

**FIFTH INTERNATIONAL URBAN DESIGN CONFERENCE
ICCPP-2017**

'Cities, People and Places'

**Urbanization Futures:
Policies, Strategies and Implications of Densification of
Cities**

20 October - 22 October, 2017

at

Sri Lanka Foundation Institute
Colombo, Sri Lanka

Organized by

Department of Architecture
University of Moratuwa, Sri Lanka

National Science Foundation Sri Lanka

UOM Centre for Cities

With Associated Partners

University of Leuven, Belgium
University of Alberta, Canada
University of Luebeck, Germany
University of Bahrain, Bahrain



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MESSAGES

Prof. A.K.W. JAYAWARDANE

Vice Chancellor

University of Moratuwa



The Department of Architecture at the University of Moratuwa has been producing human resource expertise in Urban Design through the conduct of its Masters Degree programme since 2009. This conference is another major contribution by the Urban Design Programme of the Department aimed at bringing to light the multifaceted complexities of urbanization by the integrated expertise of many disciplines such as architects, planners, urban designers, engineers and geographers.

Cities all over the world are constantly under pressure to meet ever increasing demands of people, who are primary users of our built environment. People prefer cities where the modern luxuries, education, entertainment, health-care, rewarding employment and leisure are more conveniently available and can be provided more effectively. The challenge for the professionals is the creation of such livable cities by professionally overcoming urbanization challenges. Creation of a new ministry of Megapolis and Western Development further emphasize the increased importance to the issues related to city development in Sri Lanka.

Conference theme this year, “Urbanization Futures: Policies, Strategies and Implications of Densification of Cities” is not only timely but also of great importance. Considering the expertise of the participants and the wide range of topics presented, I have no doubt that the conference will be of great benefit to all.

I would like to take this opportunity to congratulate the Department of Architecture of the University of Moratuwa for organizing this conference for the fifth time and the participants for their contributions. I wish this conference a great success.

Prof. M. LALITH DE SILVA
Dean of the Faculty of Architecture
University of Moratuwa



It is my pleasure to have the opportunity to write this message to the proceedings of ICCPP 2017; the fifth International Urban Design Conference organized by the Department of Architecture, University of Moratuwa. The Faculty of Architecture has been improving and refining its research culture in the past years and therefore has achieved recognition in teaching, research, and consultancies. It is happy to note that Research activities are carried as collaborative research at inter university and interfaculty level in addition to, Faculty level, Department level and Individual level. The research conference based on the topics of built environment is the pre-eminent approach to present the research carried out at each level. In this endeavor, the Program of Urban Design of the Department of Architecture of the Faculty of Architecture in the University of Moratuwa in association with its international and national academic partners every year organized this International Conference on "Cities People and Places" (ICCP). This Conference provides a platform for a wider range of research and scholarly work carried out by local and international researchers and practitioners who are involved in Architecture, Building Sciences, Environmental Design, Urban Design, Engineering, Facilities Management, Landscape architecture, Lifestyle and Product design, Project Management Technology and urban Planning.

The theme of this year's International symposium is "**Urbanization Futures: Policies, Strategies and Implications of Densification of Cities**". As a result of urbanization and globalization, new transformation in built environments especially in densification of cities has been experienced all over the world. The prominent issues of this trend include the loss of identity of places and the socio-cultural inferences, over-emphasis on technology and communication, imbalances of natural systems and resultant natural disasters and the failure to arrest global economic crisis. Some of these issues are revealed in Sri Lankan city development processes too specially in our **policy and effort to revive our cities as mega-poleis**. Therefore, it is important to discuss these issues at a greater depth in order to bring out an intellectual discourse at this conference. It will also deliberate on the emerging issues related to the Cities, People and Places and outline the future directions to **create sustainable cities to ensure resilience, where we live in**.

I am certain that the fifth International Urban Design Conference organized by the Department of Architecture would be a milestone to expand the prospect of research carried out by the staff and students of our faculty.

I wish ICCPP Conference 2017 all success!

Dr. R.M.K.U. RAJAPAKSHA
Head of the Department of Architecture
University of Moratuwa



Negligence of our responsibilities when shaping the urban forms, making the urban context vulnerable and less responsive to environment and Mother Nature has caused numerous issues related to many disciplines. It is high time for the designers and relevant authorities to stand and take a step forward to implement mitigatory and awareness strategies thus achieving the urban development goals. With the technological advancements, there are many mitigatory measures that could be adopted, yet such responsiveness is less visible in current practice. Within this context, ICCPP 2017 invites us to critically think of our responsibilities as stakeholders of the built environments, observe the measures taken so far and the results obtained through the efforts taken while encouraging us to think beyond the frames to step towards a holistic approach.

At a time when we humans, need much attention given in improving and developing the urban context “ICCPP” stands as a much-valued effort to address the need of sustainable urban forms and becomes a meaningful and intellectual platform to announce the efforts taken to identify mitigatory efforts and alternatives further to be taken in molding urban forms. ICCPP has been bringing together academics, professionals, researches and students to share knowledge and research findings in the field of urban design. The conference is focused on discussing the need of making our urban forms responsive in every way leading for the betterment of environmental, social, economic aspects thus improving sustainable urban strategies.

The enormous effort of Dr. Janaka Wijesundara and the organizing committee in making the conference a success is highly appreciated and valued. I would also like to sincerely thank all of the people who have contributed to realizing this Conference. Thank you and congratulations to all the authors for working hard on the papers and presentations. I hope that the papers presented in this publication truly reflect the theme of the Conference and the role that has played and will continue to play in the betterment of our urban environment.

KEYNOTE SPEAKERS

Arch. Peter Barber
Peter Barber Architects, UK



HUNDRED MILE CITY AND OTHER STOREYS

ABSTRACT

London is in the throes of a housing crisis which sees 170,00 people homeless and 200 families losing their homes each day.

My lecture will begin by touching briefly on the politics of housing in London as it has developed since the second world war up until now. It will outline some simple manifesto ideas which I believe could resolve the issue. It will then go on to describe a series of high density low rise street based urban designs and housing projects, built and unbuilt and the ideology and design methodologies which underpin them.

