty of that is destroyed by uncontrolled developments. Damages of the context can be protected, if it is developed in orderly manner.

Different type of architectural styles can be seen among the buildings in the city. Some buildings, especially the religious buildings retain the characteristics of the

Kandyan period. While the Post Modern buildings display the traditions of British colonial buildings. Spatial and visual characters can be clearly seen in these old buildings. All of those buildings are expressed unique character of that period. But those are respected to past and mountain historical layers of historical development process.



Fig.23 Kandy city haphazard developments
Source. Author

But the new constructions are totally violating the old architectural style by not responding to the context. It has abandoned the importance of total image of the city. New constructions have to be conscious of and responsible about historical layers. These are different in material, details, colour, textures and scale when comparing with the old building. Responsiveness of these buildings to the context is questionable. According to the old grid iron pattern one district contained a similar type of activities. Buildings were too at the same scale comparing with scale of the district. When considering the present situation, the scales of the buildings are not considered.

The New Bank of Ceylon building is constructed with new material such as wall tile, Glass and aluminum. Detailing is more closely related with the British architectural style. By using a Kandyan roof as a roof structure designer has tried to give a Kandyan character to the building. But the Kandyan roof which does not match with that style. It is a composition of, proportions and combination of all other factors.



Fig.24 New Bank of Ceylon Building Complex
Source. Author



Fig. 25 Kandy City Center Shopping

Colour combination of the building is acceptable in an urban environment, but not with old buildings. Responsiveness to historical buildings by colour usage of new building is questionable. Entrance foyer of the building creates a quality of a gathering space and act as a transitional space between the busy roads and the building. As a whole this building stands along without disturbing to the context.

New market concept is one of a major development in Kandy historical setting. It is located near the bus terminal, surrounded with several important heritage buildings. This is to be considered as a massive development which is taking place in the historical core area. The negative impact will be more where the heritage value is higher.

In the past time that land occupied by some retail sellers and a school, *Kappetipola Maha vidyalaya*. This area consisted with small plots occupied by private owners and several commercial activities were established. At present the whole area is occupied by the new shopping complex and the car park. This immense change creates a significant impact on historical functions.

The new shopping complex and car park address several problems of the city. Parking was a major issue of the city for which the Car Park is a positive solution. Kandy is a living city with a large population and large amount of people get there for there day today activities and at the same time there are local and foreign tourists/ visitors too. Therefore new developments are essential. However the location of the new market complex is directly facing the sacred Temple of the Tooth, which does not identify the actual needs with the clam environment around the sacred tooth relic. It violates the value of prominence of historical objects. This is not a appropriate approach, the new construction at old city and the calm sacred condition of the area will be reduced.

1.4 Character of Historic City of Kandy

1.4.1 Tangible Characters

When studying the context of Kandy city, it could be identified the important and significant object buildings scattered all over the city. Those are that found very different to each other by their architectural style and function too. There are various types of objects in the cityscape such as religious temples, churches, *Kovils*, mosque. Some of them are land marks, Clock Tower, old post office, Sylvester College, Old

Police station etc. The Temple of the Tooth Relic is the most significant object of the city as well as spiritual image of the city.



Fig. 26 Object in the nature



Fig. 27 Clock Tower



Fig. 28 Temple of the Tooth Relic

Source: https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1



Fig. 29 Historical building fabrics of Dalada Veediya

Source: https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1

The city of Kandy contains a very dense and domestic scale built fabric. There are several reasons for this. Mainly all of buildings in the city are responding to historical character of the area.

Therefore height restriction and several regulations are imposed to protect the existing built fabric.

Buildings express several qualities which is a combination of different kind of buildings with diverse architectural expressions, style and function. It is very permeable connecting with

every street. The differences occur due to many reasons, such as function, location, density of building etc. Sometimes the scale, building line, sky line and façade detailing are different according to the street. These buildings were related with activity pattern of the street from ancient time. However with the time now it is changed.

The city of Kandy consists a few specific open spaces, different each other from function. *Mahamaluwa* is the major sacred open square, which is located in front of the Temple of the Tooth Relic. It is defined by Kandy Lake, *D.S. Senanayaka Veediya* and Temple Street “the sense of enclosure” has been created according to the hierarchy of the function, location, layout, topography and character of the space. This open square becomes a major space in the city. It is the climax of the journey of this city. Every person comes to the city with the image of the Temple of the Tooth Relic;

either the journey begins or ends at this space. Other secondary special nodes and open squares are very attractive. The Torrington Park and surrounding open space the market, clock tower- bus stand are more socially interacted open spaces in the city of Kandy. The paths are more important aspects in a city. The physical structure of the city is composed on the regular grid-iron organization. It has divided in to twelve squares by intersection of linear pathways and streets



Fig. 30 Railway Station

Source: https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1



Fig. 31 Good shed bus stand

In the City the pathways were defined by single or two stories narrow building façades and large scaled wide colonial building facades. This specific hierarchy that has been maintained in the enclosure of the space can be identified in the city. A continuous fabric of low scale enclosures most of the secondary linear spaces, narrow façade, uniform height buildings of different architectural style enclosures are which increases the intensity towards *Dalada Veediya* which is defined as a row façade. The large scale with wide façades of colonial architecture which is contributes in a positive manner to the city. Some secondary linear pathways, gives beautiful panoramic views around the city context.



Fig. 32 Pathway in-between Lake and the Greenery



Fig. 33 Pathway through Queen's Hotel



Fig. 34 Pathway from George E. De Silva Park

Source: https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1

The cityscape of Kandy could be divided into basic three districts according to functions, City layout and spatial character.

In the city layout, the sacred distinct given the prominence by the location and it comprises of religious activities and religious buildings like Temple of the Tooth Relic, Audience Hall, four *devalas* and the esplanade. This is the most valuable area of the city. Lot of significant features is contributed to enhance the character of the area; the beautiful lake with the inherited *Walakulu bemma* (the Cloud Wall), different architectural language with colonial buildings, churches, climax of the city *Mahamaluwa* are contributed to create the image and identity of city of Kandy.

The Commercial District is developed on the grid-iron city form. It includes eleven numbers of squares. Paths and streets are interconnected at every square and the built fabric is very unique and maintains a low profile.

The commercial district could be identified as the peripheral districts. In this area the architectural character which is very much different. It is consists mostly with commercial functions, institutional buildings, greeneries, open space, parks, markets, some important colonial buildings, transport terminals etc. Additionally there is a green forest on the east – *Udawatta Kele* and beautiful lake side around the Kandy Lake.

The exciting views are the most important character of the city. The every end of the street, which can be seen a panoramic view and framed views of surrounding green hillside such as *Udawatta Kele*, *Bahirawa Kanda*, *Hanthana*. These panoramic views give a visual interaction with the scenic beauty and more emotional mind-set.

The city of the Kandy could be identified as spatial progression along some historic streets. When walking along the roads changes in levels contribute to the variety of spaces and activities.

1.4.2 Intangible Characters

The order maintain by the regular grid line organization, the axial line of approach produced by the *Dalada Veediya*, the orientation of the main street running east-west towards the sacred compound; the sacred compound being set in an elevated position and in forecourt; the scale and detailed of the religious and secular building in the sacred compound and the *Dalada Veediya*, the sense of the enclosure and security

formed by the mountains give the city an expression of power, stability and order and evokes sense of security, pride and reverence, thus giving the city a sacred character.

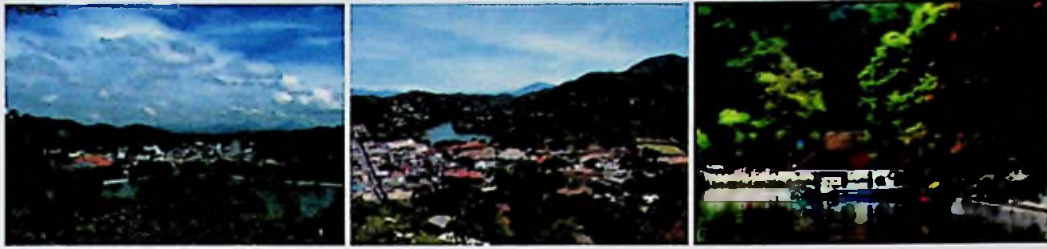


Fig. 35 Kandy City view from mountains

Source: https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1

Mountains the original organization of the city with only minor alterations, the existence major religious and secular buildings and the related activities; representation of several phase of its history through the built fabric; have provided Kandy with its historic character.

Although the city of Kandy contain with different built environment characteristics. Which comprises many other visual and spatial concepts such as Indian, British, postmodern, modern etc. and is organized in a regular gridiron spatial order. The character of city cannot be categorized as a dynamic for the presence and influence of the Sinhalese culture, mainly due to the prominence of in spatial organization. Through the natural geographical setting of the city, that defines the extent of the town as well as the point of access. And also the location and nature of the lake; existence of greenery, demonstrate heavy influence of geographical setting of the city. That defines its physical appearance and features which are apparent. This is an illustration how the natural feature were incorporated the spatial organization of the city, while more or less determined by cultural aspiration associated with it.

Further comparison several facts of character of Kandy City and the spatial and visual divisions employed in the three primary city categories; it could be rightfully and clearly substantiated that Kandy is predominately sacred character.

1.5 Social, Cultural and Religious Background of Kandyans

As a result of the isolation from the rest of the island the Kandyan kingdom displayed a different culture all together. People who lived in this area were known as the “Kandyan people”.

“Greater part of the Sinhalese people, the hardy mountaineers of the interior preserved their independence, keeping the foreigner at bay for more than 200 years after the first landing of the Portuguese. They have had their reward: for in spite of the progress of the denationalization even amongst these, there are still preserved amongst them sufficient traces of the old national life, sufficient remains of skillful craftsman’s handiwork, to enable us to form an estimate of the Sinhalese as a live and individual people, with a national character and national art.”

Ananda Coomarasamy

The social structures of the Kandyans were mainly based on the cast system. Each of these castes have a specific duty which others are not allowed to perform. And they are hierarchically arranged. In Kandyan society, cast was basic integration principal. Relations in the social, political, economic and religious spheres were regulated on the basis of caste. Caste implied an ideal order in which men performed all functions necessary for society on the basis of their status of birth. People considered the king as the god of their where he also had inherited a ritually pure caste status.

“The castes performing their various traditional duties were the ideal order that ensured harmony in society and nature. Caste functions were priestly functions and the king had to fit as everybody else did, because it was his particular gift and sacred function to rule and no one else’s. The performance of the caste duty of each was good for all.”

H. I.Senevirathna

Because of the caste system people learnt to respect each other which is lacking in the present society. Also each and every citizen used to obey the king. Therefore Kandy can be considered as a traditional Sinhalese monarchy with rich cultural values. Wealth is an indicator of the social status, and in Kandyan societies the amount of land owned by an individual denoted his social status. Therefore king being the wealthiest person in the society owned highest amount of land.

The Art and Architectures, dance and drama, folk tales and festivals and in many other fields the traditions which derive from Kandy are alive.

Kandy claims to be a place in history is founded not only on her political survival and the traditional value. From fall of *Kotte*, Kandy becomes the last stronghold of independent Buddhism and the two monasteries, *Malwatta* and *Asgiriya* claim to

preserve the traditions of the ancient *Mahavihara* in Anuradhapura. From the very beginning Buddhism came to be very closely associated with the institution of Kingship in Kandy where most of the political decisions were taken after consulting a priest. The existence of Kandy as an independent Kingdom and its king as an upholder of Buddhism gave this religion a certain dignity and self-respect which it would have lacked if the whole country had been governed by a Christian power. People came to the city from the perimeter villages not only to pay homage to the Sacred Tooth Relic of the Lord Buddha but also to see the annual *Esala Perahara* which is one of the greatest rituals of the *Dalada Maligawa* known all over the world. Kandy was also religious center where several Hindu shrines were always built next to a temple also the churches were built too in the hope that it could enjoy pride of place in Christian worship. This connection with religion gave rise to a universal way of life based on the non-violent and serene teaching of the Buddha. Also the contribution from the *Sangharaja* and the king in the field of art and Architecture helped to create valuable products.



CHAPTER TWO

2.0 BACKGROUND OF COLOUR AND ITS USAGE IN BUILT ENVIRONMENT

Colour, is known as a universal language as music. The world around us comprises of birds, animals, trees, flowers, mountain, buildings, signs, and numerous other things, by their colouring. The *jungle fowl*, the gray skin elephant, the *Na* tree leaves much the same wherever we find them. Red is universally recognized as a warning of danger and green an assurance of safety.

2.1 History of Colour

Colour has revealed much about the civilizations of people in primitive tribes as well as in highly developed cultures. Since the dawn of history man has worked to bring beauty in to his environment through the use of colour. The ancient Egyptians adorned the wall of tombs and temples with brilliant hues of blue, tangerine, green, and carmine.



Fig. 36 The Great Pyramids Mask of Pharaoh Egyptian Tapestry
Source: <https://www.google.lk/search?q=egypt+history&tbm=isch&tbo=u&source=univ&sa=X&ei=vx0TU9fIK4XoIAWtuIHgAw&ved=0CD0QsAQ&biw=1366&bih=667>

The great temples of Greece and Rome as well as the dwellings were decorated with coloured marble floors, brightly painted walls and ceilings, and rich draperies and silks, with the glorious colours of their stained glass windows, which remain today as the supreme creative achievement of western culture, brought beauty into the dull lives of a downtrodden people.

During the Italian Renaissance the vibrant red, greens, gold, and blues used by the master artists were carried into the great palaces of France and Germany. With the rococo extravagance of Louis in France, where feminine tastes had a great influence,

colours became less vibrant. Throughout the late seventeenth a period when France dominated the arts of the western world, French colour was in vogue wherever beauty



and luxury were cherished. During the latter part of the eighteenth and nineteenth century when Marie Antoinette dominated the court inside of Louis, colour becomes even more delicate and softly pastel colours. Since the early part of the 1920 colour in America has taken on a new freedom. However, it is notable that colour is everywhere, and new combinations never dreamed of before are employed with exciting results. Everything from the white monochromatic look to a sharply contrasting scheme is used with equal enthusiasm.

Fig. 37 Stained Glass Window Young Jesus Teaching Temple

Source. https://www.google.lk/?gws_rd=cr&ei=cx4TU6agB16higeD1oH4Bw#q=Stained+Glasses+Window+YoungJesus+Teaching+Temple+Mary+Basilica+

2.2 Insight Sensations of Colour towards People

The perception of colour is a sensory experience. The colour of an object is seen by the eye when white light is shone upon the object's surface. The surface reflects some colour and absorbs others. It is the reflected wavelength that is picked up by the eye. Within the eye, the retina contains receptors called rods and cones. The cones react to colour wavelengths whilst the rods react to brightness. The cones are responsible for all high resolution vision. The eye moves continually to keep the light from the object of interest falling on the fovea central is the most sensitive part of the eye where the bulk of the cones reside.

Each colour has a different wavelength blues, greens and violets have shorter wavelengths, while reds, oranges and yellows have longer wavelengths. When colour wavelengths fall on the retina, the brain interprets the signals as colour.

Colour has inherent powers which provide immediate and marked reactions in the onlooker, and as such it has been developed as a language symbol is both the natural and the man-made worlds. It is a sensation aroused in the observer as a response to the stimulus of the radiant energy of a particular wavelength. White light contains all the colour wavelengths, and, when it passes through glass pyramid they separate into

component parts in the familiar rainbow spectrum. A surface will reflect certain wavelengths determined by the nature of the surface, and absorb the rest. The reflected wavelength gives colour to the surface. For example, a surface of the pigment cadmium red reflects the red and produces a red colour and absorbs all the rest. A white surface reflects all wavelengths and absorbs none, while black absorbs all and reflect a certain amount of white light along with part of the spectrum corresponding to their apparent colour.

2.2.1 Colour Constancy

Colour constancy is an example of subjective constancy and a feature of the human colour perception system which ensures that the perceived colour of objects remains relatively constant under varying illumination conditions. A green apple for instance looks green to us at midday, when the main illumination is white sunlight, and also at sunset, when the main illumination is red. This helps us identify objects.

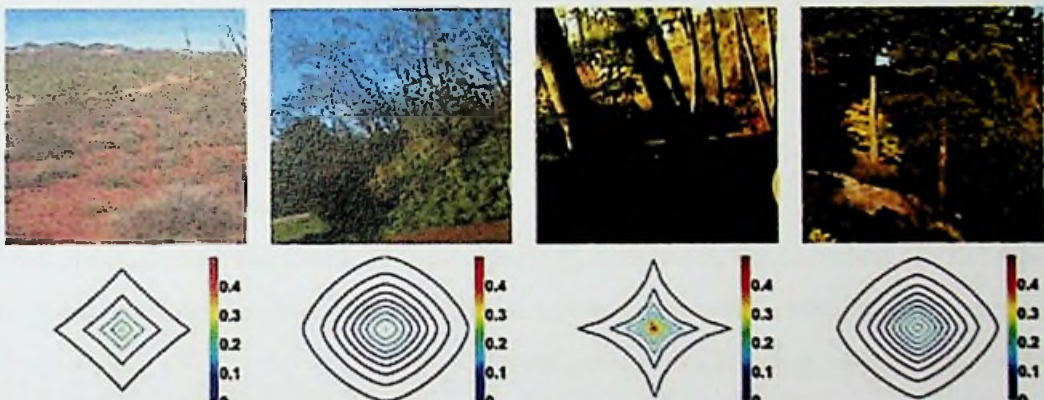


Fig.38 Colour constancy in nature

Source: https://www.google.lk/search?q=Colour+constancy+in+nature&source=lnms&tbm=isch&sa=X&ei=rB8TU6DFM8H6iQfk3YHoDw&ved=0CAcQ_AUoAQ&biw=1366&bih=667

2.2.2 Simultaneous Contrast

Two colours, side by side, interact with one another and change our perception accordingly. The effect of this interaction is called simultaneous contrast. Since we rarely see colours in isolation, simultaneous contrast affects our visible sense of the colour. For example, red and blue flowerbeds in a garden are modified where they border each other the blue appears green and the red, orange. The real colours are not altered only our perception of them changes. Simultaneous contrast also affects the

apparent value of its background colour. Surrounding colour with black tends to make them richer and more vibrant, while outlining with white often has the opposite effect.



Fig.39 Equinox, Hans Hofmann
Source. https://www.google.lk/?gws_rd=cr&ei=cx4TU6agBI6higeD1oH4Bw#q=Equinox%2C+Hans+Hofmann



Fig.40 Row of colourful houses in *Burano*
Source. https://www.google.lk/?gws_rd=cr&ei=cx4TU6agBI6higeD1oH4Bw#q=Row+of+colourful+houses+in+Burano

2.2.3 Optical Mixture

Optical mixture is the opposite of simultaneous contrast. When an object or building patches of colour are small that they pass below the threshold of conscious perception, we see the colour as optically mixed.

2.2.4 Spatial Dimension

Spatial dimension, the fourth of these internal phenomena, occurs when our brain add or subtract distance, depending upon the colours perceived. We tend to perceived

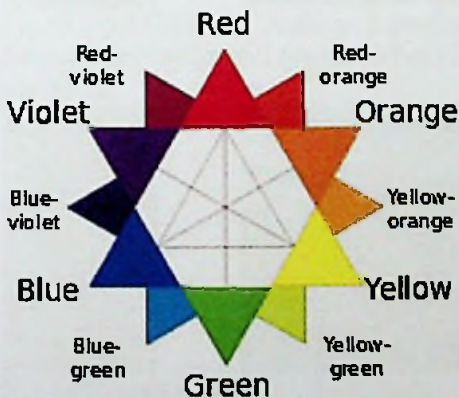


Fig. 41 Colour wheel
Source. https://www.google.lk/?gws_rd=cr&ei=cx4TU6agBI6higeD1oH4Bw#q=colour+wheel

warm colours, such as red, orange, and yellow closer than cool colours, such as green, blue and purple. The simplest type colour wheel, organizes colour pigments into primary, secondary and tertiary hues. Sir Isaac Newton developed the first circular diagram of colours in year 1666. Since then scientists and artists have studied and designed numerous variations of these concepts.

According to colour theory, red, yellow and blue are known as Primary colours as the

three pigment colours cannot be mixed or formed by the combination of any other colours. All other colours are derived from these hues. Green, orange and purple are identified as secondary colours. They are obtained by mixing the two primary colours, Orange is obtained by mixing red and yellow, green from yellow and blue and colors purple from blue and red. Tertiary colours are yellow-orange, red-orange, red-purple, and blue-green and yellow-green are colour obtained by mixing the secondary and primary colours.



Fig.42 Warm Colours Wroclaw, Poland

Source. https://www.google.lk/?gws_rd=cr&ei=cx4TU6agBI6higeD1oH4Bw#q=Wroclaw%2C+Poland, http://en.wikipedia.org/wiki/Guanajuato,_Guanajuato

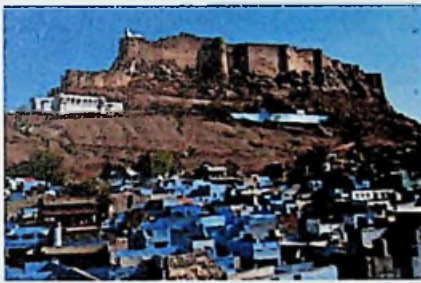
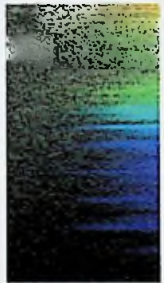


Fig.43 Cool Colours Jodhpur Rajasthan,India

Heritance Kandalama Hotel,Sri Lanka

Source. <http://wikitravel.org/en/Jodhpur>, <https://www.google.lk/search?q=Heritance+Kandalama+Hotel>



Fig.44 Neutral Colours Trivi, Italy

Taj Mahal, Agra, India

Source. <https://www.google.lk/search?q=Trevi,+Italy>, http://en.wikipedia.org/wiki/Taj_Mahal

Colour in other terms can define as warm, cool and neutral colours. All reds, yellows and orange are identified as warm hues, these colours have strong intensity, generally

active, cheery, advancing, somewhat informal, and tend to blend objects together. While greens, blues and violets are identified as cool hues, is generally restful, soothing, receding somewhat formal and tend to make individual objects stand out. It is generally accepted that cool colours are soothing and relaxing, and warm colours are stimulating, therefore these hues are commonly chosen to emphasis such feelings. Day light also can be warm or cool, depending on the time of day and the direction from which it comes. Warm light tends to accentuate warm colours and neutralize cool hues, while cool light intensifies cool colours and weakens warm hues.

2.3 Psychology Function of Colour

Colour psychology is the study of colour as a determinant of human behavior. The interface between colour and environmental motivations is a highly complex one. It can be influenced by many factors such as light, surface quality and proportion. Colour, communicates ideas which effects human behavior and feelings strongly. Various cultures have different interpretations of colour psychology with colour symbolism. For example, symbolically red may be used to signify danger, love, fear and reason that reds have the illusion of appearing enact than other colours.

Colour psychology and its emotional effect on people can be quite dramatic; the effect can be very powerful indeed when combined with lighting and surface quality. Although certain moods can be directly identified with specific colour this is by no means universal, and different people will often react differently to the same colour.

colour	wavelength interval	frequency interval
red	~ 700–635 nm	~ 430–480 THz
orange	~ 635–590 nm	~ 480–510 THz
yellow	~ 590–560 nm	~ 510–540 THz
green	~ 560–490 nm	~ 540–610 THz
blue	~ 490–450 nm	~ 610–670 THz
violet		

Fig.45 The Colour of the visible light spectrum

Source. https://www.google.lk/search?q=_I%252Fcolor_wavelength_frequency.pn

The fact that we have to consider is that all individuals and each one of us may react quite differently to what is regarded as the norm, although in the majority of cases this difference may be only slight. It must also be remembered that throughout our lives, our own personal choice and tastes in colour will alter, and what we liked as children will not necessarily be our choice in old age. Our mental outlook and the background to our lives will also to some degree dictate our choice in colour.

Colour	Associated with	Pitfalls
Red	Passion, danger, heat, adventure, optimism, power, energy	Can be seen as aggressive, it can be overpowering and may cause headaches. Consider colour blind people as red/green colour blindness is the most common
Purple	Love, femininity, youth	Can appear to be very girly, or symbolise naivety or weakness
Orange	Stability, warmth, reassurance	Can be seen as attention-seeking, could make dark rooms appear smaller
Yellow	Spirituality, happiness, growth	Might enhance feelings of emotional distress. Can symbolise cowardice, dishonesty and deceit
Green	Nature, energy, calm, balance, security, life, growth, good luck	Can also symbolise jealousy and envy
Blue	Calm, peacefulness, loyalty, serenity, authority, promotes intellectual thought	Can be cold and unwelcoming. Can symbolise sadness, depression, and is thought to suppress hunger
Indigo	Joy, creativity, spirituality	Can symbolise enmity, death, arrogance
Brown	Security, stability, very practical	Not very mentally stimulating. Can also be seen as dirty or dull
Grey	Modernity, intelligence	Can be seen as boring or dull. Also symbolises old age and sadness
White	Clearness, innocence, purity, peace, simplicity	Can be seen as cold, clinical and sterile. White symbolises death in Eastern cultures
Black	Sophistication, eccentricity, drama, power	Can be depressing, and bring about feelings of fear, unhappiness, anger and remorse. Black symbolises death in Western cultures

Fig.46 Psychology of different Colour

Source: <https://www.google.lk/search?q=Psychology+of+different+Colour&tbm=isch&imgil=1bV9nc9iLSxLZM%253A%253Bhttps%253A%252F%252Fencrypted.G1hnYs1qjf4XSssN3DQ53MeV>

2.4 Conscious usage of Colour in the Built Environment

Colour, which is the reflective performance of light on different materials, makes the world colourful. Russian esthetician Chernyshevsky said: 'The sense of beauty cannot be separated with hearing and vision.' And 'the sense of colour is the most popular form in the sense of beauty.

Karl Heinrich Marx & Friedrich Engels, 1963-p145

Colour creates various moods but these moods can never be precisely designed. Colour recognizes no boundaries, but colour shades are interpreted in perception easily and this knowledge is significant for the colour variation and planning. The man, the space and the quality of the space are totally bounded together. Colour can change the entire environment in such manner. It makes the space more meaningful or not. Different colour expresses different qualities of the architectural space or urban context. When a person experiences the urban context the overall quality is impressed by the colour at the initial stage. The colour may be material colour, natural colour and artificial or applied colour within the space. It should not be a painted colour every time drawing attention to the overall structure or colour may highlight just as one detail. It guides the eye through entire building.

A simple change of colour schemes can breathe new life to the space. It may be a significant affect for the user within the space. It always bounds with the activity in particular environment. Using the colour scheme in different functions and the different spaces does not generate the same quality. The colour combinations used in a domestic space and office space won't be the same. It has different colour scheme to be applied according to the functional needs. Therefore the make of colours in various building typologies should have to achieve appropriate spatial quality with in the given environment. When talking about the colour as a tool in the architectural space. Which is rather similar to lighting, textures or materials in a space, but the combination of colour is much more important than lighting textures or materials in the space.

2.4.1 The use of Colour in Architecture

Colour in architecture is quite unlike that in painting; first of all it is colour in three dimensions. The use of colour in architecture can find in building interiors, exteriors and building elements such as doors, windows, roof covering, canopies, moldings, columns, arches and balconies. It is also subjected to changing with sunlight and surface quality of materials.

Colour in architecture is quite unlike that in a painting; because it is colour in three dimensions, also subjected to changing sunlight and most importantly, it requires the careful use of materials with necessary consideration to their ageing and weathering properties.

Traditional local building materials give strong sense of unity to a context in such instance; it is possible for a new building to construct with the same materials, interpreting modern structural requirements. However, care has to be taken to use them in the right way, to harmonize with the existing patterns in the surroundings.

Colour accentuates shape and yet can actively deny conceal the real mass of a building; it has always played a crucial role in complementing the architecture to harmonize with the surroundings and personalizing them.. There are two traditions in the use of bright, contrasting or decorative colour. In the ancient tradition of many cultures natural materials were used for the exterior of building. These were mainly shades of grey and brown or stone and wood. In exceptional cases because of local consistency, brick buildings were coloured red or orange. Therefore they were not seen as coloured. Some buildings were brightly coloured to mark them as exceptions out of rest. The tradition of modernism on the other hand perceived architecture primarily as white, black or grey, with primary colours used only as accents as sense of fashion and perception.

In architecture different hues can be brought together with the usage of different construction materials, such as natural and artificial. Wood will grey and darken with age. Copper will start its life as golden, turn dark brown, and in fifteen to twenty years will become bright green. Stone will grey and may acquire a green patina of moss. Paint fades rapidly under sunlight and brightly painted colour walls need repainting every three years and modern materials such as aluminum, glass, cladding materials can be found in different hues.

In the selection of material for architectural buildings always effect to colour of final perception of an urban context. Therefore, it is important to consider all factors of historical, cultural and existing urban fabric of such context before. The selection should not always match the tone or colour on adjacent building precisely.

The existence of a traditional local building material gives a strong sense of colour unity to a context. In such an instance, it is possible for a new building to construct with the same materials with different hues, interpreting modern structural requirements. Care has to be taken to use them in a manner harmonizes with the existing colour patterns and colour identity of the surroundings.

2.4.2 The use of Colour in an Urban Context

“The sense of beauty cannot be separated with hearing and vision.’ And ‘the sense of colour is the most popular form in the sense of beauty”

Karl Heinrich Marx & Frierich Engels, 1963, p145

The use of colour in an urban context is a very important factor; Different colours can refresh or make people restless. Changes in the quality of the urban fabric will in turn influence changes in feelings behavior and emotions of the urban fabric. Colour can make people aware of distance, weight and scale. Colour is a basic factor which influences the special character of a city.

Colour in architecture can be classified as natural, artificial and neutral. As natural colour, from the perspective of geography and as different intensities of blues from sky and mountains and different intensities of earth colour dominating natural colour with urban context.

Colour in building façades can be mainly considered as artificial colour. These are seen on building elements, land marks, signage, advertisements, urban street scape known as fixed colour while moveable colour is seen in fashion, animals and vehicles. Buildings are the main part of a city, though colour of the buildings are warm, cool or neutral they are the colours that people frequently applied to buildings and these colours activate the urban fabric. Colour has its own unique tone during its development because of its natural history and cultural environment; it is an important

part of the urban culture and urban style. Because of colour resulting from light refraction, variety objects of colour will change according to the surface texture, the degree of light and environmental impact, and a colour of a city can be divided into the single primary colour and the visual effects of colour.

With the introduction of new materials, the importance of traditional building procedure associated with wood and stone of the past has been misplaced. Now the important issue is improvement of colour appearance of buildings. Currently, natural materials are mainly used for decorative purposes, and their colour does not correspond to the material used for the construction, making material's features and colour distorted and unreadable. It is possible for walled surfaces of the building to have such a construction or cladding or colour that changes its colour and transparency according to the temperature or intensity and position of sunlight.

2.5 The Factors that Influence in Urban Colour

There are numerous factors which influence the urban colour fabric; they are geography and climate conditions, historical and cultural context and development of technology. They complement each other to a great extent. However, some of these factors are very much significant, as they directly and indirectly effect for the final colour perception in an urban fabric.

2.5.1 Geography and Climate

Geography and climate are important factors for the ultimate impact of the colour perception of a city. From the perspective of geography and climate, the city can classified as the tropical city, the temperate city, the coastal city, the winter city, the mountain city, the plains city and valley city. According to such classifications the cities gives different colour perception and different identity to each.

2.5.2 Historical and Cultural Context

Urban colour, history and culture complement each other to a great extent in the final colour perception of a city. Therefore it is important to focus on the historical and cultural aspects, towards urban fabric to get better understanding of existing colour applications. Because of the difference in national faith, history, culture and costumes

different cities have different colour preference and they create unique urban colour elegances which inheritance for such urban context only.

Where the urban colour was formed with the historical accumulation, it would become the carrier of the culture of the city, and constantly so displayed. Because of the differences in national faith, history, culture and customs, different countries and cities have different colour preferences and they will accordingly create unique urban colour identities.

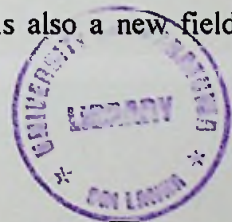
2.5.3 Development of Technology

Most of the traditional cities, before industrial revolution, used to apply materials indigenous to their regions. Architectural styles evolved within the limitations of available materials and this disciplined the form as well as the color of the buildings. As a result of not having access to artificial colour, the constant use of local materials and produced well balance visual harmonized urban settings that emphasized mostly with natural colour. With the social development and progress of science and technology, more opportunities are provided for fabrication of different materials to the construction industry. With such materials many artificial colour hues are introduced and applied to urban context with or without appropriate understanding of existing context. This directly affects the traditional urban colour harmony of urban street scape and colour perception of urban fabric of the city.

In recent centuries new opportunities for the development of urban colour perception have been created as cities function for twenty four hours. It is also a new field, closely connected with technological development.

2.6 Colour Identity of Model Cities

Different cities have a unique colour identity as explained in 2.5.2 which influence the aesthetic tastes of its inhabitants. Costumes and cultural and differences result from these factors. Colour in the built environment is the basic way to discuss special identity to place, colour is a cultural marker, colour as a language of the city. It plays a significant role in our perception about the city. Therefore, colour as an essential element in creating the sense of place. The following cities are most outstanding and



colorful cities around the world today come across to take as precedents to study and workout guidelines to final research for colour perception as parameters.

2.6.1 Colorful Jodhpur, Rajasthan. India –Blue City

Jodhpur is the second largest city in the state of Rajasthan, India. It is called the Gateway to Thar, as it is literally on the edge of the Thar desert. Jodhpur has called the Sun City as the sun shines almost every day of the year, also known as the Blue City, as most houses in the old city are different intensities of blue, is particularly noticeable on the north side of the town, known as *Brahmpuri* for the many *Brahmins* that live there. *Jodhpur* is an historic city and the origin dates to the year 1459 AD.



Fig.47 Panorama view of *Jodhpur, Rajasthan, India*
Source. <http://en.wikipedia.org/wiki/Jodhpur>

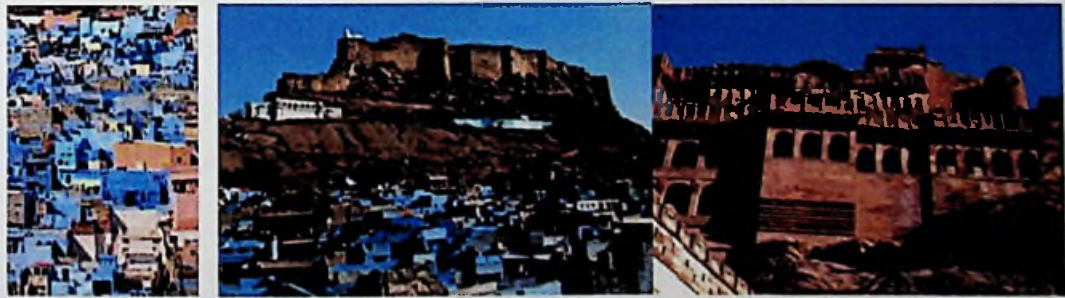
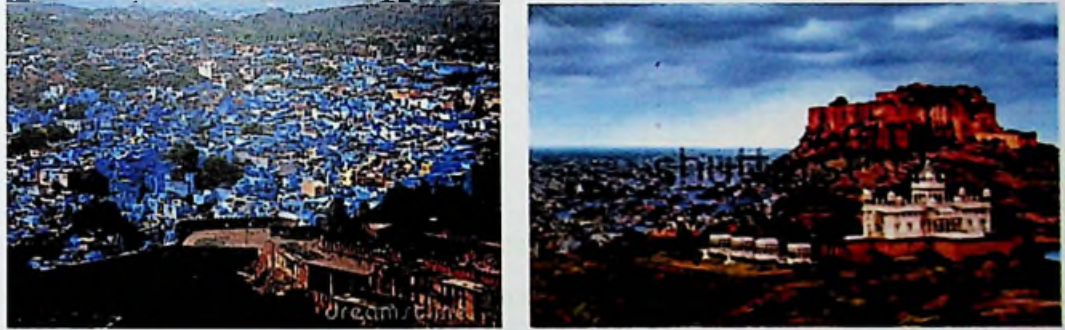


Fig.48 Blue city *Jodhpur, Rajasthan, India*, with *Mehrangarh Fort* and *Jaswant Thada*
Source. <http://en.wikipedia.org/wiki/Jodhpur>

The city was built as the new capital of the state of *Marwar* to replace the ancient capital *Mandore*, the ruins of which can be seen near what is now the *Mandore*

gardens. The climate of Jodhpur is generally hot and semi-arid, but with a rainy season from late June to September. Temperatures are extreme throughout the period from March to October, except when monsoonal rain produces thick clouds to lower it slightly. In the months of April, May and June, high temperatures routinely exceed 40°C. The city's generally low humidity rises and this adds to the normal discomfort from the heat.