The lecture will end with images of 100 Mile City, Our solution to the housing Crisis in London, 'A speculative reimagining of London's periphery.'





Arch. Peter Barber

Peter Barber worked with Richard Rogers, Will Alsop and Jestic+Whiles prior to establishing his own practice in 1989. He is currently a lecturer and design tutor at the University of Westminster.

He has lectured about the work of the Practice at many institutions, including the Royal Institute of British Architects, the Architectural League in New York, and numerous international and domestic university schools of architecture including Genoa, Frankfurt, Brighton, Kingston and Glasgow as well as Oxford University and The Bartlett - University College London.

He has been invited by the Government to lead a discussion on "Designing for Better Public Spaces" with a team of top built environment professionals. He was an advisor to English Partnerships in the production of the Urban Design Compendium

Plnr. Prof. Willie Mendis
Emeritus Professor of Town & Country Planning
University of Moratuwa, Sri Lanka



Defaulting Urbanization Policy Formulation Imperatives for the Future

ABSTRACT

The main theme of the Conference on Urbanization Futures : Policies, Strategies, & the Implications of Densification of Cities, is opportune for Sri Lanka, which perhaps is the only country to have embarked upon a policy of " de-urbanization " by the absorption of Town Councils in the non-urban Pra deshaya Sabhas. This disjointing reflects a reversal of policy regarding urban status. It also compounds policy duplicity by way of fiscal delimitation of "built-up areas " within Pra deshaya Sabhas. and of " areas suitable for development " so deemed & declared under the Urban Development statute.

In the above context, the issue of the implication of the densification of Cities must necessarily be viewed in the backdrop of its immersion in an apex urbanization policy. The latter is what is addressed in this Paper to highlight the consequences of defaulting thereon.

The proactive strategies to develop Cities & Towns began earnestly with the post-1977 economic liberalization that effectively advanced the process towards urbanization policy formulation; but with different aims. Its strategy centered on Projects & Programs triggered by the then Colombo Master Plan Project. A key outcome was the creation of a new Administrative Capital City of Sri Jayawardenepura Kotte, adjoining the re-designated Commercial Capital of Colombo City. Its accompanying infra-structure development stimulated a significant focus on the urban sector; but fell short of the formulation of a comprehensive integrated urbanization policy for the country.

It is in the above backdrop, that a powerful Urban Development Authority (UDA) was established in 1978, tasked with transforming development across the length & breadth of the country, less the areas

designated as the "Systems" in the giant Accelerated Mahaweli Development Project. However, its statute failed to empower it with the formulation of an apex urbanization policy. Its lacuna was the lack of a definitive status on whether projects & programs followed policy or its reverse. Nonetheless, 22 years later an amendment to the Town & Country Planning Ordinance mandated the UDA to comply with the National Physical Planning Policy & Plan prepared by the redesignated National Physical Planning Department (NPPD). The latter Plan included a National Urban Settlement configuration comprised of five inter-linked largely populated Metro Regions complemented by delineated environmentally sensitive fragile areas.

The aforementioned was reinforced by a focused Ministry of Urban Development which currently has been designated as that of Megapolis & Western Province Development. Its dual responsibility for the UDA & NPPD has virtually made it prime to embark upon a National Urbanization Policy. However, it is challenged by the myriad of other key national policy formulation Ministries; especially in Economic Development, and in the follow-up of related international covenants such as the global 2030 Agenda for Sustainable Development. Consequently it lacks the strength to make Urbanization a defining powerhouse of overall development with the spatial transformation entwined with sectoral transformation of the country's economy.

The current status of the learning curve in policy formulation suggests a promising future for urban Sri Lanka. Its contrary will be a missed opportunity with a perceived densification of Cities exclusively in polarized places. An imperative is a structural shift from its confined scope to rapid change in urbanization as envisioned. The thrust of the latter should be to re-visit and re-set the currently dominant UDA Planning & Building Regulations regarding the strategies for the densification of Cities. The Academia & Practitioners are awaiting this breakthrough by the foresight at the highest level of Government. The inputs from this Conference should be a stimulus in same.

Professor Willie Mendis

Professor Willie Mendis is a Scholar who has been totally immersed in the urban sector. His many research publications stand in testimony of same. It's key focus has been on the nexus between Urbanization & Development. Consequently, the prospects of the Colombo-Trincomalee development corridor and of Urban Agglomerations were prominent in his work. Underlying same was the relevance of re-setting the urban definition. Further, his study of trans-national urban networks was a "futuristic" suggestion for policy makers in view of Sri Lanka's strategic location in the global sea lanes.

Professor Mendis is an Engineer who diverted his career to Urban Planning. He was the prime mover in the founding of the Post Graduate & Undergraduate Courses in Planning at the University of Moratuwa as it's Senior Professor. He was later elected as it's Vice Chancellor, and subsequently released to be appointed as Chairman of the Urban Development Authority.

The Institution of Town Planners, Sri Lanka, bestowed on him it's first Lifetime Achievement Award.

The University of Moratuwa conferred upon him an Honorary Doctorate, and appointed him an Emeritus Professor.

This year, the National Honour of Vidya Jyothi was conferred on him by H.E. the President in recognition of his outstanding services to Sri Lanka.

Mr. Susil Sirivardana
Senior Adviser (Housing)
NHDA, Sri Lanka



THE CITIZEN AND OUR TOWNS - IMPERATIVES FOR RETHINKING NEW DIRECTIONS

ABSTRACT

The time is long overdue for probing again the fundamentals of the social compact between the Citizens and their Towns. Mainly third level Towns. The compact has broken down and we have been in a process of unmediated drift and urban sprawl. Hence, the idea of The Citizen and the Town has to be reclarified in terms of lessons from our own recent best practices. New Directions regarding the roles of Citizens, roles of the Authorities, the compulsion to respond positively to demographic pressures, the strategic role of Facilitation, working within Affordabilities and Feasibilities of the Community will be explored and analyzed. The universities also have a key role in this innovative approach.

Mr. Susil Sirivardana

Community Worker and Writer. Key concerns are People as Subjects, quality of Support Systems, and experiential Learning. Has written extensively on Social Change, People and grounded Civilizational ideas, Currently, a Senior Advisor – Housing Development.