2.6.1.1 Streetscape of Jodhpur

Most of the street in Jodhpur city appears to be narrow, lined with buildings with single to three storied and connected with other street creating a network. Wherever present, the pedestrian pavements very narrow, and mostly the streets merge with the buildings. All sites along the road located at perpendicular accesses to the road and buildings always come to the street line. Therefore, the position of the street line and the building line remain as same.

2.6.1.2 Activities of Jodhpur

Activities in Jodhpur city streets are mainly residential and commercial therefore, the street is busy with great variety of commercial activities and residential activities. Therefore social interaction in *Jodhpur* is mainly in the city streets.

2.6.1.3 Built Fabric of Jodhpur

Building façade is an essential architectural element of any building. They enclosed, separate and protect the interior space they create while giving an aesthetic appearance to the streetscape. The external walls show the basic colour and textured. These have the largest area and therefore claim the longest observation time from people. The buildings heights vary from single story to three stories. The external walls proportions of these buildings are comparatively small and the ground floors are more permeable to welcome people since the external wall area reduce again. The buildings share the neighbor's external wall and at some points connect the façade of few buildings together. The building height does not overpower the pedestrians, because the building façade is broken into horizontal segments, reducing the visual height.

Buildings have included with several types of features and elements. Columns,

arches, and balconies can be identified as common elements of the façade. More simple rhythm of elements can be seen along the building fabric. Vertical and horizontal lines have been balanced well, according to rhythm of building fabric.

2.6.1.4 Colour Schemes of *Jodhpur*

The colour of *Jodhpur* tells the history and makes it legend of a populace who shaped a paradise in the heart of the heat and sandstorms of *Rajasthan*. The district of *Jodhpur* that is painted light blue is generally where the highest cast of Hindus lives. This high cast is referred to as "*Brahmins*" and traditionally were priests and town leaders.

The colour blue in India is commonly associated with royalty and power. One motivation for the blue painting of *Jodhpur* is that the higher cast *Brahmins* wished their dwellings to be of the Royal colour and this is the commonly accepted reason. The residents of *Jodhpur* are extremely proud of the city's blue colour.

The true reason for *Jodhpur's* blue colour is more practical motivated than artistic reasoning. The dry arid environment of which *Jodhpur* is located is blighted by termites. The small insects damaged and destroyed the traditional building techniques which involved the exterior being coated in lime wash. It was discovered that the termites were repelled by copper salt compounds and these were added in low concentrations to the lime washes. Copper solutions under certain conditions produce blue compounds and this was true of the materials applied to the exterior of *Jodhpur's* houses. The *Brahmin* class could afford the copper sulphate lime washes and applied it to their houses which were concentrated in just one area of the city. It is therefore commonly thought that the *Brahmins* painted their houses the blue colour to emphasize their royal connection when in actual fact they were the ones only able to afford the specialist exterior paint. The blue of *Jodhpur* is best viewed from *Meherangarh* Fort where an entire side of the city is painted in this one uniform blue colour.

Jodhpur city also comprises natural colour and artificial colour like any other city in the world. This directly and indirectly effects the impact of colour perfection of human behavioral patterns and the urban character a creating a sense of place and a sense of identity.

As natural colour, from the perspective of geography and climate, the hot and semi-arid city was raped from colour brown, black intensities of mountains. Jodhpur city naturally blessed to have more cooling and neutral colour, as different intensities of blues from sky and mountains and different intensities of earth colour dominating natural colour with urban context. Artificial colour, is seen in building façades, building elements, land marks as fixed colour, Moveable colour is observed in people fashion, animals, vehicles and urban streetscape elements.

Artificial colours can identified in building fabrics, building elements, urban streetscape, advertisements, signage panels, urban lighting, urban landscape as immovable and vehicles and people as movable features.

The character of façade or street scape is mainly generated quality of the building fabric It is a main factor to that generates the image about of a particular city. It directly affects the space outside and pattern of related space. The external walls shows the basic blue intensities colour and textured them have the largest area and the longest observation time from people. Since roof was flat and act as roof terrace which also utilize for day to day activities of dwellers.

Building elements such as decorated arcades, handrails, canopies, moldings, doors and windows can be identified as important element of the façade. The building elements are commonly are out of the building façade colour or in different blue intensities.

Doors and windows in Jodhpur have played an important role of the building fabric, decorated square and arch shapes are most prominent detailing of doors and windows. The doors and windows are mostly timber as a material and colour different intensities of blue to further more to emphasize the identity of blue and maintain the character of Jodhpur as blue city.



Fig.49 Building elements and street scape of Blue city Jodhpur, Rajasthan, India
Source. <http://en.wikipedia.org/wiki/Jodhpur>

Hand rails are finished out of wall cladding material, precast decorative panels and cast iron materials. These are Coloured blue and white to harmonize with entire building fabric. The texture of matt or semi matt effect created with paint identifies the building façade as single area.

Other building elements such as decorated arches, canopies and moldings in building envelop show the grandness of the façade to the entire urban context. Elements are colour by the building façade colour in blue different intensities to harmonize with the entire building fabric, which maintaining the identity of Jodhpur as blue city as well.

Streetscape elements such as street trees, street lighting, and street furniture flower beds, with the natural colour or different intensities of blue can be identified. Continuity of the streetscape, paving materials also with natural colour and materials. Semi-public spaces such as inner court yards, shared amenity areas and roof terraces within the city in the blue colour intensities amidst which green, black and white colour can be identified. The movable elements such as animals, bullock carts and bicycles are in neutral colour intensities' are more common with in the Jodhpur city.



Fig.50 Natural colour analysis of *Jodhpur, Rajasthan* ,India

Source. Author

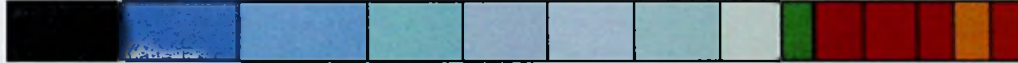


Fig.51 Artificial colour analysis of *Jodhpur, Rajasthan* ,India

Source. Author

2.6.1.5 Study of the Present *Jodhpur, Rajasthan* , India – Pink City

With the development of city the present Jodhpur also get change accordingly to encounter and fulfill requirements of the people. To fulfill such, most of residential ground levels have been turns into commercial activities while giving more permeability to roads.

When considering the character of the existing build fabric and the influence from modern architecture can be seen, mostly the building façade Modern materials have been introduced with minimum disturbance to existing built fabric and the identity of the city.

2.6.2 Colorful Jaipur, Rajasthan, India – Pink City

Jaipur is the capital and largest city of the Indian state of *Rajasthan* in northern India. The foundation of the city dates back to the eighteenth century, with credit to the great warrior and astronomer *Maharaja Sawai Jai Singh II*. The city is unusual among pre-modern Indian cities in the regularity of its streets, crowns the hill in the northwest corner of the old city furthermore was, is one of the most important heritage cities of India. *Jaipur* is more popularly known as the ‘Pink City’.



Fig.52 Panoramic view from the hills surrounding *Jaipur, Rajasthan, India*
Source.http://en.wikipedia.org/wiki/History_of_Jaipur



Fig.53 Pink City Palace", *Jaipur, Rajasthan, India*
Source.http://en.wikipedia.org/wiki/History_of_Jaipur



Fig. 54 *Hawa Mahal, or "Palace of the Winds", Jaipur, Rajasthan, India*
Source.http://en.wikipedia.org/wiki/History_of_Jaipur

Jaipur has a semi-arid climate under, receiving over 650 millimeters of rainfall annually but most rains occur in the monsoon months between June and September. Temperatures remain relatively high throughout the year, with the summer months of

April to early July having average daily temperatures of around 30 °C. During the monsoon there are frequent, heavy rains and thunderstorms. The winter months of November to February are mild and pleasant, with average temperatures ranging from 15–18 °C and with humidity.

2.6.2.1 Street Scape of Jaipur

The city was built following the principles of *Vastu Shastra*. The city was divided into nine blocks, out of which two consist the state buildings and palaces, whereas the remaining seven blocks were allotted to the public. The urban quarters are further divided by networks of gridded streets.

Most of the street in Jaipur city some roads appears to be wide and either sides of road get buildings with signal story to five stories and connected with other street which acts as a network to the city. The pedestrian pavements where existing, are comparatively wide. Mostly streets are merging with pavement and the buildings. All sites along the road located at perpendicular accesses to the road and buildings always come to the street line. Therefore position of the street line and the building are the same.

2.6.2.2 Activities of Jaipur

Jaipur is a center for both traditional and modern industries. It is famous as a large exporter of gold, diamond and stone jewelry & Handicraft, miniature paintings in Asia. Since commercial activities are dominating street and pavements were busy with great variety of activities.

2.6.2.3 Built Fabric of Jaipur

Building façade the walls are essential architectural elements of any building are similar to that of Jodhpur and are as explained in 2.6.1.3 above. However, the building height overpowers the pedestrians since buildings have more floors. Buildings have included with several types of features and elements, columns, arches, and balconies can be identified as common elements of the faced. More simple rhythm of elements can be seen along the building fabric. Vertical and horizontal lines have been balance well, according to rhythm of building fabric.



Fig.55 Pink Buildings, Pink city, Jaipur, Rajasthan, India
 Source.http://en.wikipedia.org/wiki/History_of_Jaipur



Fig. 56 Jaigarh fort, Jaipur, Rajasthan, India
 Source.http://en.wikipedia.org/wiki/History_of_Jaipur



Fig.57 Downtown Jaipur, Rajasthan, India

Fig.58 Steve Goldthorp, Jaipur, Rajasthan, India

Source.http://en.wikipedia.org/wiki/History_of_Jaipur



Fig.59 Ajmeri Gate, Jaipur, Rajasthan, India



Fig.60 The City Palace of Jaipur, India

Source.http://en.wikipedia.org/wiki/History_of_Jaipur

2.6.2.4 Colour Schemes of Jaipur

Jaipur is one of most beautiful and magnetic cities of India with pink in color and pink in vibrancy. The pink colour has its own history. In 1876, the Prince of Wales and Queen Elizabeth II visited India on a tour. Since pink denotes the colour of hospitality, *Maharaja Ram Singh* of Jaipur painted the whole city pink in colour to welcome the guests. Also has been popularized with the name of Pink City because of the colour of the stone exclusively used for the construction of all the structures.

While the scientific reasoning behind the choice of pink has been pinned down to its reflectivity and cooling effect, it is also believed that the king experimented with colour like green and yellow before finally settling on pink.

The tradition has been sincerely followed by the residents who are now, by law, compelled to maintain the pink colour. Therefore new buildings in and around the old city layout have maintained the pink colour of the original city in order to carry on the legacy of the “Pink City.”

Jaipur city comprises natural colour and artificial colour like any other cities in the world, which is directly and indirectly effect for the impact of colour perfection of human behavioral patterns and the urban character and creates a sense of place and a sense of colour identity.

As natural colour, from the perspective of geography and climate, the city was covered under as hot, cold and semi-arid and raped from colour brown, black intensities of mountains. Jaipur city naturally blessed to have more cooling and neutral colours, as different intensities of blues from sky and mountains and different intensities of earth colour dominating natural colour with urban context.

As artificial colour, mainly can consider colour in building facades, building elements, land marks, urban lighting, urban streetscape as fixed colour, moveable colour in people fashion, animals and vehicles.

Character of façade or street scape is mainly generated quality of the building fabric. In other hand it is a main factor to generate image about particular city. It directly affects the space outside and pattern of related space. The external walls shows the basic intensities of pink, brown, and white, black colour and textured them have the largest area and the longest observation time from people. Roofs are flat or domes and where flat roofs act as roof terrace which also utilize for day to day activities of dwellers.

Building elements such as decorated arcades, handrails, canopies, moldings, doors and windows can be identified as important element of the façade. The buildings elements are commonly are out of the building façade pink, white and brown colour in different intensities.

Doors and windows in Jaipur have played an important role of the building fabric, decorated square and arch shapes are most prominence detailing of doors and windows. To compiled doors and windows they had been use mostly timber as a material and colour different intensities of brown to further more emphasize the identity of pink and maintain the character of Jaipur as pink city.

Hand rails are finished out of wall cladding material, precast decorative panels and cast iron materials. Colour from the pink and white to harmonize with entire building fabric. The texture as matt effect or semi matt effect with painted can identify in the building façade as single area.

Other building elements such as decorated arches, canopies and moldings can identify in building envelop and which show the grandness of the façade to the entire urban context. Elements are colour by the building façade colour in pink different intensities to harmonize with the entire building fabric, which maintaining the identity of Jaipur as a pink city.

Streetscape elements such as street trees, street lighting, and street furniture flower beds, with the natural colour or different intensities of blue can identify. Continuity of the streetscape paving materials also with natural colour and materials. Semi-public spaces such as inner court yards, shared amenity areas and roof terraces also can



identify with in the city. Which is yet in the pink colour intensities, green, black and white colour can identify. The movable elements such as animals, bullock carts vehicles and bicycles are in different colour intensities. Colour in fashion of People living in city is mostly vibrant and act as an accent to urban fabric.



Fig. 61 Natural colour analysis of Jaipur, Rajasthan, India
Source. Author



Fig: 62 Artificial colour analysis of Jaipur, Rajasthan, India
Source. Author

2.6.2.5 Study of the Present Jaipur

With the development of city the present Jodhpur also get change accordingly to encounter and fulfill requirements of the people. To full fill such, most of residential ground levels turn in to commercial activities while giving more permeability to roads. When considering the character of the existing build fabric as influence from modern architected can be seen, mostly the building façade has introduced with conventional and modern characteristics with especially with modern materials with minimum disturbance to existing built fabric and the colour identity of the city.

2.6.3 Guanajuato, Mexico, North America – Silver City

The city of *Guanajuato* is the capital of central Mexico in North America. City located in a narrow valley, which makes the streets of the city narrow and winding. The origin and growth of the city resulted from the discovery of minerals in the mountains surrounding. The city was one of the most influential during the colonial period. One of the mines, *La Valenciana*, accounted for two-thirds of the world's silver production at the height of its production therefore city popular as silver city as well. The city was also the site of the first battle of the Mexican War of independence between insurgent and royalist troops at the *Alhóndiga de Granaditas*. The city was named a World Heritage Site in 1988. *Guanajuato* has average temperature overall is 18.5 °C with an average annual rainfall of between 600 to 840 mm and get most rain falls during the rainy season between July and August.

2.6.3.1 Street Scape of *Guanajuato*

Since Guanajuato city located in a narrow valley it naturally creates the streets of the city narrow and winding and long sets of stairs up the mountainsides. One of the city's unique features is a network of underground tunnels that are used as roads. Most of streets on the surface are alleys that vehicles cannot pass through; therefore the streets are mostly pedestrianized.

On either sides of road are buildings with single story to three stories and also connected with other street which acts as a network to the city. Where the pedestrian pavements are not identified and mostly streets are merging with the buildings. All sites along the road located with direct accesses to the road thus the buildings always come to the edge of the street. Therefore people have more permeability to ground level and pedestrian activities are more dominating among the streets as pedestrian orientated walkable city.

2.6.3.2 Activities of *Guanajuato*

Since Guanajuato is a compact, walkable city according to urban context the streets are much more pedestrian orientated bazaars, accomplish with activities such as cafes, bars, street food stalls, markets and art galleries can identify frequently.

In the historic center of the city have numerous small shady plazas and colonial era mansions, graceful churches and civil constructions with lively atmosphere. Therefor at the surface level activities are dominating busy with great variety of activities with dominating peoples.

2.6.3.3 Colour Schemes of *Guanajuato*

The city of Guanajuato is the most colorful in all of Mexico, one celebrated for its cultural and mineral importance during the colonial period and beyond. A city shot up around these mines as they were being explored, and the colonial-era architecture is evidence of this building boom. Yet the spirit of Guanajuato is reflected in the colour of those buildings, varied across the full spectrum from one end of town to the other City comprises natural colour and artificial colour like any other cities in the world, which is directly and indirectly effect for the impact of colour perfection of human behavioral patterns and the urban character and creates a sense of place and a sense of colour identity.



Fig.63 Guanajuato City images

Source.MexicoSource.http://en.wikipedia.org/wiki/Guanajuato,_Guanajuato



Fig.64 Basilica of our Lady of *Guanajuato*

Fig.65 Plaza San Fernando

source.MexicoSource.http://en.wikipedia.org/wiki/Guanajuato,_Guanajuato

As natural colours, from the perspective of geography and climate, the city was raped from colour brown, black intensities of surrounding. Guanajuato city naturally blessed to have more cooling and neutral colours, as different intensities of blues from sky and mountains and different intensities of earth colour dominating natural colour with urban context.