ORGANISING COMMITTEE

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Dr. Janaka Wijesundara

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CONFERENCE INFORMATION

International conference on 'Cities, People & Places' –ICCP-2017

The event is organized by the Department of Architecture of University of Moratuwa in collaboration with joint international academic institutions and is held on 20th, 21st and 22th of October 2017 at the Sri Lanka Foundation Institute at No. 100, Sri Lanka Padanama Mawatha, Independence Square, Colombo 07.

Conference Secretariat

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University of Moratuwa, Katubedda
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Language

The official language of the conference is English. There will be no simultaneous translations.

Dress code

Conference - business, lounge or national
Dinner - smart casual

Registration

Conference delegates can collect their materials at the registration desk at the Sri Lanka Foundation Institute in Colombo. Opening times of the registration desk will be from 3.15 pm to 6.30 pm on 20th Of October from 8.30 am to 5.30 pm on 21st October 2017.

Secretariat room

During the conference, the secretariat room is located at the Sri Lanka Foundation Institute in Colombo where the main conference is being held. The opening hours of the secretariat will be from 8.30am – 7.00 Pm on 20th October to 21st October 2017.

Certificate of Attendance

A certificate of attendance will be issued to all participants after the conference sum up.

Awards

The paper presentation award and the best presentation award will be awarded during the conference and at the summing up session.

Liability

The organizing committee is not liable for personal accidents, loss or damages to private properties of registered participants during the conference. Participants should make their own arrangements with respect to personal insurance.

Disclaimer

Whilst every attempt be made to ensure that all aspects of the conference mentioned in this announcement will take place as scheduled, the organizing committee reserves the prerogative to make last minute changes should the need arise without prior notice.

PROGRAM

Day 1

Friday, 20 October, 2017

INAUGURATION

- 03:15 p.m. Arrival of Guests and registration
- 03:30 p.m. Arrival of the Keynote Speakers
- 03:35 p.m. Arrival of the Chief Guest
- 03:45 p.m. Procession Proceeds to Auditorium
- 04:00 p.m. Lighting of the Traditional Oil Lamp
- 04:10 p.m. National Anthem
- 04:15 p.m. Ceremonial Inauguration of ICCPP- 2017
Theme Video Presentation
- 04:20 p.m. Welcome Address by Dr. Janaka Wijesundara, Conference Chair-
ICCPP 2017
- 04:30 p.m. Address by Dr. Upendra Rajapaksha, the Head of the Department of
Architecture
- 04:35 p.m. Address by Prof. Lalith De Silva, the Dean of the Faculty of
Architecture
- 04:40 p.m. Address by Prof. Ananda Jayawardane, Vice Chancellor of the
Moratuwa University
- 04:50 p.m. Presentation on the pre-conference Urban Design Workshop 2017
- 05:00 p.m. Keynote Address -1, Archt Peter Barber, Peter Barber Architects, UK
- 05:25 p.m. Keynote Address -2, Plnr.Prof. (Emeritus) Willie Mendis, University
of Moratuwa, Sri Lanka
- 05:50 p.m. Keynote Address -3, Susil Sirivardana, Senior Advisor (Housing),
NHDA, Sri Lanka
- 06:15 p.m. Address by the Chief Guest:
- 06:30 p.m. Vote of Thanks by Archt. Janaka Dharmasena
- 06:35 p.m. Sri Lankan Cultural Pageant, performed by University of Kelaniya,
Sri Lanka
- 07:35 p.m. Conference Dinner
- 08:40 p.m. END of the Program (Day 1)

Day 2

Saturday, 21 October, 2017

SCIENTIFIC CONFERENCE

- 08.30-08.45 a.m. Conference Registration
- 08.45-08.55 a.m. Arrival of the Keynote Speakers
- 08.55-09.00 a.m. Procession Proceeds to Auditorium
- 09:00-09.05 a.m. Lighting of the Traditional Oil Lamp
- 09:05-09.10 a.m. National Anthem
- 09.10-09.15 a.m. Theme Video
- 09.15-09.20 a.m. Welcome speech by Dr. Janaka Wijesundara, Conference Chair, ICCPP-2017
- 09.20-09.25 a.m. Presentation on the pre-conference Urban Design Workshop 2017
- 09.25-10.10 a.m. Keynote speech 1, Archt Peter Barber, Peter Barber Architects, UK
- 10.10-10.40 a.m. Keynote speech 2, Plnr. Prof. (Emeritus) Willie Mendis, University of Moratuwa, Sri Lanka
- 10.40-11.10 a.m. Keynote speech 3, Susil Sirivardana, Senior Advisor (Housing), NHDA Sri Lanka
- 11.10-11.20 a.m. Tea break
- 11.20-01.00 p.m. Parallel Sessions- Session-1A, 1B, 1C, 1D
- 01.00-01.45 p.m. Lunch
- 01.45-03.15 p.m. Parallel Sessions- Session-2A, 2B, 2C
- 03.15-03.30 p.m. Tea break
- 03.30-05.00 p.m. Parallel Sessions- Session-3A, 3B, 3C
- 05.00-05.05 p.m. All participants get together at the Main Auditorium
- 05.05-05.35 p.m. Discussion, concluding remarks by Prof. Ranjith Dayarathne, University of Bahrain, Bahrain
- 05.35-05.40 p.m. Vote of thanks by Archt. Janaka Dharmasena

- 05.40 p.m. END of the Program (Day 2)

Day 3

Sunday, 22 October 2017

CULTURAL TOURS – (Tour registration required)

06.00a.m. – 06.30p.m. Tour Option 1- Sigiriya Archaeological/Cultural tour

06.00a.m. – 06.30p.m. Tour Option2- Geoffrey Bawa Garden/Architecture, Galle
City-Southern tour

END of the Program (Day3)