As artificial colour, mainly can consider colour in building facades, building elements, land marks, urban lighting, urban streetscape as fixed colour, moveable colour in people fashion, animals and vehicles.

Character of façade or street scape is mainly generated quality of the building fabric. In other hand it is a main factor to generate image about particular city. It directly affects the space outside and pattern of related space. The external walls shows the basic intensities of spectrum of warm colour and textured them have the largest area and the longest observation time from people.

Building elements such as decorated arcades, handrails, canopies, moldings, doors and windows can be identified as important element of the façade. The buildings elements are commonly are out of different hues in different intensities.

Doors and windows in Guanajuato have played an important role of the building fabric, decorated square and arch shapes are most prominence detailing of doors and windows. To compiled doors and windows they had been use mostly timber as a material and coloured by mostly warm and cool colour intensities to further more emphasize element with lift up identity of city.

Hand rails are finished out of wall cladding material, precast decorative panels and cast iron materials. Colour from the black, brown and other colour intensities to harmonize with entire building fabric. The texture as matt effect or semi matt effect with painted can identify in the building façade as single area.

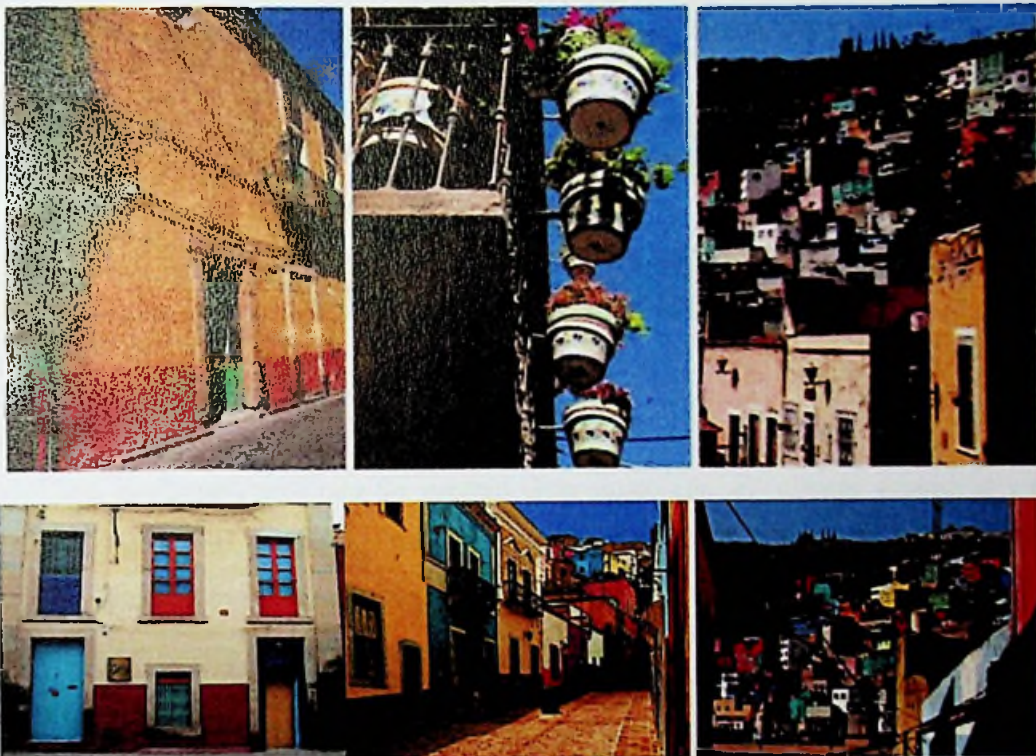


Fig.66 Colourful streetscape, Guanajuato
Source.MexicoSource.http://en.wikipedia.org/wiki/Guanajuato,_Guanajuato

Other building elements such as decorated arches, canopies and moldings can identify in building envelop and which show the grandness of the façade to the entire urban context. Elements are colour by different intensities to harmonize with the entire building fabric, which maintaining the identity of Guanajuato of silver city. Streetscape elements such as street trees, street lighting, furniture and flower beds with natural or artificial colour in different intensities can identify. The movable elements such as mostly people, vehicles are in different colour intensities. Colour in

fashion of People living in city also vibrant and harmonize with the urban fabric
 fabricfashion of People living in city also vibrant and harmonize with the urban fabric



Fig.67 ThePurple blossoms of the jacaranda trees in spring add to an already colourful citySource.Mexico

Source.http://en.wikipedia.org/wiki/Guanajuato,_Guanajuato

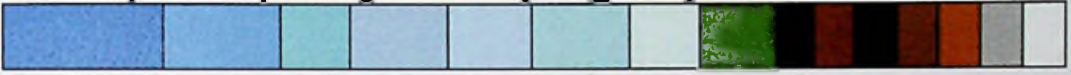


Fig. 68 Natural colour analysis of Guanajuato, Mexico

Source. Author



Fig. 69 Artificial colour analysis of Guanajuato, Mexico

Source. Author

2.6.3.4 Study of the Present Guanajuato

With the development of city the present Guanajuato also get change accordingly to encounter and fulfill requirements of the people. To full fill such, most of residential ground levels tern in to commercial activities while giving more permeability to roads.

When considering the character of the existing build fabric as influence from modern architected can be seen, mostly the building façade has introduced with conventional and modern characteristics with especially with modern materials with minimum disturbance to existing built fabric and the identity of the city while maintaining the vibrant colours as identity of city.

CHAPTER THREE

3.0 CHARACTER OF COLOUR IN THE CITY OF KANDY

In this chapter covenants with the Kandyan context as to how the colour was used as an element over many centuries and many eras of different reins. More over the usage of colour in this city with the functionalism and the urban formation and the streetscapes and other ammonites and built fabric is further studied in this chapter. How the identity of the colour in the city of Kandy is achieved in the built fabric with the urban planning methodologies and the typologies of buildings that are inculcated in the city planning and harmonizing with the scales and massing in the built form with a clear hierarchal system.

The geographical settings, historical, religious, cultural and commercial activities are emphasized by different intensities of neutral, cool and a smaller presentation of warm colours; whereby they acts as an accent. The traditional city was developed in a closed up manner, in a way in which they consisted as low production growth. Historically urban colour was limited by ingenious building materials and construction techniques. It ingeniously uses its natural colour in order to achieve a harmonious unity of artificial colour and natural colour in the city. In the city of Kandy, many more natural colours are used due to its natural settings, in the surroundings and the context. Henceforth the main tone in the city contains neutral colours and cool colours where the green and blue dominates among the functional areas, where the building facade contains the use of colours that complement the main tone.

The city itself as a blend of white, beige and brown intensities as neutral and cool colours with warm intensities as accent colour in the built fabric which are culturally and historically inherent to the identity of the city of Kandy. The surrounding environment with its geography and vegetation is filled with the natural colours of Brown, Blue and Green intensities.

3.1 Use of Colour in Kandiyan Architecture

In the city of Kandy colour plays a significant part of the urban beauty, where by it has become an indispensable factor which influences colour perception of urban life.

Colour itself is a part of the historical urban heritage, with its archeological significance with the vernacular elements in the built fabric.

The architecture of Kandyan kingdom cannot be compared either in extent or magnificence with that of ancient glories of *Anuradhapura* or *Polonnaruwa*. Although a subtle evolution and a continuation of a long standing tradition that was directly influenced by the buildings of *Gampola*, Kandyan wooden architecture has a distinct character of its own which responds directly to the needs of a small agricultural community; rather than luxurious. The buildings are smaller in scale and simpler in appearance, but refined in detailing.



Fig. 70 Temple of the Tooth *Lankatilaka* Temple *Gadaladeniya* Temple



Fig. 71 *Natha Devalaya* The Royal palace Audience hall

Source: https://www.google.lk/search?q=kandy+architecture&biw=1366&bih=667&source=Inms&sa=X&ei=S68VU8j5OobRkQWW0YCIDw&ved=0CAQQ_AU4FA

Buildings were mostly of timber and mud on a traditionally molded, raised stone plinth. Timber doorways, columns, brackets, beams and rafters were intricately carved with traditional decorative patterns. Massive overhanging roofs with long eave projections were doubled pitched and covered with flat clay tiles. Lacquer was used in four colours, yellow, red and black with touches of green, in decorating the turned wood columns and balustrades. Door frames and furniture were frequently embellished with finely carved ivory, bronze and metal. The refinement of the richly decorated components of Kandyan period architecture and colours gives its distinctive character. The city which is housed in a basin contained a gridiron street pattern within the valley and plateau that was placed within the basin surrounded by the mountain

ranges. Hence the built form needed to be articulated in a manner that contrasts and harmonizes with the nature and the surroundings. The mountain and the sky and the water features contained cool colours with different shades such as green, blue, shades etc. Nevertheless the built fabric has to be created using cool colours and neutral colors to bring out the character of the Kandyan city. Whereby the natural colours of the building materials were accentuated along with to bring out the cheested and aesthetics of the streetscapes in the city.



Fig.72 Colour analysis of walls and other elements of Kandiyān Architecture
Source. Author

3.1.1 The usage of Colour in the Building Envelope to achieve Contrast against the Backdrop

“The colour, texture and pattern of a plane’s surfaces will affect our perception of its visual weight proportion and dimension”
D.K.Ching 2007

The building envelope is the physical separator between the interior and the exterior environments of a building. Whereby it serves segregation that defines the degree of enclosure and the distinction between the indoor and outdoor environment. It serves as the outer shell to help maintain the indoor environment. The vertical plane of buildings of the context is more important and main factor of the building fabric. Character of the façade, is mainly generated by the quality of the building fabric. On the other hand, it is a main factor to generate the image of a particular area, often giving its identity. Thus it will directly affect and influence the spaces outside, and the pattern of the spaces related to it. The walls constitute and essential architectural element of any form of building. They provide enclosure and separation and protection for the interior spaces created, while giving the built fabric an aesthetic

appearance. The external walls and elements show the basic colour and texture of building façades and constitute the largest area and the longest observation time from people.

Colour is considered as a basic element in a cities beautification, where colour acts as a major contributory factor for the aesthetics and create attractive elements. Colour is one the most effective methods of beautifying the city with the sensory perception of Colour in the minds of the people.

Kandy city contained its own unique colour toning during its development, stemming from its natural geography, history, religious, cultural environment and commercial activities. Natural and artificial colours contribute in greater extents to emphasize such character with in the urban context.

Finishes and application of colours in the walls has created a unique character to the building fabric. Availability of materials of the area, technology and economic factors are several reasons, for the change the usage of materials. Consideration of the historical background of the city, with the evidence that is available, is an essential component in Urban Design.

Components of colours, textures, materials and finishes and a composition of all of these factors; enabled to create a strong character and identity, to the city. The existence of a traditional local craftsmanship and building materials with colours unique to them and the city provided a strong sense of unity, to the context in such occurrences. This enabled new buildings to converge, and harmonize with the existing even with the use of new materials. Further where ever possible a new building could be a convention with some materials, and colours which would be an interpretation of modern structural requirements. Whereby adequate care has to be taken to use them in an appropriate manner. Thus to be harmonized with the existing natural colour pattern available in the surrounding building context.

Selection of materials always affects the textures, colours and finishes and the final colour perception of a city.



Fig. 73 Temple of the Tooth Royal Palace of Kandy Old Street of Kandy
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>



Fig. 74 Queens Hotel
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>

External
walls

Roof



Fig.75 Colour analysis of Building Envelop of historic city
 Source. Author

Therefore it should be organized considering all factors of historical fabric and its colours. The selection should not always match the apparent tone or colour on adjacent buildings precisely. However it is important to transept a tonal range in any location. Brick, cement, concrete, timber and glass can be identified as common material for building façade in history. There are numerous types of materials used by the infill buildings in the present building façade such as Claddings, Zn/Al sheets and glass which can be identified as prominence in materials used at present. But such materials have not been used in a proper way to emphasize and compliment the character of the historically significant buildings in a manner that would harmonize and complement each other.

External
walls

Roof

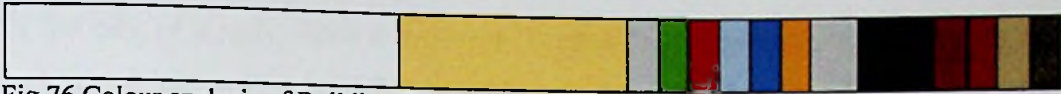


Fig.76 Colour analysis of Building Envelop of Present city
Source. Author

The harmony of natural and artificial colours in an urban context blends in a greater extent to emphasize the city's identity and results in the formulating its final imagery, with the colour perception. The warm colors and neutral colors that are being used in the buildings with white walls and brown colour which are reflected on the roofing materials and the timber works often seen in the facades and built form brings out the form of the building against a back drop of the mountains and the Sky which contain the cool and butreal colours. The contrast here is a fine vindication of the authenticity of the cities architecture and the built formation. The Kandy city is famous for its hierarchal pattern in the buildings and dwelling. Hence the intensity of colour too was a contributory factor in achieving the tone of buildings to emphasize the importance and huarache pattern of these buildings.

3.1.2 The usage of Colour in Building Elements

Elements of known size within a plane's visual field can aid our perception of its size and scale. The texture of a plane's surface, together with its colour will affect its visual weight, scale and light-reflective qualities. The shape and proportion of a plane can be distorted or exaggerated by layering an optical pattern over its surface.

D.K.Ching, 2007, p102

Building elements can be stated as the materials, component parts and methods of construction that go into making and erecting of a building or structure. These elements constitute the basis of construction, where they may include the doors, windows, floors, foundations, walls, roofs and the structural members in the design and construction of a building. In architecture, colour is needed to emphasize the character of a building to access the form and materials, and to explain its divisions. The area of the decorative colour should be no larger than that of the secondary

colour, however it can have a great change in the hue, brightness and richness against the basic colour.

In the city of Kandy, several types of features and elements are included in the buildings to emphasize the building and its grandness to colour perception of the city. These include doors, windows, arches, moldings, columns, canopies, balconies and hand rails that can be identified as common elements of the facades. More simpler rhythm of elements can be seen along the historic building fabric. Vertical and horizontal lines have been balanced well, according to rhythm of the historical building fabric.

Doors and windows are introducing incidents and visual interest to its immediate surroundings; special emphasis must take with it in façade detailing to avoid undesirable timed effects. Which played an important role of the building facades. Square and arch shapes are the most prominent detail of doors and windows. Natural colours in timber have been used in path ways and internal spaces. Mostly white or yellow ocher colours have been used to paint doors and windows along the external areas.

It is evident that the colour of the elements and materials that are been used with textures and the elements in the built fabric such as windows and door and balconies etc. which are made out of the timber works are the unifying there for the harmony of the street facades.



Fig.77 Historic use of colour in Building Elements
Source. Author

Most of the infill buildings have been violated the character of the streets in Kandy city, with the use of modern materials, unsuitable decorations and colour. Warm and cool colour claddings, glass, Zn/Al or steel doors and windows have been used for front façade of infill buildings.



Fig.78 Present use of colour in Building Elements
Source. Author

Roofs as topmost covering with long eave projections which were double pitched, covered with flat clay tiles has been used as a common material for the covering of roofs in the buildings. A wide variety of half round clay tiles and Calicut tiles are seen frequently in the city. Therefore natural colours like brown intensities and black intensities were identified in historical building envelopes. Since the brown and black shades falls under cool and neutral colours, a cooler effect is given to the context by the usage of these colours. Nevertheless in the context of contemporary architecture and building facades in the context, there are various types of current materials and shapes, that can be seen as roof coverings, on infill buildings (eg. asbestos and corrugated steel (takaran) material sheets.



Fig.79 Canopies, name boards and text colour analysis of present *Dalada Veediya*
Source. Author

The colour perception along the historical streetscapes and built facades hereby has created a unique character to the city with the white or beige walls, brown intensities tiles roofs and the timber elements like doors, windows used in the faces and the other parts of the buildings with dominating cool colours. While building fabric dominates in the urban context with lush green intensities from mountains and the blue intensities of sky. Hence the perception of human behavioral pattern as against the influence of the colour and textures along the streetscapes and start facades can be an advantageous situation to understand the colour perception of the Kandy city.

3.2 Exclusive Usage of Colour in Urban Context of Kandy

Urban colours are an important component of colour perception of city. Changes in the quality of the urban fabric will in turn influence changes in feelings behavior and emotions of the urban fabric. Colour can make people aware of distance, weight and scale. Colour is a basic factor which influences the special character of a city.

In city of Kandy, urban colour directly reflects the urban history, culture and overall image of the city. It is an urban feature and an important component of urban attraction, and is also a symbol of urban character. Urban colour is not only related to the urban external man made masses and spaces, but also affects the environmental, geographical quality of public space. It completely reflects the social civilization and development of the city in different phases.

3.2.1 Use of Colour to Enhance Legibility of Buildings

Colour has great impact towards legibility of. Colour, together with line and form, has traditionally been the basic element of design in architecture. Colour has played a major role during the prehistoric period when man used paint to express their feelings and emotions on cave surfaces. The early Greeks used colours on their buildings, while the Egyptians coloured their statues in ancient times.

Since Kandy city is historically, religiously and culturally significant and most of its architecture has an overall quality as a holistic perception. But the cities still give the elegant, warm, comfortable and cultural feelings.



Fig. 80 Tempel of the Scared Tooth *Ulpan ge*
Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>

In the uniqueness of Kandy city's urban colour perception , it includes all kinds of urban colour composition factors, such as natural, artificial, fixed, movement, stable and short-term colour etc. If there is no change in colour, there is some harmony with in the urban context. The main aspects in Kandy city's urban colour are considered as

coordination between the artificial colours and natural colours. The other situation is the coordination between the artificial colours and artificial colours. Urban colour has been harmonized with natural environmental colours, such as the green forest, green mountains and manmade lake, where its colour has been distinguished from the city. Subsequently the city lay in a basin form and surrounding mountains nature's, the original colour is always easy to harmonize with the perception. Therefore, the urban colours should try to reflect the outstanding natural colours especially the natural colour of trees, mountains and water bodies in city.