DAY - 1 Friday, 20th October 2017 - ICCPP2017 - INAUGURATION

Time	
15.15 -15.30	Arrival of Guests and registration
15.30 -15.35	Arrival of the Keynote Speakers
15.35 -15.45	Arrival of the Chief Guest
15.45 -16.00	Procession Proceeds to Auditorium
16.00 -16.10	Lighting of the Traditional Oil Lamp
16.10 -16.15	National Anthem
16.15 -16.20	Ceremonial Inauguration of ICCPP-2017, Theme Video Presentation
16.20 -16.30	Welcome Address by Dr. Janaka Wijesundara, Conference Chair- ICCPP -2017
16.30 -16.35	Address by Dr. Upendra Rajapaksha, Head of the Department of Architecture, University of Moratuwa, Sri Lanka
16.35 -16.40	Address by Prof. Lalith De Silva, Dean of the Faculty of Architecture, University of Moratuwa, Sri Lanka
16.40 -16.50	Address by Prof. Ananda Jayawardane, Vice Chancellor, University of Moratuwa, Sri Lanka
16.50 -17.00	Presentation on the pre-conference Urban Design Workshop-2017 conducted by the University of Moratuwa
17.00 -17.25	Keynote Speaker -1: Archt. Peter Barber, Peter Barber Architects UK
17.25 -17.50	Keynote Speaker -2: Plnr. Prof. (Emeritus) Willie Mendis, University of Moratuwa, Sri Lanka
17.50 -18.15	Keynote Speaker -3: Susil Sirivardana, Senior Adviser (Housing), NHDA, Sri Lanka
18.15 -18.30	Address by the Chief Guest:
18.30 -18.35	Vote of Thanks by Archt. Janaka Dharmasena
18.35 -18.45	Tea Break
18.45 -19.45	Sri Lankan Cultural Pageant, performed by the Department of Fine Arts, University of Kelaniya, Sri Lanka
19.45 -20.40	Conference Dinner
20.40	END of the Program

DAY-2			
Saturday, 21st October 2017 - ICCPP2017 - SCIENTIFIC CONFERENCE			
Time			
08.30 - 08.45	Conference Registration		
08.45 - 08.55	Arrival of the Chief Guest and Keynote Speakers		
08.55 - 09.00	Procession Proceeds to Auditorium		
09.00 - 09.05	Lighting of the Traditional Oil Lamp		
09.05 - 09.10	National Anthem		
09.10 - 09.15	Theme Video Presentation		
09.15 - 09.20	Welcome Address by Dr. Janaka Wijesundara, Conference Chair, ICCPP-2017		
09.20 - 09.25	Presentation on the pre-conference Urban Design Workshop 2017 conducted by the University of Moratuwa		
09.25 - 10.10	Key note speaker 1-Archt. Peter Barber, Peter Barber Archt, UK		
10.10 - 10.40	Key note speaker 2-Plnr. Prof. (Emeritus) Willie Mendis, University of Moratuwa, Sri Lanka		
10.40 - 11.10	Keynote Speaker-3: Susil Sirivardana, Senior Adviser (Housing), NHDA, Sri Lanka Tea break		
11.10 - 11.20			
11.20 - 12.55	Session 1A - Mapping and Modeling Cities	Session 1B - People's Cities	Session 1C - Informal Urbanism
11.20 - 11.45	IN-09	PK-01	IN-12
11.45 - 12.10	IN-10	SL-01	TH-01
12.10 - 12.35	SL-04	SL-03	CN-01
12.35 - 12.55	Q & A	Q & A	Q & A
12.55 - 13.45		Lunch	
13.45 - 15.15	Session 2A - Urban Neighborhoods	Session 2B - Transforming urbanism	Session 2C - Sustainable Urbanism
13.45 - 14.10	TH-02	SL-05	IN-14
14.10 - 14.35	SL-07	IN-07	IN-13
14.35 - 15.00	BD-02		SL-21
15.00 - 15.15	Q & A	Q & A	Q & A
15.15 - 15.30		Tea break	
15.30 - 17.00	Session 3A - Urban Systems	Session 3B - Urban Landscape and Sense of Place	Session 3C - Urban Landscape and Connectivity
15.30 - 15.55	SL-13	SL-16	SL-19
15.55 - 16.20	SL-14	SL-15	SL-18
16.20 - 16.45	SL-12	SL-20	SL-17
16.45 - 17.00	Q & A	Q & A	Q & A
17.00 - 17.05	All participants get together at the Main Auditorium		
17.05 - 17.35	Discussion and concluding remarks by Prof. Ranjith Dayaratne, University of Bahrain		
17.35 - 05.40	Vote of thanks by Archt. Janaka Dharmasena		

DAY - 3 Sunday, 22th October 2017 - ICCPP2017 - CULTURAL TOURS	
Time	Tour Registration required
06.00 - 18.30	Tour Option 1- Visiting Sigiriya Archaeological / Cultural Site in North Western Province
06.00 - 18.30	Tour Option 2- Visiting Geoffrey Bawa Gardens and Architecture, Galle Heritage City-Southern Tour

DETAIL SESSION PLAN

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 1A

Theme : **Mapping and Modeling Cities**
Session Chair : **Prof. Rahula Attalage**
Session Co-Chair : **Archt. Dr. Anishka Hettiarachchi**
Venue/Time : **Hall No: 1 / 11.20 - 12.55**

Time	Paper ID, Title and Author(s)
11.20 - 11.45	IN-09- GENDERED CINEMATIC CITY: A CASE OF HYDERABAD CINEMA Deepthi Krishna, Thota
11.45 - 12.10	IN-10- THE WANDERING MAPS IN THE CITY OF BHUBANESHWAR Nibedita, Mishra
12.10 - 12.35	SL-04- MODELING AGEING POPULATION (60+ YEARS) IN SRI LANKA Amalie Jayatilake, Sarath Peiris
12.35 - 12.55	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 1B

Theme : **People's Cities**
Session Chair : **Archt. Dr. Gamini Weerasinghe**
Session Co-Chair : **Archt. Jeeva Wijesundara**
Venue/Time : **Hall No: 2 / 11.20 - 12.55**