The basic colour of the city is not only one colour, yet certain lightness, purity, secret within the scope of its tendency, or what the colour system can find. Basic hue as cool colours occupies the proportion of higher in order to play a leading role, secondary colour occupies less than basic colour and decorative colour occupies only a small percentage in order to form a stable and overall colour perception of the city.



Fig. 81 Temple of the Tooth Audience hall Trinity Chapel
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>



Fig.82 St. Paul's Church, St. Anthony's Cathedral Natha Devala Shrine
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>



Colour is an historical urban heritage. Urban culture, history and economy are reflected by some kinds of colour. Hence, if an urban traditional colour is destroyed at preference, that equals to the destruction of history. Historical and cultural urban features need to be protected as the same as cultural heritage in order to continue its historical significance and the new buildings and built fabric should be responsive to these vernacular elements. Buildings are the most distinct elements of urban design,

where they shape and articulate space by forming the street walls of the city. Well-designed buildings and groups of buildings work together to create a sense of place with the perception of colour of the city. Buildings are the most distinct elements of urban design they shape and fluent space by forming the street walls of the city.

Furthermore many colours are essential when experiencing and analyzing historical architecture. The relation between the colour scheme and the appearance of the building is significant. Historically used to apply materials indigenous to their regions. Architectural styles evolved within the limitations of available materials and this disciplined the form as well as the colour of the buildings. As a result, the constant use of local materials and not having access to artificial colours produced urban settings with visual harmony. The vernacular colour schemes are almost disappeared today. This probably led to the most striking feature, the simplification of the maintenance of the buildings: all the buildings were lime washed white, which of course is the natural colour of lime wash when no pigment is added, which is freely available. Nevertheless the colour white projects purity, cleanliness, and neutrality. With development of the technology new materials and new colour schemes are evident on the façades of buildings in bring together them. There for historical artificial colour in building facades has get influence to warm and cool colours instead of neutral colours in smaller percentage.

3.2.2 Use of Colour to define different Urban Districts, Nodes, Land makes and Edges

The five elements defined by Kevin Lynch in his famous book the “Image of the City” in perceiving urban space. Whereby the users understood their surroundings in consistent and predictable ways which are as follows:

- **paths**, the streets, sidewalks, trails, and other channels in which people travel;
- **edges**, perceived boundaries such as walls, buildings, and shorelines;
- **districts**, relatively large sections of the city distinguished by some identity or character;
- **nodes**, focal points, intersections or loci;

- **landmarks**, readily identifiable objects which serve as external reference points.

In identifying and relating to these elements the presence of colour plays a very significant role where of used in the correct proportion and intensities they can really produce meaningful cities that will enable to formulate the functionalism of the city with a sense of place and a sense of time. Where by people will recall in their minds the character of the urban spaces where in which they come in contact with.

The same can be applied to the Kandyan context where the use of different tones in colour has been a catalyzer in emphasizing the importance and the distinction of the elements that they define.

Urban colours in a city, follows functional requirements, identity and perception at as the foremost parameters in this regard. As the first requirement will be a city's overall functioning in terms of religious, administration, commercial and transportation sectors. Secondly, it is the functioning of a city's districts or the streets. There are significant colour differences between commercial streets, where certain areas should be distinguished. The colour between major districts or streets and small districts or streets further should be distinguished.

Cities has different districts which were also call as "segments" K. Lynch 1960

The cityscape of Kandy could be divided into basic three districts according to functions, City layout and special character as the sacred district, the commercial district and the peripheral district or the outer commercial district. According to such districts, colour tone also similarly should be different to further emphasize the functions of each precinct.

In the city layout, the sacred district gets prominence by the location where it comprises the religious activities and religious buildings like Tooth Relic Temple, Audience Hall, four *devalas* with the walkways.

In the religious district, elegant and subtle colours have been used, in order to display the cultural heritage, entertainment or mass gathering. This district has lively and clear colours that are used, are able to summon the sacred mood with soft tones to satisfy and harmonize with the environmental colours present.



Fig. 83 Temple of the Tooth Royal Palace of Kandy

Old Street of Kandy

Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>

Commercial district, basically contains the gridiron city form the commercial district, which included twelve squares, paths and streets are interconnected at every square and the built fabric is very unique and local scale and colour in the building façades, which are mostly white, beige and building elements, name boards are out of warm and cool colours, with lush green intensities and blue intensities as the back drop.

Other outside commercial district could be identified as peripheral districts. This area consist mostly commercial functions, institutional buildings, greeneries, open space, parks, markets, some important colonial buildings, transportation terminals etc.

Other than this there is a green forest present on the east – *Udawatta kele* and beautiful lake side containing a huge water body (Kandy Lake).



Fig. 84 Market
Source: Author

Railway Station

Good shed bus stand

Peripheral District with mixed residential built fabric which has less density acts as the periphery of the city core. Most of the built elements are new additions or extensions of the city lay out. The Good shed bus stand towards, *George E De. Silva* Park, Market, *Maha Vihara* complex and leading school can identify.

These commercials and peripheral district mostly used combination of neutral, cool and warm colour as an accent mostly in elements to emphasize the character of such function with lush green intensities and blue intensities as the back drop.

Furthermore, colour has been used in the nodes as focal points, intersections and landmarks as readily identifiable objects which serve as external reference points as buildings, streets, and districts which are emphasized. Nodes and landmarks are not essentially being physical nodes of intersections two streets. Most of the focal points or intersections are facing towards colonial building facades and the natural settings. Intersection at of *D.S. Senanayaka Veediya* and the *Dalada Veediya*, Queen's hotel façade in white colour, Kandy Lake in blue colour with a lush green backdrop of mountains to the such nodes.



Fig. 85 Temple of the Tooth Queen's Hotel Old Police Station
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>

There are naturally consecrated landmarks and manmade magnificent landmarks that can be identify within the city. When perceiving Kandy landmarks plays and important role. City has many potential land marks which have historical values. Since the city situated in a valley, there are plenty of lush green intensities that can be experienced with natural landmarks such as lake and mountains with the trees. Clock tower as a magnificent man made structure against a huge shady tree.

Edges may occur due to the topography and natural landscape. As city has surrounded by three peripheral mountains, those ranges can be identified as edges. If we consider the street edges, the most prominent are *Dalada Veediya*, *Kotugodella Veediya*, *Yatinuwara Veediya* and *D. S. Senanayeke Veediya*. These street edges act as definition of city blocks.



Fig. 86 Clock Tower Temple of the Tooth Water Fountain Near mahamaluva
 Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus/>

The edges naturally blessed with more cooling colours, as blues from sky and water green from mountains, vegetation from mountains, merge in different intensities with smaller percentage in other colours in harmony. In such an urban setting natural colours are dominating though, inter connects appropriately with the Kandy city Character.



Fig. 87 Lake Edge

Source: <http://flashpackatforty.com/2013/03/12/dambulla-to-kandy-by-bus>

3.3 Impact of Colour on the Complete Visual Image of Kandy

"The sense of the beauty cannot be separated with hearing and vision, and the séance of colour is most popular form in in the séance of beauty"

Karl Keinrich Marx & Frierich Engels, 1965, P 145

Colour is the most important part of urban magnificence. People usually depend on their sense of sight in an environment, and colour is usually the first thing to see. Hence it is a tangible force where one would respond to in perceiving the spaces and urban forma in a city. It is noteworthy to mention that colour not only affects the sense of beauty, but also has an impact on people's emotion and the efficiency of existing and functioning.

Geography, history, culture and climate are important factors for the formation of urban character and urban development. Urban colour and urban history and culture complement each other. From the perspective of geography and climate, the city of Kandy was classified as the tropical and mountain valley city.

Urban colour comprises the natural colour and artificial colour. Natural colours are resembled as lush greenery from the surrounding mountains encircling the city, as well as the blue intensities from sky and lake that generate natural colours. Natural colour includes two aspects embedded in them which are the dynamic and static. Colours of nature are always easy to acknowledge, and are the most beautiful. The

colour of a city which is surrounded by mountains has been distinguished for the city. Even the use of colour is bold in green around the town, where it would not challenge the harmony of urban colour. Furthermore existing natural colours act as the urban background, organize an urban background, and has paved the way for the cultural colours to follow the natural colours, which was mostly during the historical era. During such period buildings were mostly constructed out of natural materials such as timber, clay tiles, clay bricks etc. Henceforth the effects of colours also emphasize the natural colours and smoothly harmonize with the natural settings. Limited artificial colours has been identified in the building façades which correspondingly generate out of natural materials, since the colour effects yet falls under the natural colours.

With the social development and progress of science and technology, technology continually develops, and it provides more opportunities to the performance of urban colours, and also affects the traditional urban colours. Whereby it affects the further development of the urban colours and introduces much more artificial colours in deferent hues. This caauses a flamboyancy, which often dilutes the historic values of the streetscapes. Furthermore due to increasing needs for more commercial activities, most of the historic houses were converted to shops or shop houses and the face has given a new look with new materials and the colours such as warm and cool colours and which change the colour character and identity of the city. From the time when green and blue natural colours were dominating within the city, such colours are still suppressed among natural colours. Colour beauty amongst the people comes from the natural temperament to people. For humanity, nature's original colour is always easy to accept. Therefore, the urban colour should try to reflect the outstanding natural colour especially the natural colour of trees, mountains, sky and water rather than competing with natural colours.

Although the Kandy city contained a unique character in its built from Urban morphology, streetscapes and architecture, along the glossy green mountains; rapid urbanization unplanned urban sprawl and hap hazard developments has resulted in unsightly encroachments in the scenic mountains. The various factors which influence the character of a city, colour with its "first sight" is undoubtedly a basic factor for creating a city with a specialty. As the city form represents conceptual order, the plan

of building volumes and spaces, city colour shapes perceptual experience. A sense of colour, in fact is the most direct visual signature. The Dilemma of colour is a significant element in the Kandy city which has been a significant element contributory in the determination of the city's Authenticity.

In this sense the use of Colour in the built fabric plays an important role in the psychology of perceiving spaces. Where the composition and the intensity of the usage of colour will generate a meaning and identity of space.

The warm colors and cool colors that are being used in the buildings with white walls and brown color which are reflected on the roofing materials and the timber works often seen in the facades and built form brings out the form of the building against a back drop of the mountains and the Sky which contain the cool colors.

The contrast here is a fine vindication of the authenticity of the cities architecture and the built formation. The Kandy city is famous for its hierarchal pattern in the buildings and dwelling. Hence the intensity of colour too was a contributory factor in achieving the tone of buildings to emphasize the importance and hierarchy pattern of these buildings.

CHAPTER FOUR

4.0 CASE STUDIES

Kandy city is gradually developing over an extensive period of time. However it could be evident that rapid changes are taking place in living environment of the Kandy recent past, and the process is continuing. Hence functionally many changes are mainly introduced to the urban environment, some are not appropriate. Therefore the built fabric and the urban street scape directly affected and many negative forces destroy the urban context and the city uses, lifestyle in numerous ways.

The urban colour relation is observed and reflected as an aesthetic object, the methodology of aesthetics will be borrowed; it is an effective way to research and analyze the relationships of urban colour when experience is regarded as original aim, includes urban building fabric colour, street scape, landscape and immediate context of the city.

The other type of experience is that with people-to-city experience to understand the city; the main approaches are reading literature and collecting data. Meanwhile it is required to maintain a high degree of sense to natural environment; at the end the geographical dimensions of cities are the original dynamic of colour relationships.

4.1 Case Study One – *DALADA VEEDIYA*

4.1.1 Study of the Historic Ward Street | *Dalada Veediya*

During the time of British conquest *Dalada Veediya* renamed as ward Street, however lately reverted to its original name as *Dalada Veediya*.

Ward Street or presently *Dalada veediya* is the main street of the Kandy City, and most of other streets are directed to *Dalada Veediya*. It divides the city in to two segments. *Dalada Veediya* begins from the point of which the significant symbolic element of clock tower and it ends at junction where the *Sangaraja mawatha* and it meets *Anagarika Darmapala Mawatha* each other. The significance is this is the main access to *Dalada Maligawa*. Therefore this street has a prominence with its own. If a visitor enter in to the city from west use *Dalada Veediya* and it is the main entrance to the *Dalada Maligawa* from the main bus terminal. *Dalada Veediya* is a very busy street due to the commercial activities and which connects other busy streets too.

Furthermore, this street is pointers many directions, to the south main bus terminal, to the north *Yatinuwara veediya* and to the east Lake Road.

4.1.1.1 Street Scape of Historic *Dalada Veediya*

This street appears to be narrow comparatively to other streets in the city; either sides of road consist of with single story to four storied buildings and also connected with other street which acts as a spine to the city. Pedestrian pavements are very wide, that is reason to narrow the street, mainly due to the pavements are mostly link with the front verandah of the historic buildings. The importance is most of the historic buildings consist of with pedestrian path through the building close to the street edge. As an example, there is no pavement next to the Queen's Hotel. The building heights are more than the other streets in the city. All building plots along the road located at perpendicular accesses to the road and historical buildings located at the street line. There for position of the street line and the building line remain as same.

4.1.1.2 Activities of historic *Dalada Veediya*

Historic *Dalada Veediya* is dominated by mainly commercial activities there for street is busy with great variety of commercial activities. Until late British period the *Dalada Maligawwa* and the surrounding area used as the commercial city center of Kandy.



Fig. 88 Wared Street (*Dalada Veediya*)
Source. *Lankapura* historic images of Sri Lanka



Fig. 89 Baptist Church

Due to the expansion of the city and the limited area it shifted towards the clock tower junction with the commercial and transportation activities. Therefore the old city and new city centers connected through the *Dalada Veediya*, in addition to that the street has direct access to the *Dalada Maligawa*. Street starting from new commercial hub of the city, the most significant symbolic element of clock tower and ends with the

Dalada Maligawa. Kandy Lake and *Udawathakelle* forming a back drop to the street end, while in-between all the committal activities are taking place.

4.1.1.3 Built Fabric of Historic *Dalada Veediya*

Building facade, the walls are essential architectural elements of any building. They enclosed separate and protect the interior spaces. The facades contribute to the aesthetic aspect of the urban built environment. The external walls give the basic colour and texture to such space. This is the biggest area and the longest experience for the community. The buildings heights vary from single story to four storied buildings since building horizontal external walls proportionately small when compared to their heights.

Ground floors are more permeable to welcome people since the external horizontal wall area reducing again. The buildings share the external wall with the neighboring building at some points connected the façade of few other buildings together. The pedestrians are comforting in these spaces where the building height does not overpower, because the building faced is broken into horizontal segments, reducing the visual height.

All these historical buildings located at the edge of the street. Therefore open space in front of the building fading along the street. Clearly defined building edge and continues façades are the most important characteristics of historical urban fabric. There were hardly seen any open space in-between buildings. Therefore all of the buildings along the street could be identified as one linear building mass, which is an identical character of a street in an urban built fabric. Building width and equal heights of historical buildings were maintained from beginning to the end. Some of these building consist of open verandahs or porticoes. Hotel Queen's emphasized the special quality at the end of the road. Proportionately narrow down the road according to increment of the building heights. Next passing these high scale built fabric enter to a vast open area with the view of Kandy Lake. The change of built fabric facilitates to sense the climax of this spatial experience.

Historic buildings of this street comprise with several interesting features and elements, such as columns, arches, and balconies. These elements are common to the

faced, creating a simple rhythm in building fabric. Vertical and horizontal lines have been well balance, according to rhythm of historical building fabric.

4.1.1.4 Colour schemes of Historic *Dalada Veediya*

In *Dalada Veediya*, colour makes its own unique character in the urban fabric, with these developments over the religious, historical, cultural, economic and geographical settings. It is an important part of the urban culture and urban style for the colour schemes of the urban street scape which directly harmonize with the overall colour identity of the city. The colour of the surrounding will arouse different feelings among people. The change of quality of urban fabric, the feelings, behavior and emotions will be differing. In addition a specific colour can give people certain sense about the distance, weight and scale of the urban street scape.

Colonnade, arcade, proportionately small windows with thick wall and other details of façade have memorized the character of colonial architecture, Decorative timber handrails, decorative valance board and clay tiled roof can be identified as important element of the façade with colour.

Colour scheme of *Dalada veediya* was comprises of natural colour and artificial colour , which is directly and indirectly effect for the impact of colour perfection of human behavioral patterns and the urban character and creates a sense of place and a sense of identity to such street.

As natural colour, from the perspective of geography and climate, the street was covered under as the tropical climates and surrounded with lush green mountains. At the beginning of Street green patch can identify as a park was named as *George De.Silva* Park, in-between two ends of street with additional trees harmonies with the building façade and the end of the street open area with panoramic view of *Dalada Maligava*, Lake and the lush green *Udawattahakalle* Mountains.

Street naturally blessed to have more cooling colours, as different intensities of blues from sky and lake and different intensities of green from *George De. Silva* Park, mountains, trees and the other colour in smaller percentage harmonies with dominating natural colors with urban context.

Sky

Water

Landscape

Mountains

Others

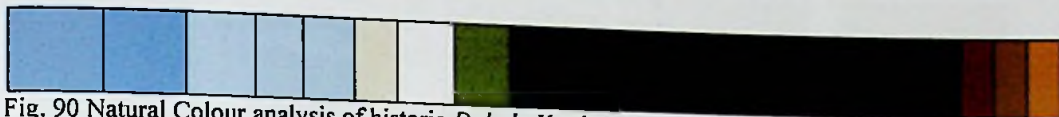


Fig. 90 Natural Colour analysis of historic *Dalada Veediya*
 Source. Author

As artificial colour, mainly can consider colour in building facades, building elements, land marks, urban street scape elements as fixed colour and moveable colour in people and vehicles.