Time	Paper ID, Title and Author(s)
11.20 - 11.45	PK-01- STUDY OF METAPHYSICAL LAYER: CONNECTION OF A CITY WITH PEOPLE Zain, Zulfiqar
11.45 – 12.10	SL-01- PEOPLE'S NEGOTIATION OF SPACE IN THE CONTEXT OF URBANIZATION AND HISTORIC CONSERVATION IN CLAN JETTIES, MALAYSIA Kaushalya Herath
12.10 - 12.35	SL-03- AN INVESTIGATION OF PUBLIC ART AND ITS ROLE OF INCREASING URBAN QUALITY THE CASE STUDY AREA: ARAYAMPATHY, BATTICALOA Arthy Yoga lingam
12.35 - 12.55	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 1C

Theme : **Informal Urbanism**
Session Chair : **Archt. Plnr. Piyal Silva**
Session Co-Chair : **Archt. Janaka Dharmasena**
Venue/Time : **Hall No: 3 / 11.20 – 12.55**

Time	Paper ID, Title and Author(s)
11.20 – 11.45	IN-12- COMPETITION FOR URBAN SPACE: ANALYSIS OF SPATIAL ASPECT OF STREET VENDING IN PUNE CITY Isha, Panse, Pra tap, Raval
11.45 – 12.10	TH-01- BANGKOK STREET FOOD PHENOMENON Montouch Magluntong
12.10 – 12.35	CN-01- URBAN DESIGN FOR DEVELOPING A SENSE OF COMMUNITY IN CULTURALLY-DIVERSE NEIGHBOURHOODS Virajji, Bandara, David, Monteyne
12.35 – 12.55	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 1D

Theme : **Lessons and Way Forward**
Session Chair : **Arch. D.B. Nawaratne**
Session Co-Chair : **Arch. Asiri Dissanayake**
Venue/Time : **Hall No: 3 / 11.20 – 12.55**

Time	Paper ID, Title and Author(s)
11.20 – 11.45	BG-01- STARCHITECTURE EXPOSED? A BATCH OF NEAR-GRADUATES REFLECTS ON ITS FUTURE Koen De Wandeler
11.45 – 12.10	SL-11- SEA LEVEL RISE AND VULNERABILITY OF COASTAL COMMUNITY AND INFRASTRUCTURE IN THE WESTERN COAST OF SRI LANKA K.W. Indika ,W.R.W.M.A.P. Weerakoon, R.M.D.I. Rathnayaka, S.M. Fenando, and S.S.L. Hettiarachchi
12.10 – 12.55	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 2A

Theme : Urban Neighborhoods
Session Chair : Archt. Prof. Samitha Manawadu
Session Co-Chair : Archt. Kolitha Perera

Venue/Time : Hall No: 1 / 13.45 - 15.15

Time Paper ID, Title and Author(s)

13.45 - 14.10	TH-02- HOUSING CHAIN AND FACTORS AFFECTING SELECTION OF HOUSING IN THE BANGKOK METROPOLITAN REGION Sastra, Srihabhak ,Kiyonobu, Kaido ,Shigeru, Fukushima Hiroyuki, Takai
14.10 - 14.35	SL-07- UNDERSTANDING THE TERRITORIALITY IN MARGINALIZED NEIGHBORHOODS FROM OCCUPANTS' POINT OF VIEW WITH SPECIAL REFERENCE TO SAMMANTHRANAPURA, MATTAKKULIYA Gehan Athukorala, Janaka Wijesundara
14.35 - 15.00	BD-02- COMPARATIVE ANALYSIS BETWEEN URBAN KITCHEN MARKET AND SUPER-SHOPS - FOCUS ON PROPER RETURN ON INVESTMENT (ROI) IN SENSE OF SPATIAL UTILIZATION IN THE CONTEXT OF DHAKA, BANGLADESH Nayna Tabassum, Prince Anower Parvez
15.00 - 15.15	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 2B

Theme : **Transforming urbanism**
Session Chair : **Arch. D.P. Chandrasekara**
Session Co-Chair : **Arch. Nadeeka Jayaweera**
Venue/Time : **Hall No: 2 / 13.45 - 15.15**

Time	Paper ID, Title and Author(s)
13.45 - 14.10	SL- 05- EXPLORING THE ELEMENTS OF URBAN METARMOPHOSIS THAT SUSTAIN THE PLACE INTEGRITY OF HISTORIC URBAN CENTRES: THE CASE STUDY OF SLAVE ISLAND, COLOMBO Damsari Edirisinghe, Ja naka Wijesundara
14.10 - 14.35	IN- 07- SOCIAL NETWORKS AND SPATIAL CHARACTER A STUDY OF SOCIO-SPATIAL TRANSFORMATIONS OF OPEN SPACES IN TRADITIONAL NEIGHBOURHOODS OF INDIAN CITIES Navajyothi, Subhedar
14.35 - 15.15	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 2C

Theme : Sustainable Urbanism
Session Chair : Archt. Plnr. Pali Wijerathne
Session Co-Chair : Archt. Shobha Senevirathne
Venue/Time : Hall No: 3 / 13.45 - 15.15

Time	Paper ID, Title and Author(s)
13.45 - 14.10	IN- 14 - URBAN SUSTAINABILITY - STREET CHARATER, INFRASTRUCTURE & IDENTITY Mellissa Joseph Pereira
14.10 - 14.35	IN-13- RESILIENT CITIES FOR THE FUTURE: A CASE OF CHENNAI Greeshma P, Manoj Kumar K.
14.35 - 15.00	SL-21- SUSTAINABLE CITIES: AN ICT MODEL FOR INCLUSIVE DEVELOPMENT Mohamed Fazil Mohamed Firdhous
15.00 - 15.15	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 3A

Theme : **Urban Systems**
Session Chair : **Prof. Lal Balasuriya**
Session Co-Chair : **Arch. Dr. I.G.P. Rajapaksha**
Venue/Time : **Hall No: 1 / 15.30 - 17.00**

Time	Paper ID, Title and Author(s)
15.30 - 15.55	SL -13- DISTRICT COOLING SYSTEMS FOR MEGA PROJECTS IN SRI LANKA Shanith Kankanamge, Nayanthara De Silva and C.R. De Silva
15.55 - 16.20	SL- 14- DISTRICT COOLING POTENTIAL FOR MEGA DEVELOPMENTS IN SRI LANKA Niroshan Diminige, R. A. Attalage,
16.20 - 16.45	SL-12- IMPACT OF ROADSIDE LANDSCAPE TO DRIVING BEHAVIOR; A STUDY WITH REFERENCE TO SOUTHERN HIGHWAY Sha meen Dharmasena, Suresh Edirisooriya
16.45 - 17.00	Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 3B

Theme : Urban Landscape and Sense of Place
Session Chair : Archt. Prof. Shirani Balasuriya
Session Co-Chair : Archt. Dr. Vasana De Silva
Venue/Time : Hall No: 2 / 15.30 - 17.00

Time Paper ID, Title and Author(s)

15.30 - 15.55 SL- 16- **A STUDY ON THE IMPACT OF CULTURAL TOURISM ON URBAN LANDSCAPE WITH REFERENCE TO THE CITY OF KANDY**
Rasul Wanigasekara, Janaka Dharmasena

15.55 - 16.20 SL- 15- **THE APPRECIATION OF THE SENSE OF SPACE THROUGH THE ACOUSTIC LANDSCAPE OF URBAN PARKS: CASE STUDY OF URBAN PARKS COLOMBO**
Yahani Hasara Waduthanthri, Shereen Amendra

16.20 - 16.45 SL- 20 - **THE LANDSCAPE AND THE TOURIST ATTRACTION: A STUDY WITH REFERENCE TO NUWARA-ELIYA, SRI LANKA**
Niranjie De Silva, D.P.Chandrasekara

16.45 - 17.00 Final Discussion and award of certificates of attendance

DETAILED SESSION PLAN

Saturday, 21 October 2017

Session 3C

Theme : Urban Landscape and Connectivity
Session Chair : Archt. D.H. Wijewardene
Session Co-Chair : Archt. Dr. Senaka Darmathilaka
Venue/Time : Hall No: 2 / 15.30 - 17.00

Time	Paper ID, Title and Author(s)
15.30 - 15.55	SL- 19- STUDY ON EFFECTIVENESS OF STRATEGIES TO REESTABLISH LANDSCAPE CONNECTIVITY OF SOUTHERN EXPRESSWAY N.G. I. Aroshana
15.55 - 16.20	SL-18 - INFLUENCE OF GENDER ON PERCEPTION OF LANDSCAPE: A STUDY OF VIHARAMAHADIVI PARK IN COLOMBO. M. D. B. Perera
16.20 - 16.45	SL- 17- A STUDY OF THE RELATIONSHIP BETWEEN ECOLOGICAL NETWORK PATCH METRICS AND LANDSCAPE CONNECTIVITY; WITH REFERENCE TO CASE OF COLOMBO WETLANDS H.E.M.W.G.M.K Ekanayake
16.45 - 17.00	Final Discussion and award of certificates of attendance

ABSTRACTS OF THE PROCEEDINGS

FIFTH INTERNATIONAL URBAN DESIGN CONFERENCE
ICCP-2017

'Cities, People and Places'

Theme:
Urbanization Futures:
Policies, Strategies and Implications of
Densification of Cities

Edited by
Janaka Wijesundara
Ranjith Dayaratne

Department of Architecture
University of Moratuwa
Sri Lanka

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PAPER ABSTRACTS

GENDERED CINEMATIC CITY: A CASE OF HYDERABAD CINEMA

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ABSTRACT

The Hyderabad metropolis of India is one of the fastest growing cities with growing population. The city's access to women and how women navigates and defines the city, and the gendered cinematic urban spaces is explored in this paper. The movies of Hyderabad which include the regional cinema released in the 2000s are analyzed. The paper uses semiotics and discourse analysis to understand the nuances of the complex relationship of women and the city. The built environment directs the navigation of a person in the city but for women it is fraught with risk and the spaces laden with cultural and social signifiers. In literature and popular culture, the city is equated to the women and their body- both equally dangerous. The presence of women in the city spaces induces male anxiety. The city is

a place for loose morals in the form of sex-workers, temptresses and uncontrolled female desire. The good women are always indoors. Women outside the domesticity spaces, has to declare her purpose. A woman out loitering for the pleasures of exploring, being and belonging to the city is not stressed and the paper tries to make a case for it. In this background, I study the films to try a answer - How women in the cinematic city navigate and access the city? C) try to define the city girl represented in the cinemas D) how modernity has freed the city women and is the new women here- in the movies.

Keywords: Feminist geography, urban studies, Film geography, cinematic city, Hyderabad

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THE WANDERING MAPS IN THE CITY OF BHUBANESHWAR

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ABSTRACT

In everyday life, walking is either considered as an exercise or as necessity for conveyance. However, 'the walk' can create a complete new experience of the city – as Calvino describes in *Invisible Cities*. Walking produces space - the pedestrian city as contrasted with the city experienced in other ways. This paper seeks to describe the relationship of walking/wandering in the planned city of what Koenigsberger had imagined in Bhubaneswar in contrast to what the city now offers to a regular pedestrian.

The paper will discuss walking in the city of Bhubaneswar, planned by Koenigsberger, the first post-independence capital city, in the state of Orissa. The low scaled neighbourhood planned city was to accommodate the requirement of the modern life. Out of the eleven principles that the planner believed and integrated in the plans of Bhubaneswar, one of the main concepts was to bind the city within convenient walking distances. Bhubaneswar has recently been the first in the list to be selected under the Smart City proposal in the country of India. The method includes analysis of walking through three parameters - the street, the public square and the alternative routes within the core city. The study is documentation for further research in drawing cartographic and mind maps for the rapidly growing city to uncover its layers of growth.

Keywords: Modernism, Post independent India, City, Bhubaneswar, Koenigsberger, Planning, Walking.

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MODELING AGEING POPULATION (60+ YEARS) IN SRI LANKA

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ABSTRACT

Population ageing is a universal phenomenon and it is expected to be among the most prominent global demographic trends of the 21st century. In Sri Lanka there was a rising trend of ageing population throughout the past years and has recorded the highest number of agers within South Asia. However, no sound statistical or mathematical models were developed to project ageing population in Sri Lanka. Using the population aged 60 years and above in Sri Lanka during 1950-2016, three types of statistical models: (i) ARIMA (0, 2, 1), (ii) exponential trend model, and (iii) double exponential smoothing model were developed. The models were compared using various statistical indicators and some statistical diagnostics tests. The comparison was done for both training set as well as validation set. Among these models the double exponential smoothing model was found as the best fitted model. According to the forecast derived from the best fitted model, it was found that the increasing trend of ageing population in the country will continue in the future and there will be approximately 2,936,000 ageing population in Sri Lanka in 2020. The information obtained this study is beneficial for planners and decision makers in the government sector and other relevant organizations to cater the needs of the increasing agers in the future of Sri Lanka.