Character of façade is mainly generated quality of the building fabric. In other hand it is a main factor to generate image about particular area. It directly affects the space outside and pattern of related space. The external walls shows the basic colour and textured them have the largest area and the longest experience in relation to the time for a pedestrian to perceive the space.

In historic and photographic evidence explains that the building façade colours are in white and beige. Since roof was out of clay tiles certainly the brown indicates with emphasize the roof in building façade. Since the building heights are not more than four stories roof and the colour of roof had been emphasize in to a greater extent. Canopies are hardly to notice, and which are out of the same building façade colour.



Fig:91 Buildings in *Dalada Veediya*
 Source. *Lankapura* historic images of Sri Lanka

Doors and windows in *Dalada veediya* take part an important role of the building fabric, Square and arch shapes are most prominent detailing in doors and windows. Timber is the prominent material and use extensively. Natural colour of timber used at

pathways and internal spaces, while white or yellow ochre colour been used to paint the external areas of the doors and windows.

Since the colours were mostly natural texture with matt effect, the visual effect is natural timber finish could be identified in doors and windows.



Fig. 92 Decorative Window designs of historic *Dalada Veediya*

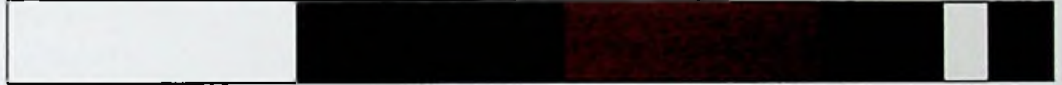


Fig. 93 Decorative Window designs colour analysis of historic *Dalada Veediya*

Source. Author

Colonnade arcade and other details of façade, which is memorizes the character of colonial architecture. Another important element of the façade could be identified as decorative timber handrails, decorative valance board and clay tiled roof.

Detailed timber hand rails are finished with natural timber colour and with the pre cast cement panels and cast iron materials. Colour of natural timer was remained with the timber handrails while white or yellow ochre colour been used to paint the precast or cast iron handrails in certain building facades.

It is visible the façade colour harmonize in these buildings and since the colours were mostly natural and cool, matt finish effect such visually gives the entire façade is as a single element.



Fig.94 Decorative Handrail designs of historic *Dalada Veediya*
Source.



Fig. 95 Decorative Handrail designs colour analysis of historic *Dalada Veediya*
Source. Author

Other elements such as arches columns and details of façade were decorated with moldings and details to emphasize building, elements and to show the grandness of the façade to the urban context. Colour by the building façade colour to harmonize and since the colour were mostly natural and cool, the texture of such also matt effect.



Fig. 96 Moldings, Columns and Arches designs of historic *Dalada Veediya*
Source. Author

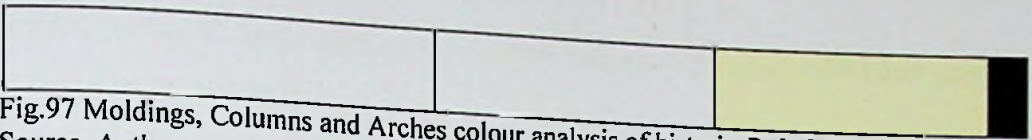


Fig.97 Moldings, Columns and Arches colour analysis of historic *Dalada Veediya*
Source. Author

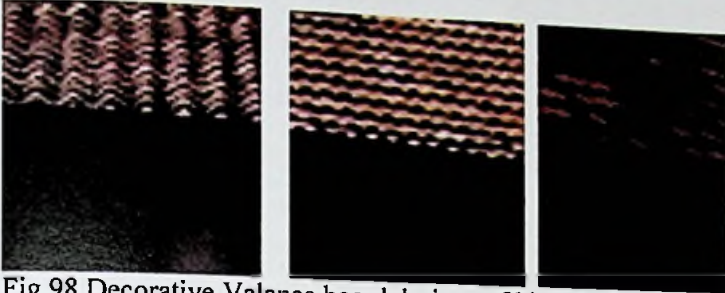


Fig.98 Decorative Valance board designs of historic *Dalda Veediya*
Source. Author

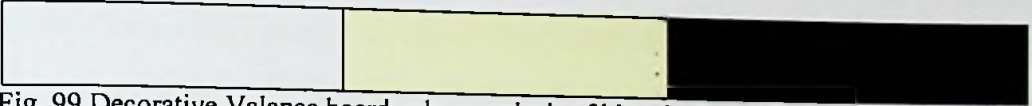


Fig. 99 Decorative Valance board colour analysis of historic *Dalda Veediya*
Source. Author

4.1.2 Study of Present *Dalada Veediya*

With the development of city the present *Dalada Veediya* also transformed according to meet and fulfill requirements of the people. *Dalada Veediya* is a main commercial street in the city with other activities exist. When considering building morphology of this street has the character of urban area. The character of the buildings influenced by British, Dutch as well as modern architecture in order to kandyan architecture. The building façade has conventional and modern characteristics.

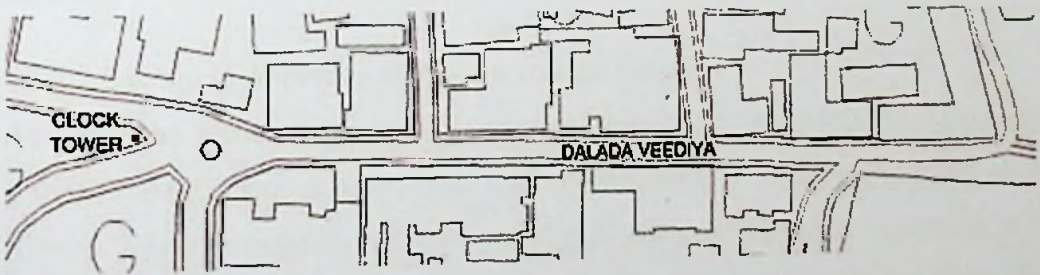


Fig. 100 Map of Present *Dlada Veediya*
Source. Author

4.1.2.1 Changing Street Scape of Present *Dalada Veediya*

Present *Dalada Veediya* also appears to be narrow comparatively to other streets in the main cities in the country ; as discussed earlier, either sides of the street building



heights varies to signal story to four stories and also connected with other street and acts as a spine in the city.

Pedestrian movement diverted in to the arched, which is a vice approach to emphasize the specialty of the area and also suits to the function. Existing street line been emphasized by most of infill taken place at this present era. Mainly these changes are taking place due to the high land values; owners are reluctant to waste any space etc.

Historical buildings with varying heights have created the uneven sky line from beginning to end of *Dalada Veediya*. But it has maintained the skyline in the historic areas of the street. Sky line can be seen on higher level at both ends of *Dalada Veediya* rather than abut of the street. That makes the unique rhythm for street. Infill building of *Dalada Veediya* has violated the above rhythm in most of areas. As an example, People's bank has not maintained the historical sky line not in accordance with the white house building. Therefore it is standing in its own in isolation. A very good approach could be identified in Delight bakery building which is next to the old bank of Ceylon building. It properly maintains the sky line by its scale and proportion of the building height in accordance with the historical building.

Most of infill were taken place without any respect to the historical building. This misconception ruins the original character of this space and the concept of a street. Furthermore it aggravates the situation by using unsuitable materials and unsuitable elements.

4.1.2.2 Changing Activities of Present *Dalada Veediya*

As discussed earlier, present day *Dalada Veediya* also dominates by commercial activities and became a busy street with no exception to other major cities in the country. The commercial activities and the city development are increasing at an alarming rate. Due to these rapid developments and commercial activities other related activities also taking place within the city.

There are several large scale infill projects could be identified along the *Dalada Veediya*. Most of them are located in between the historic buildings. The unfortunate truth about it is, character of the buildings was completely ignored.

At the beginning of *Dalada Veediya* close to the Clock Tower many changes are taking place. Since the George De Silva Park conversion to address to a certain

amount of demanding commercial activities, green area further reduce and introduces an urban concrete park to preserve the openness, the prominent character of within this space. Due to the urban sprawl in to the city, population increased and pedestrian traffic as well as the mortar traffic. This situation demands for smooth traffic pattern for both the vehicular and pedestrian within the city. As a result the underpasses were introduced in the area between sub bus terminal and clock tower. It helps to ease the traffic towards *Dalada Veediya* to great extent and at the end of the *veediya* acquire the panoramic view of *Dalada Maligava*, *Udawattakelle* and Kandy lake.

4.1.2. 3 Contemporary Built Fabric of the *Dalada Veediya*

With the city development it requires an additional space for its adding functions. Therefore to meet such many buildings were erected as infill to the urban space within the historical building fabric.

Some of these buildings are harmony with the historic building fabric while some are not. Therefor contemporary built fabric has created different character to the street in the historical context. The infill buildings comprises with several variety of elements which could be seen in the historical buildings. The new elements as columns, arches, and balconies could be identified as common elements in the faced.

All of historical and other buildings have been located at the edge of the street and frequently attempt to maintain the character and the rhythm of the historic ward street. Therefore there is no such open space in front of the building and also along the street. Clearly defined building edge and continues façade are the most important, unique character of historic fabric. There were hardly to be seen open spaces in-between buildings. Therefore the buildings along the street could be identified as one linear building mass. The width and the equal heights maintained in historical buildings from the beginning to the end. Some buildings consist of open verandahs or porticoes. Hotel Queens is been maintained and emphasized the special quality abutting to the street. Which is proportionately narrow down the road, compare to its increment of building heights. End of this journey the street entirely open to the view of lake. This changing height of buildings enhances the sense of climax.

Orientation of infill buildings are as per the plot, respected to existing perpendicular arrangement of historical settings at *Dalada Veediya*. Therefore it facilitates to

maintain strong character of *Dalada Veediya*. However some setbacks violate the continuity of the building fabric.

Open space on either side of *Dalada veediya*, on to one side the Baptist church contributes to improve prominence character of the past. Even though, importance of that space is weaken with introducing small scale buildings.

Infill buildings of *Dalada Veediya* maintaining the rhythm of the existing building fabric as analyzed in the previous chapters and sub chapters.

Height is a key factor to maintain the rhythm of building fabric. But height of the new Bank of Ceylon building is standing in isolation contrary to the rhythm of the streetscape. Many new buildings were contributed as large scale developments maintain the scale of streetscape excessively. Some of them are Bank of Ceylon, People bank and Kandy city center. These buildings are mainly commercial and recreation developments.

The underpass is in between clock tower and the George De. Silva park, some small scale developments could be identified along the street. Such development took place in between small scale historical buildings. Cubic form is a very contrast form of the Bank of Ceylon building, in this context. City center building as arisen among small scale buildings has extensively effect for the existing rhythm of the street.



Fig. 101 Peoples Bank building
Source. Author



Fig. 102 City Center shopping complex

A continues built up area is named as urban solid, which could be seen a long facing to *Dalada Veediya*. In this urban context, *Gorge De. Silva* Park is a remarkable open space as it demarcates edge of building façade of *Dlada Veediya*. And it enhances the character of the urban fabric as an open within the urban built fabric.



Fig.103 *Gorge E.De. Silva* Park as remarkable space
Source. Author

When walking towards the clock tower along the street, several food outlets and restaurants such as Devon, White House and KFC could be found. They were located in convenient locations, which are very vital for the people who are coming to the city for day today activities and also to the visitors and travelers. In the past most of the food outlets and restaurants including Hotel Queens were reserved for certain elite group in the society. However at the present, due to the change of life style and social values which are accessible to each and every person of any social class or cast.

In this area as a whole, the main buildings have Colonial architectural characteristics in present day too. Some important buildings among them are new shopping complex, the people's bank building, several other buildings.

The rest of the buildings within the urban fabric are old buildings some of them are converted in to commercial activities in order to facilitate the needs of the modern world. Nevertheless, architecturally buildings in this area have not gone through significant changes as the other streets in the Kandy city.

4.1.2.4 Changing Colour Schemes of Present *Dalada Veediya*

With the development of the city, *Dalada Veediya* also developed accordingly. Since the commercial activities requirements also developed additional buildings were introduced in *Dalada Veediya* excessively. Considering its own unique character and the development of the technology many more new materials with different colours and textures were introduced to infill buildings.

While analyzing the existing colours, textures and rhythm of colonnade, arcade, with proportionately small windows with thick wall and other details of façade that memorized the character of colonial architecture. At the same time, decorative timber

handrails, decorative valance board and clay tiled roof can be identified as important element of the façade with new colour and texture added to the street facade.

Colour combinations of present *Dalada Veediya* is comprises of natural colour and artificial colour, which is directly and indirectly effect for the impact of colour perfection of human behavioral patterns. It is a huge impact to the urban character, this may create a sense of place and a sense of identity to such street which may create either a positive or negative effect.

As natural colour, from the perspective of geography and climate, the street was covered under as the tropical climates and wrap with lush green mountains.

Street naturally blessed more greens and blues from vegetation and water which cooling colours comparatively fading with the contemporary developments. The intensities of blues from sky and lake and different intensities of green from *Gorge De Silva* urban park, mountains, the and vegetation blended with the other lesser colour combinations and harmonies with dominating natural colour with urban context in historical *Dalada Veediya*. It clearly noted comparatively natural colour or intangible quality has reduced with the recent development in *Dalada Veediya*.

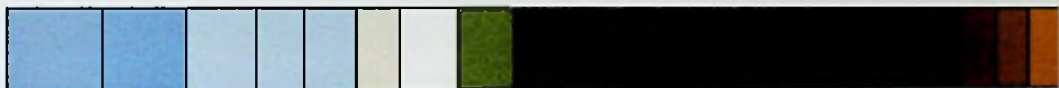


Fig. 104 Natural colour analysis of present *Dalada Veediya*
Source. Author

As artificial or tangible colour, mainly could be consider colour in building facades, building elements, land marks, urban streetscape as fixed colour and in people, vehicles will be considered as moveable colours

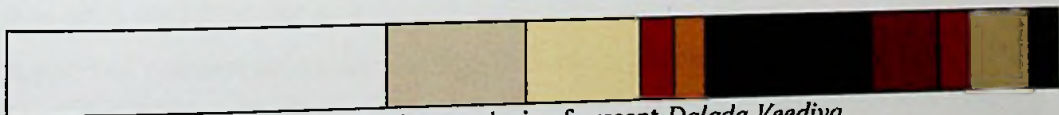


Fig.105 External wall and roof colure analysis of present *Dalada Veediya*
Source. Author

Bank of Ceylon prominent building at the beginning of the *Dalada Veediya*, wall façade comprises of shade of gloss dark red, matt saffron in colour. The glass been used for building envelops. Since dark red colour is more prominent warm colour, is stand out other than all other buildings in the immediate context.

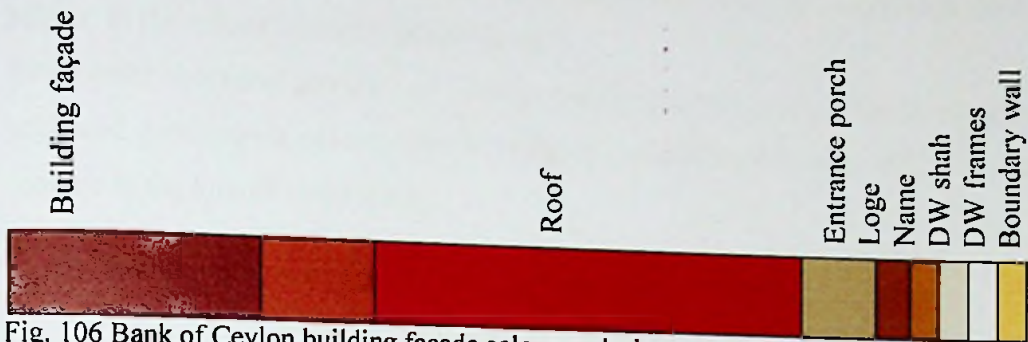


Fig. 106 Bank of Ceylon building façade colour analysis
Source. Author



Fig.107 Bank of Ceylon building
Source. Author

Double pitch roof is prominent element of the building which has a combination of traditional and modern roof styles and the materials. Therefore buildings envelop and the roof has two different architectural languages are in contradiction. Nevertheless it acts as a backdrop for historical buildings in some angles from the street, with the support of contrast appearance of colour from the street.



Fig.108 People Bank building
Source. Author



Fig.109 City Center shopping complex
Source. Author

People Banks of the *Dalada Veediya* wall façade is beige, sandstone white with touch of brown in the door and windows which harmonize with the historical rhythm of colour, in the colour character of the street.

City center shopping complex of *Dalada Veediya* comprises wall facade in saffron, gray and dark brown colour. This building too maintains the same different colour scheme to the historical buildings.



Fig.110 City Center shopping complex building façade colour analysis

Source. Author

The most common material for roofing of the historical building and the infill buildings are used clay tiles, therefore brown is added and emphasize at the top most levels of the building façade. In addition to that new materials such as asbestoses and polycarbonate transparent sheets, which adds grey and bluish white colure to roof element.

Since the building heights are not more than four floors roof and the colour of roof could be seen in to a greater extent. The canopies are noticeable up to a greater extent since their material colour is warm red, and such canopies are standout in the building façade in to a certain considerable degree.



Fig. 111 Cargill's building
Source. Author



Fig. 112 Devon Bakery
Source. Author

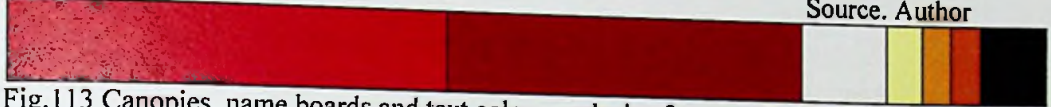


Fig.113 Canopies, name boards and text colour analysis of present Dalada Veediya
Source. Author

The change of doors and windows significant in shape, in proportion and different materials which makes a variety of colour in *Dalada veediya* is an important characteristic of the built fabric.

Square and arch shapes are mostly prominent in the doors and windows in the facade. The modern materials were used such as aluminum, glass in order to timber. Therefore the prominent Colours were white, yellow ocher colour, brown and black in the external facade.



Fig.114 Proposed door and window designs of present *Dalada Veediya*
Source. Author

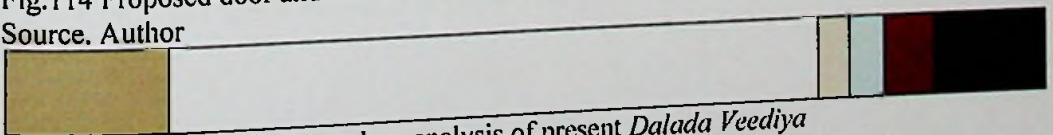


Fig.115 Doors and window colour analysis of present *Dalada Veediya*
Source. Author

The colour combinations are mostly natural and cool, where the effect of natural matt timber colour is prominent. However with the other colour combination of modern materials, for a certain extent which harmonized with the historical built fabric, even though the shapes do not contribute in correct proportions to the historical built fabric. Hand rails are out of timber and retain the natural colour. The decorative items are made of pre cast cement panels and cast iron materials.

Colour of natural timber is remained with the timber handrails while white or yellow ocher colour been used to paint handrails and decorative items in some building facades. However the façade colours are harmonized in to an acceptable extent.



Fig.116 Proposed Hand rails details of present *Dalada Veediya*

Source. Author

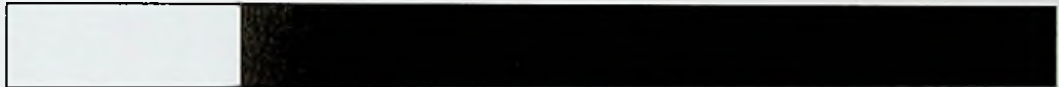


Fig.117 Proposed Hand rails colour analysis of present *Dalada Veediya*

Source. Author

Similarly other elements such as arches columns and decorative items colours in the built façade harmonize, since the colours were mostly natural and cool mixed in correct proportions with warm colour.



Fig.118 Proposed façade Elements of present *Dalada Veediya*

Source. Author

4.1.3. Impacts of Colour Perception of Present *Dalada Veediya*

The street has been subject to numerous changes over the period of time and at present, all the actives were changed too. A commercial development could be seen all along the street while retaining the character of British and Dutch as well as the colour.

Colour in present *Dalada veediya* comprises of natural colour and artificial colour, which is directly and indirectly effect on human behavioral patterns.

The Impact of colour perfection also has a direct impact and the urban character which makes a sense of place and a sense of identity.

Colour changes human behavior due to the feelings as energizing or stressful, which is essential for a city, gives an identity in urban reform.

Natural and artificial colour analysis of historic and present *Dalada veediya*



Fig.119 Natural colour analysis of historic *Dalada Veediya*

Source. Author



Fig. 120 Natural colour analysis of present *Dalada Veediya*

Source. Author

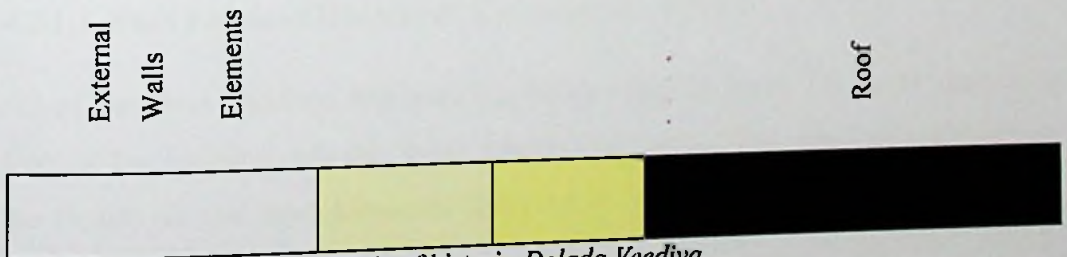


Fig.121 Artificial colour analysis of historic *Dalada Veediya*

Source. Author

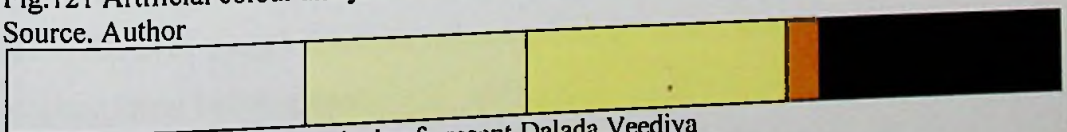


Fig.122 Artificial colour analysis of present *Dalada Veediya*

Source. Author

4.2 Case Study Two - D. S. SENANAYAKA VEEDIYA

4.2.1 Study of Historic D. S. Senanayaka Veediya

Presently *D. S. Senanayaka veediya* is the old '*Hetti Veediya*' which housed the *chetty* whose business was to supply silk cloth to the palace. Its boundaries spread from Hotel Queens towards beginning of *Katugastota* road to the north of the city.

4.2.1.1 Street Scape of Historic D. S. Senanayaka Veediya

During ancient kingdom, this street has been a main cart way. This street was often to facilitate the need of *Asela Perahara* conducted annually; possession is conducted by the Sacred Temple of Tooth. This street has a linear character with green patch among buildings. Residential areas of most of the aristocrats are situated close to the street. The new construction maintains a setback due to the regulations imposed by the local authorities.

4.2.1.2 Activities of Historic D. S. Senanayaka Veediya

Historic *D.S. Senanayaka veediya* was a place for the people related to government and the administrative body of the country. It had been developed as a religious activities area, while giving propriety for residential for the aristocrats.

Commercial activities related to this area hardly to been seen at that time. The balconies were a prominent feature of these residential units to watch '*Perehara*' the procession.

4.2.1.3. Built Fabric of Historic D. S. Senanayaka Veediya

All of historical buildings had been located abutting the street. The urban space is in front of the building only the street. Clearly defined building edge and continuity of the façade are the most important character of historic built fabric. There were no such open spaces in-between buildings. Therefore the linear continuity in the street is preserved even though there are setbacks. This gives the identity to the street, to read as a one linear building mass.

Buildings were extensively small in scale. Most of them were single and double story buildings. Width and equal heights of historical buildings could be seen from the

beginning of the street to the end, and some buildings consist of open verandahs or porticoes. Hotel Queens emphasized the special quality at the end of the street. Proportionately narrow down the street in relation to increment of building heights. At the end of the tallest building street leads to an open area with the view of Kandy Lake that is the memorable climax of this spatial experience.

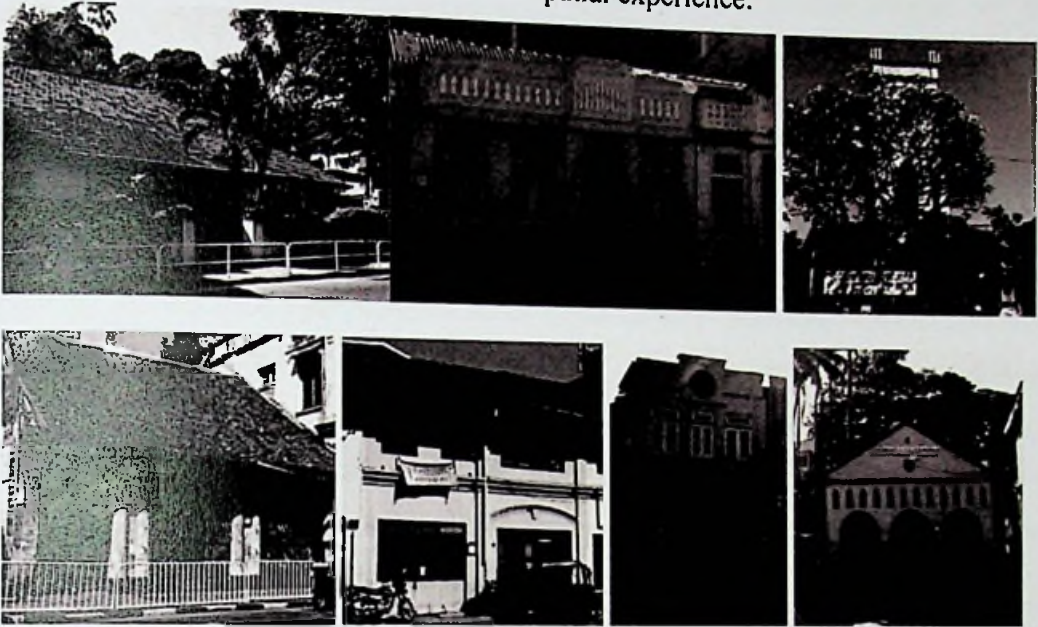


Fig: 99. Buildings of historic *D.S.Senanayake Veediya*
 Source: https://www.google.lk/?gws_rd=cr&ei=88YWU9-zFlesiAek2oC4CA#q=kandy+images

Historic street buildings comprised with several types of features and elements such as columns, arches, and balconies could be identified as common elements of the facade. A simple rhythm could be seen with such elements along the historical building fabric. Vertical and horizontal lines, the continuity been well balanced, according to rhythm of historical building fabric.

4.2.1.4 Colour Schemes of Historic *D. S. Senanayaka Veediya*

D.S. Senanayeka Veediya, had its own unique colour tone with development during this period due to its religious, historical, cultural, economic and geographical settings. It played an important role of the urban culture and urban style in the colour streetscape, which harmonized with the overall colour identity of the historic city. The colour of the surrounding stimulated the city dweller, the by passer as well as the visitor in a positive manner in different degrees with the quality of the urban

fabric. Colonnade, arcade, small windows with thick wall and other details of façade the character of colonial architecture, decorative timber handrails, decorative valance board and clay tiled roof add colour to the façade.

As adding natural colour, from the perspective of climatic and geographical setting, the street wrapped with the lush Green Mountains in a tropical climate. At the beginning of the northern end of the street Trinity College contributes in a positive manner with green patch. It is a unique feature either ends of street consist of a lush green vegetation harmonies with the street façade. The end of the street is open to a panoramic view of the *Mahamaluwa* which is a wonderful and most important urban space in front of *Dalada Maligava*. At the same time street open to the Kandy Lake and the *Malwattha* temple premises act as a back drop to this magnificent experience. The Street naturally blessed with more cooling colours, as blues from sky and water green from mountains, vegetation in front of Trinity College and *Mahamaluwa*, merge in different intensities with smaller percentage in other colours in harmony. In such an urban setting natural colours are dominating though, inter connects appropriately with the Kandy city Character.

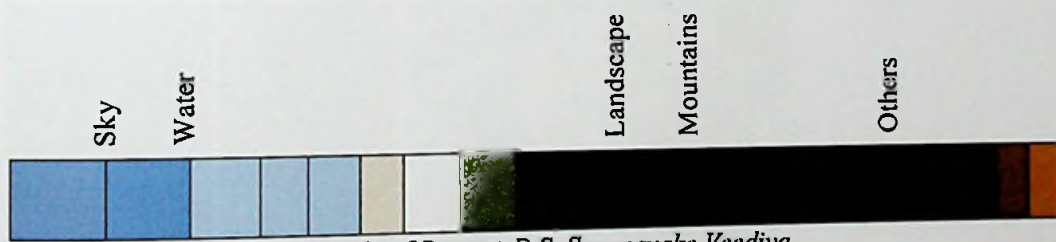


Fig. 123 Natural colour analysis of Present D.S. Senanayake Veediya
Source. Author

As artificial colour, mainly can consider colour in building facades, building elements. The urban streetscape as fixed colour, people and vehicles considered as moveable colour.

Character of façade is mainly generated quality of the building fabric. In other hand it is a main factor to generate image about particular area. It directly affects the space outside and pattern of related space.

The external walls demonstrate the basic colour and textured as the main element in the urban space. In historic and photographic evidence explains that the building façade colours were white and beige. Since the roof was clay tiles added the brown and gave emphasis to the roof in the building façade. Since the building heights are not more than four floors and the colour of roof had been emphasize in to a greater extent. Canopies were hardly noticed, because in colour they were also similar to the building façade.

Doors and windows were important part of the built fabric. The square and arch shapes were the most prominent shapes of doors and windows which were out of timber. While white or yellow ocher colour been used to paint doors and windows at external facades.



Fig.124 Decorative Doors of historic *D. S. Senanayaka Veediya*
 Source: [https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-](https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1)

[hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1](https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1)



Fig.125 Decorative Windows of historic *D. S. Senanayaka Veediya*
 Source: [https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-](https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1)

[hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1](https://www.google.lk/search?q=kandy+images&source=lnms&sa=X&ei=-hATU5HhNYiTiQfL2YHYCA&ved=0CAgQ_AUoAA&biw=1366&bih=667&dpr=1)

Fig.126 Decorative Door and window colour analysis of historic *D. S. Senanayaka Veediya*
 Source. Author

Decorative hand rails were finished to natural timber colour where the details were pre cast cement panels and cast iron. Colour of natural timber was remained with the timber handrails while white or yellow ochre colour been used to paint handrails in some building facades. The colour of decorative elements such as pre cast or cast iron in the façade, harmonized since the colours were mostly natural and cool, matt effect. The building façade reads as a single component.



Fig.127 Decorative Hand rail designs of historic *D. S. Senanayaka Veediya*
 Source. Author



Fig.128 Decorative Hand rails colour analysis of historic *D. S. Senanayaka Veediya*
 Source. Author



Fig. 129 Decorative Moldings, Columns and Arches designs of historic *D. S. Senanayaka Veediya*

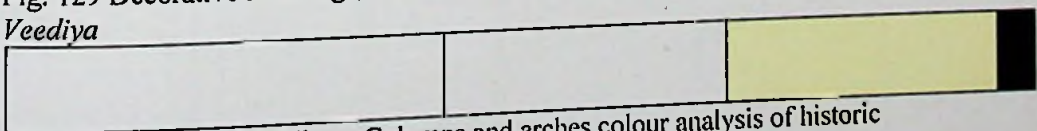


Fig.130 Decorative Moldings, Columns and arches colour analysis of historic *D. S. Senanayaka Veediya*
 Source. Author

Other elements such as arches columns and details of façade were decorated with moldings to illustrate the grandness of the façade. Colours were matched since the colours were mostly natural and cool, with matt effect.

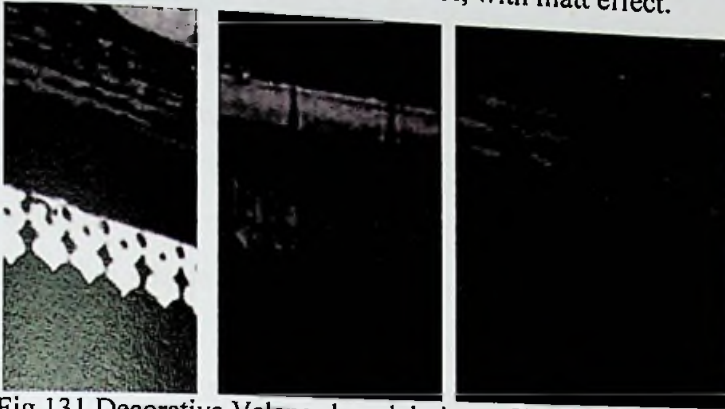


Fig.131 Decorative Valance board designs of historic *D. S. Senanayaka Veediya*

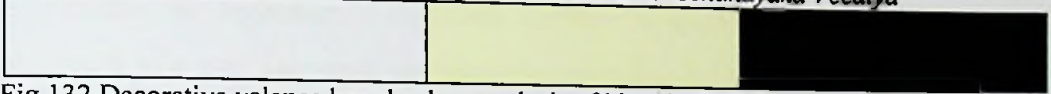


Fig.132 Decorative valance board colour analysis of historic *D. S. Senanayaka Veediya*
Source. Author

4.2.2 Study of Present *D. S. Senanayaka Veediya*

The street has been subject to many changes over the period of time and at present, some of the house as were modified and converted to accommodate commercial activities and few of them still remaining as shop houses.

A mixed development could be identified along the street. Some parts of the street the British and Dutch architectural characters are remain as unchanged. Other than that in most instances inspiration from the colonial architecture is missed out. And in some occasions the haphazard developments are taking place which is a pathetic situation, which developments violate the rules regulations and guidelines.



Fig.133 Map of *D. S. Senanayaka Veediya*
Source. Author

4.2.2.1 Changing Street Scape of Present *D. S. Senanayaka Veediya*

This street remains as its linear form with less greenery along the narrow spaces in front of buildings. However the greenery been gradually diminishing in the street facade. The greenery is remaining mainly in the *Udawaththa Kelle* forest, which at as a back drop to the street facade.

This street is often to facilitate the *Asela Perahara* perform annually, possession is organize by the Sacred Temple of Tooth. Other than the residential activities street scape has adapted to the commercial activities too. With the explosion of commercial activates to *D.S.Senanayaka veediya*, the wide street is congested with auto mobile traffic and pedestrian traffic, since the street is used as cart way in the past and no possibilities for expansion. Automobile traffic of this street has been controlled by making it as a one way road, reducing the vehicular traffic congestion up to a great extent.

4.2.2.2 Changing Activities of Present *D. S. Senanayaka Veediya*

D.S. Senanayaka veediya was originated for the residencies activities and clothing activities of “*Hetti*” people. Religious activities had been given priority from ancient era than commercial activities. But gradually transfer into a commercial, administration and institutional activities apart from residential activities within these buildings comprise the colonial character. The mega scale commercial activities which are not taken place in this particular street.

Towards the end of *D.S.Senanayaka veediya* few schools and some educational institutes could be seen and the residential activities are to remain without getting disturbed with other activities. The old buildings as well as the newly constructed buildings utilized for commercial activities. The nature of development for commercial activities occurred in small scale, comparative to other streets in Kandy city. High percentage of buildings are remain with Dutch and British characteristics with in the *D.S. Senanayaka veediya*, presently many regulations imposed on them since some identified as heritage buildings by UNESCO.