Keywords: Ageing Population, ARIMA, Demographic, Exponential Smoothing

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STUDY OF METAPHYSICAL LAYER: CONNECTION OF A CITY WITH PEOPLE

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ABSTRACT

A city has its own specific spirit and charm. That spirit gives the identity and uniqueness to city. In present fast paced environment where there is rapid urbanization, it is very important to know and maintain the core values of a city before implementing the physical development plans. With the better understanding of metaphysical realm we can create better physical realm of a city for its people. To explore and find out the invisible character of a city which makes it unique and which connect people with their city is helpful to maintain its individual character, identity and values in this age of globalization. To study this phenomena a city of Lahore is selected for this research. Lahore is the cultural capital of Punjab, Pakistan with rich history. It is discussed in number of ways by writers and researchers even poets. The layers of centuries old history of Lahore can still visible in its architecture and culture. The aim of the research is to study and understand the core values of a city and how people relate with those values. The metaphysical layer is studied by collecting the various thoughts and emotional affiliation expressed by famous authors and poet.

Keywords: Metaphysical Layer, Physical realm, Core Values, Invisible layer, identity

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PEOPLE'S NEGOTIATION OF SPACE IN THE CONTEXT OF URBANIZATION AND HISTORIC CONSERVATION IN CLAN JETTIES, MALAYSIA

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ABSTRACT

Penang is a rapidly urbanizing city in Malaysia. Neo liberal urban development in Penang challenges the vernacular built environment of the city. The Urban fabric of Penang is rich with different traits of architecture from the West and the East. With the population density and the land values are going up, much of the local urban spaces are getting replaced by the "modern" high rises and other land uses. While the colonial legacy of Penang built environment has been recognized by the heritage discourse to be conserved, self-built and local spaces are being mostly ignored. Both urbanization and historic conservation impacts the transformation of Penang. Clan Jetties of Penang as a self-built settlement which was produced and transformed by ordinary people over the last century is facing the challenges of both urbanization and historic conservation. This paper elaborates how Clan Jetty residents negotiate the spaces in the context of urbanization in order to survive and maintain their sense of belongings to their neighborhood. UNESCO incorporated Clan Jetties to the Georgetown World Heritage site in 2008. Although this new designation of world Heritage saved Clan jetties from getting replaced, it also stopped the natural transformation process of the settlement. However, the modernization desire by people, and their agency in transforming their neighborhood despite the heritage guidelines imposed upon them. Clan Jetty residents who rejected the conversion of their neighborhood to a "modern" neighborhood as defined and designed by the Government are in the process of following their own instincts in making small changes in their neighborhood. This paper discusses this continuous process of production of spaces by ordinary people by analyzing and contextualizing their stories.

Key words: Urbanization, High-rise development, Agency, Socio-Cultural Changes, Transformation, Historic conservation, People's spaces

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AN INVESTIGATION OF PUBLIC ART AND ITS ROLE OF INCREASING URBAN QUALITY THE CASE STUDY AREA: ARAYAMPATHY, BATTICALOA

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ABSTRACT

In this modern world urban sculpture is considered as a cultural necessity in contemporary urban planning. Urban Sculpture can reaffirm or reveal a sense of place in a symbolic and visually stimulating way of evoking some aspect of the social, natural, cultural, physical, political, economic or historical context of the site and its locale. Typically, public artists produce site specific sculptures and prominent installations that add character and distinction to a development and the surrounding neighborhood. After studying the city planning critiques viewpoints about public art's definition, nature and impact on city, this study evaluates the role of urban sculptures as a type of public art in enhancing public place quality in the sampled case study of Arayampathy town.

As clearly shown by the topic, the aim of this research is to explore how urban sculptures play a significant role to enhance the urban quality and urban character. This research was conducted through observations, photographic surveys, activity mapping, cognitive mapping analysis, interviews and discussions with those who live in the selected case study area. What resulted from this study was that through having the some possible qualities and public art features, city sculptures in the city of Arayampathy have the ability to improve the qualities like legibility, sense of place, and pleasure besides developing local people's social interaction and local cultural identity.

Keywords: sculpture, sense of place, public art, cultural identity.

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COMPETITION FOR URBAN SPACE: ANALYSIS OF SPATIAL ASPECT OF STREET VENDING IN PUNE CITY

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ABSTRACT

Streets are a stage for social interaction, commerce and act as determinant for character of the city. Among these activities, street vending is a dominant activity in Indian cities. The total number of street vendors in India is estimated at around 10 million, street vendors constitute approximately 2 per cent of the population of a metropolis in India as per WEIGO report. However, Street vendors are a part of de-regulated system. The study addresses this context with respect to Pune city, a growing metro in India. Pune city was also the first city to take policy directives for management of street vendors, in India.

The objective of the study is to distinguish and establish types of street vending in the context of Pune City. The study tries to estimate space utilized by different types of street vending. It analyses the patterns of distribution of types of street vending and their characteristics. This, unravels the locational aspects of street vending which proves to be essential for successful policy making. Through questionnaires, the perception of other road users towards the activity of street vending is evaluated.

The study uses quantitative and qualitative data. These include field notes, questionnaire survey of road users, field mapping and videography. Descriptive statistics such as means and frequencies were used to present the findings. The analysis of the data is based on percentages and simple cross tabulations, presenting empirical evidence to explore the spatial relations (location specific details) as against the types of street vendors.

The overall research theme is analyzing the impact of Informal Street Activities on Urban Functions and Planning aspects. This research paper is based on initial studies and is a part of doctoral research.