4.2.2.3 Built Fabric of Present *D. S. Senanayaka Veediya*

D.S Senanayaka veediya, could be identified as a mixed development at the present. The activities are religious, institutional, commercial, cultural, administrative and leisure. But commercial activities are prominent than other activities of the street.

Kandy city has gone through an unplanned rapid urbanization process, creating chaotic urban environment. Modern day buildings with different forms facilitate commercial activities during last few decades. A High percentage of buildings are remaining with unique colonial characteristics, building façades among new buildings with strict regulations imposed by many authorities to preserve these buildings and facades.

Due to such regulations most of the infill buildings along the street also have maintained the orientation with designing the front elevations entrances of the building, to maintain the continuity visual appearance of the street. The new materials such as glass, brick, concrete, aluminum and stainless steel used in many constructions,

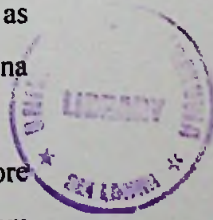
4.2.2.4 Changing Colour Schemes of Present *D. S. Senanayaka Veediya*

D.S. Senanayeka veediya, had its own unique colour tone with development during over a period of time due to its religious, historical, cultural, economic and geographical settings. It played an important role in the urban culture and general colour identity of the city.

D.S. Senanayaka veediya was comprises of natural colour and artificial colour , which a great impact on colour perfection of human behavioral patterns and the urban character which creates a sense of place and a sense of identity in the street.

This street remains as its linear form with less greenery along the narrow spaces in front of buildings. However the greenery been gradually diminishing in the street facade. The greenery is remaining mainly in the *Udawaththa Kelle* forest, which at as a back drop to the street façade and a visual connection towards the Hanthana mountain range.

Street and the visual connections mainly the borrowed spaces blessed to have more cooling colours with existing natural landscape, at different intensities. of blues from



sky and lake and different intensities of green from mountains, trees and the other colour in smaller percentage harmonies with dominating natural colors with urban context.

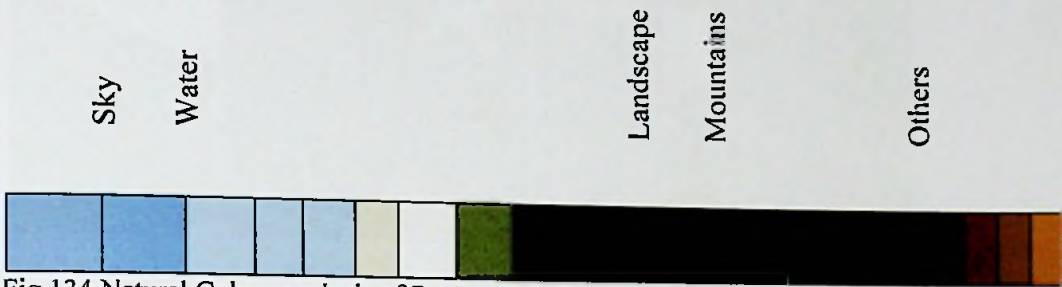


Fig.134 Natural Colour analysis of Present D.S. Senanayake Veediya
Source. Author

As artificial colours, mainly consider the colour in building facades, The fixed colours are as building elements, and moveable colour as people and vehicles could be identify in the urban streetscape.

Character of façade is mainly generated quality of the built fabric. Similarly another factor is to generate the image of the particular area. It directly affects the external space in relation to the internal space.

As discussed earlier, the external walls demonstrate the basic colour and textured as the main element in the urban space. In historic and photographic evidence explains that the building façade colours were white and beige.

Since the roof was clay tiles added the brown and gave emphasis to the roof in the building façade. Since the building heights are not more than four floors and the colour of roof had been emphasize in to a greater extent. New materials are as asbestoses and modern materials such as polycarbonate transparent sheets, which adds grey and bluish white colour to roof.

The name boards are noticed very much since their proportion and material colour is warm colours, the intensities of such name boards are dominating very much in the building façade. And also obstruct the visibility of roof and the colour of the covering material.

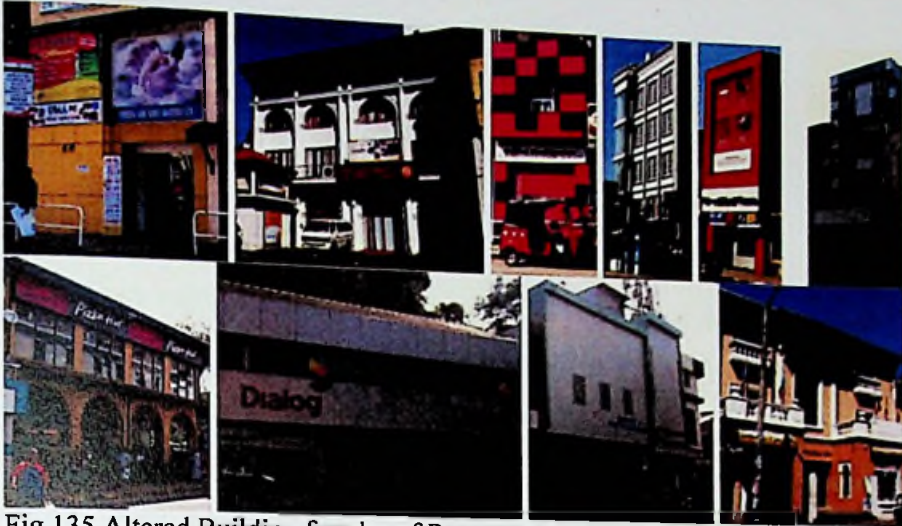


Fig.135 Altered Building facades of Present *D.S. Senanayake Veediya*
Source. Author

External walls

Roof



Fig.136 External walls and roof colure analysis of Present *D.S. Senanayake Veediya*
Source. Author



Fig.137 Altered Building facades with name boards, displays of Present *D.S. Senanayake Veediya*
Source. Author

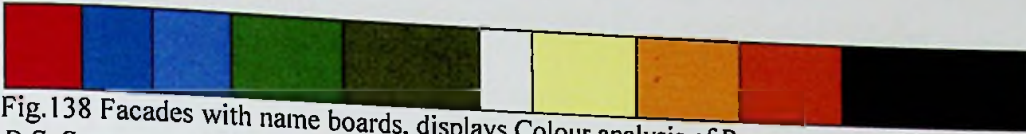


Fig.138 Facades with name boards, displays Colour analysis of Present *D.S. Senanayake Veediya*
Source. Author

Doors and windows are important part of the built fabric. The historical buildings doors and windows shapes are prominent which are out of timber. While white or yellow ochre colour been used to paint doors and windows at external facades.

Presently the Alterations are taking place and prominent colours are red, maroon, brown, gray and blue. Most of the doors and windows frame are out of colour aluminum and the shah is out of glass for visibility and connectivity of user and the owners of the commotional activities. Such colours are effect for the colour character of the street.



Fig.139 Altered Windows designs with new materials and colour of Present *D.S. Senanayake Veediya*
Source. Author

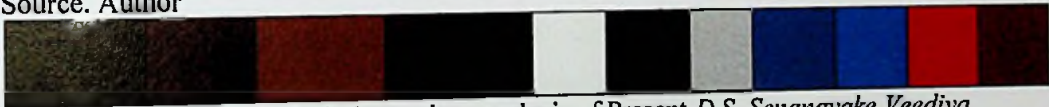


Fig.140 Altered door and window colour analysis of Present *D.S. Senanayake Veediya*
Source. Author

In the new constructions for the hand rails materials used are wrought iron, cast iron and aluminum while the colour combinations of white, black, silver. The proportions and the styles are mostly contrast and alien to historic details even the colour. These are nothing to do with character of the street.



Fig.141 Altered decorative hand rail designs of Present *D,S. Senanayake Veediya*
Source. Author

4.2.3 Impacts of Colour Perception of Present *D. S. Senanayaka Veediya*

Kandy city has gone through an unplanned rapid urbanization process, creating chaotic urban environment. Modern day buildings with different forms facilitate commercial activities during last few decades. A High percentage of buildings are preserved with unique colonial characteristics.

However a mixed development could be identified along the street. Other than the preserved buildings in most instances inspiration from the colonial architecture and kandian architecture is missed out. And in some occasions the haphazard developments are taking place which is a pathetic situation, which developments violate the rules regulations and guidelines create numerous problems.

While the colour combinations in modern buildings and alterations comprises of white, black, silver. The proportions and the colour intensities are mostly contrast and alien to historic city façade colour. These are nothing to do with character of the street. That may create a negative effect on human behavioral pattern.

Natural and artificial colour analysis of historic and present *D.S. Senayake Veediya*

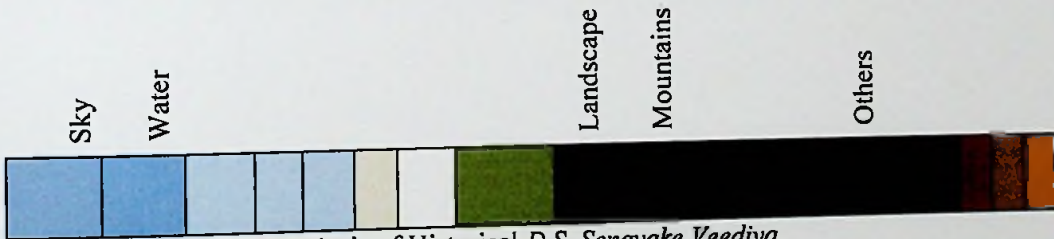


Fig.142 Natural colour analysis of Historical *D.S. Senayake Veediya*
Source. Author

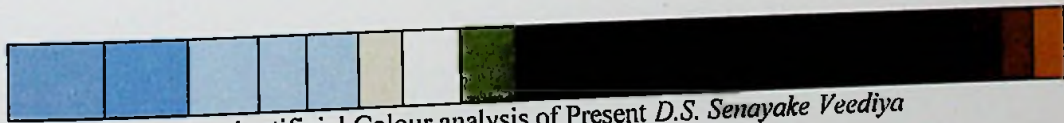


Fig.143 Natural and artificial Colour analysis of Present *D.S. Senayake Veediya*
Source. Author

External
walls

Roof

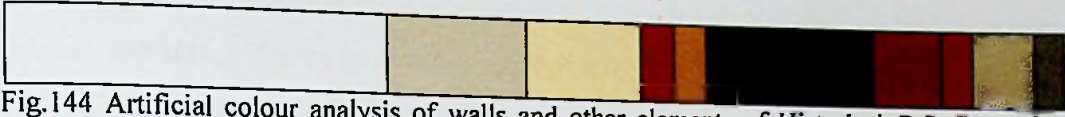


Fig.144 Artificial colour analysis of walls and other elements of Historical *D.S. Senayake Veediya*

Source. Author



Fig.145 Artificial colour analysis of walls and other elements of Present *D.S. Senayake Veediya*

Source. Author

CONCLUSION

In Kandy colour is a significant part of the urban beauty, and it is a factor which influences colour perception. Colour itself is an urban historical heritage; urban politics, economy and culture are reflected by some kinds of colour in Kandy. Urban colours and urban history and culture complement each other. Therefore, we should emphasis on the urban historical and culture in the urban colours planning, hence that we can study the historical characteristics of the city deeply, develop them, and form such data can work out guide line for new features with the contemporary urban fabric to furthermore uplift the colour perception while protecting religious, historic and cultural identity of the Kandy city.

Designing urban spaces includes the orchestration of the built forms, in harmony with the nature, geo-physical features and the context together with the functionalism of the cities collectively forming a lively oasis. This is with the formation of the Urban Grain that is formed in the collective articulation of spaces forming an aesthetically pleasing and meaningful character in the city; which will formulate a coherent set of relationship between the uses of the city.

In this sense the use of Colour in the built fabric plays an important role in the psychology of perceiving spaces. Where the composition and the intensity of the usage of colour will generate a meaning and identity of space.

The Dissertation contained a study of the perception of colour urban spaces, in the city of Kandy which has a historic significance being the last domain of the Sinhalese kings prior to the Colonial rule. The perception of Colour in the per-view of the city of Kandy was studied in depth and there by the case studies were carried out in two of the main arteries “ the Dalada Veediya” and “D.S.Senanayake Veediya”.

The effects created by the application of colour in the Kandyan context, was discussed in chapter 03. Forming an identity to the region with the intensities of colour that was used in the built fabric, with the application of the same in the facades, and how the built fabric responded harmoniously with the back drop of the mountains and the sky and the water features which contained cooler colours of blue and green was discussed. Here the effects of neutral colours, such as, white, beige and light brown in

the facades were blended to the cooler colours forming a contrast against the backdrop, enabling the users to perceive that urban fabric distinctly.

The usage of warmer colours in smaller blends, and proportions further enhances the urban beauty, giving the ambiance of the urban spaces, and creating a sense of space and sense of time.

The blend of colour in the built fabric and the street facades revealed the human response to the climax it where it precipitated, to form an urban ambiance, and was hence a contributory factor for the urban aesthetics. This was revealed in the case studies carried out is the two streets, the "*Dalada Veediya*" and the "*D.S. Senanayaka Veediya*". The former contain highly commercialized activities and prominent buildings with eth administrative areas and the latter contained noblemen's houses which were converted to shop housed amidst the highly commercialized activities which was more like the "*Hetti Veediya*" (Business Street.). Both were threatened by the urban infill which diluted the character and the green spaces were diminishing silently. The elements in the building facades too contributed to the orchestration of colour in the streets which resulted in the overall perception of the Knadyan character. The modern developments that are happening, needs to be regularized, where they will help to enhance the beauty and aesthetics of the streetscapes and preserve the character with the modern materials and elements that are used in the appropriate proportion.

With all the above scenarios the introduction of these new colours due to the new developments in urbanization can effect in positive or negative implications in the human response to the streetscapes. Where the addition of more warm colours such as red, yellow, orange can have positive effect with their high intensities and could enhance the street facades. They can contribute to the ambiance of the urban spaces with the proportion that it is ben used, where they can be vividly active and stimulating in the minds of the people.

Therefore this scenario can affect the colour identity in terms of the historical aspects, socio-cultural aspects and the geographical aspect of the urban context.

The effects on the impacts of Colour Perception.

In the case studies conducted with the two main streets in the Kandy city the use of colours in different tones were seen effecting the climax and the visual perception of

the urban spaces. How the composition of colour and the application of it in the built fabric. The direct effects of the existing colour identity were studied, with reference to these streets. Hence it was observed that historically cooler colours were dominating but the use of neutral and small proportion of the warm colours harmonized the built fabric with the backdrop of the natural elements present in the context.

The cool colours contained less intensities and a cheerful character. And a historical and cultural identity was emphasized.

Hence it would result in a positive implication of the warm colours are used in small proportions in the built fabric if used in small proportions to enhance the urban character.

The relationship of the streetscapes and the surrounding by nature with the geographic features and the streetscapes and the landscape is enhanced with the usage of color.

Drawing a harmony with the surrounding nature and responding to the context is an essential factor in creating urban spaces and urban design. Forming a coherent set of relationship in the urban fabric makes it's a people friendly place where the human behavior is dealt with accordingly with the sensory perception of the colour.

The study reveals that the perception of color needs to be taken in to account as a metaphor that will be a powerful force in formulating guidelines and the regulations for city planning.

In the articulation of space in urban context and the articulation of the built fabric in the urban spaces the composition of color is a prime force in response to the human behavioral aspect where by spaces are intermingled to related to the human actives that they are desired to, while giving them a subtle meaning and preserving the importance of the spatial progression.

While perceiving the street facades of the two streets taken for the study the coherent perception of a meaningful streetscape is suddenly interrupted by the elements that are included for personal glorification

In the built forms and the structures. Thus threatening to destruct the character of the street along the Dalada Veediya the horizon of the streetscapes with the built forms depicts a symbolic relationship between the backdrop of the mountain range where the ridges of the mountains and the treetops meets the sky forming the actual horizon in the valley and basin where the city is housed. The composition of warm and neutral

colors in the built form is evident here where they contrast against the cool colors in the backdrop.

The morphological study and the solid to void relationship of *Dalada Veediya* together with its ridge of the roof tops forming a horizon of the built forms will resemble the hierarchy if they will reveal a clear hierarchical pattern in the built forms. Thus indicating the importance of the buildings of their individuality.

Further to the above the addition of color will define its character of either serene vibrant dynamic sublime etc. where the historical facades of the *Dalada Veediya* and *D.S.Senanyaka Veediya* has been depicted.

Moreover the visionary perception of a dweller of the region which will commute to the city or a visitor will intentionally or un-intentionally perceive space as a pleasant or unpleasant memory in the matter color intensity is incorporated to the built fabric, and urban space. The two streets resemble this clearly and how this character can be diluted with ad hoc development forcing incompatible colors in to the street facades.

The sustainability of the materials will also result in different implications in the street scape and street facades in the usage and perception of the urban fabric. This is due to the fact that materials can change its texture and color over a length of time thus forming a different streetscape.

In the City of Kandy, which is declared as a world heritage site by the UNESCO, it is important to preserve its heritage, but formulating guideline and regulation, properly which otherwise will result in incompatible structures mushrooming, which will not harmonize with the character of the city. Hence the application of colour plays a vital role here. With modern developments a slight blend of warmer colours that enhance the character, would result in a gradual evolution of the historicism that is present in the city, creating more meaningful architecture, and streetscapes preserving the urban heritage and its archeological significance, in harmony with the lush green vegetation and the mountain ridges. In this context it is of prime importance to preserve that character of the heritage city where the modern elements with their colour and textures that are used with blend and harmonize the authentic.

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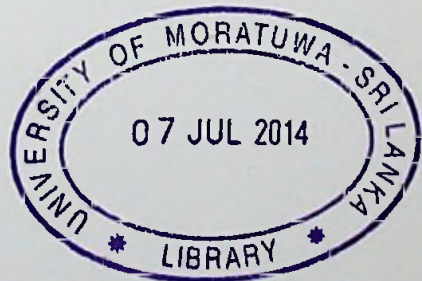
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