Keywords: Street vending Typology; Spatial utilisation; Locational aspects

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BANGKOK STREET FOOD PHENOMENON

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ABSTRACT

In 2016, Bangkok was voted as the world's best destination for street food for 2 consecutive years according to CNN. It shows that street food is very popular among both local and international tourists, as it is delicious, easy access, and cheap. Its contributions to urban life go beyond their own informal employment, as it generates demand and supply for a wide range of services provided by other informal and formal workers: (1) as fast food providers, for low to middle-income workers, (2) as an economic activity, which generates income for urban poor, and (3) as a social connector for the variety of its consumers. Accordingly, this research aims to study on the phenomenon of Bangkok street food by examining the history and relationship between street food distribution, location, and other urban activities. Din Daeng, Nong Khaem, Rat Burana, and Samphanthawong are four cases that were chosen for analysis in terms of 'self-made' public space and spatial identity. With this study, the well-planned and managed street food can be part of the city, which captures and responds to Bangkok's urban contexts. And it will help to find solutions for street food to be included in policy terms as economic assets to cities, while endure in the city within the contemporary urban context.

Keywords: distribution, history, phenomenon, 'self-made' public space, street food

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URBAN DESIGN FOR DEVELOPING A SENSE OF COMMUNITY IN CULTURALLY-DIVERSE NEIGHBOURHOODS

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ABSTRACT

A sense of community is a fundamental requirement for communities to thrive and prosper. However, in today's multi-ethnic environments developing or maintaining a sense of community is becoming increasingly challenging especially in cities such as Calgary, Canada, which are experiencing rapid population diversification. Thus, there is a growing need for such cities to actively support their diverse populations in building a sense of community.

Nearly a century of scholarship points to the link between the physical environment and social behaviour and recognizes the urban environment as a catalyst in enhancing a sense of community among citizens. However, assessments to identify how urban environments can facilitate a sense of community among diverse populations remain rare in urban planning and design.

The aim of this case study was to identify how the physical environments can support building a sense of community among culturally-diverse populations, and thus identify strategies for making cities more resilient and sustainable in the face of rapid demographic changes. For this research, the Family Housing Complex at the University of Calgary was selected as a case study due to being a widely-diverse population living in a single neighbourhood. Using a number of observation techniques and interviews, the study focused on the diverse day-to-day encounters among residents to identify opportunities for developing a sense of community among them.

Keywords: culturally-diverse neighbourhoods, urban design, ethnographic research, and sense of community

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STARCHITECTURE EXPOSED? A BATCH OF NEAR-GRADUATES REFLECTS ON ITS FUTURE

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ABSTRACT

The growing gap between rich and poor, social polarisation and climate change are the top risks facing the planet, according to a recent report of the World Economic Forum (2017). This warning corroborates earlier analyses of globalization that have associated these destructive socio-economic phenomena with the rise of advanced producer service firms as drivers of globalisation. The business acumen and global networking activities of APS firms have urged urban authorities and private investors across the global globe to invigorate local economy through large-scale, prestigious (re)development projects that often involved the construction of 'iconic' buildings. Whilst this so-called 'starchitecture' receives wide-spread attention, urban architecture covers a far wider range of interventions including various forms of spontaneous, 'bottom-up' architecture and 'engaged' urbanism

Architects, urban planners and designers at the beginning of their professional career are thus confronted with a bewildering range of career-paths. How should they profile themselves as young professionals? Should they focus their talent and skills on creating exclusive 'iconic' environments that befit global corporate imagery? Or should they engage with local stakeholders in co-creating authentic, meaningful places? The choice is not merely demand-driven. It also reflects a discipline 'in disarray' over its fate and relevance in the post-postmodernist era.

This paper reviews how thirty Final Year Master Students coming from 18 countries explored these questions as part of a course on contemporary urbanism at the KU Leuven Faculty of Architecture. It first outlines the course and the distinct assignment that spurred students to consider the impact of 'starchitecture' on contemporary architecture and urbanism. The next two sections review first how students evaluated starchitects' profile and practice both in general and in their home country and second, how they felt about the phenomenon and whether they could identify with it. The final section summarizes the students' overall perceptions and recommendations.

Key-words: starchitecture, APS firms, engaged urbanism, inclusion

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SEA LEVEL RISE AND VULNERABILITY OF COASTAL COMMUNITY AND INFRASTRUCTURE IN THE WESTERN COAST OF SRI LANKA

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ABSTRACT

The vulnerability of the coastal community and infrastructure for various ocean based hazards has increased gradually as a consequence of sea level rise with the global climate change. This study explored the mean sea level variation using time series gauge records obtained by PSM SL via the British Oceanographic Data Centre BODC and the National Aquatic Resources Research and Development Agency (NARA), Sri Lanka. The AVISO satellite sea level data was computed as a different data sources for comparability of gauge observation during more than twenty years from 1993 to 2013. The vulnerable land area was classified by interpolating 10 cm contours from mean sea level using Shuttle Radar Topographic Mission (SRTM), 90 m DEM originally produced by the NASA with horizontal datum WGS84 and Vertical datum EGM96 using GIS software, Arc Map 10.1. These sea level rise in Western Sri Lanka was found as 1.98 mm/year; a positive trend with regard to the global mean sea level rise during the study period. The maximum seasonal sea level range was recorded 20-30 cm during the December to January. The vulnerability was classified under three categories; high (0 -10cm), moderate (10-20cm) and low (20-30 cm) using the elevation from MSL; in 10 cm contours as a factor of vulnerability assessment. Each land area was calculated separately: 70 - 80km² high vulnerable area, 150-160 km² moderately vulnerable area and 240 – 250km² low vulnerable area within the western province of Sri Lanka. All coastal cities including their communities and infrastructure are vulnerable to ocean based hazards such as meteorological tsunami, storm surge and saltwater intrusion during extreme weather conditions with high frequencies and intensity as a result of sea level rise.

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Thus, the policy makers of coastal urban city development, construction and management must noticeably be focused on the trend of sea level rise and related impact.

Keyword: Sea level, Vulnerable, coastal, Seasonal change

HOUSING CHAIN AND FACTORS AFFECTING SELECTION OF HOUSING IN THE BANGKOK METROPOLITAN REGION

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ABSTRACT

Industrialization is shifting to out of the Bangkok Metropolitan Region (BMR), while Bangkok is increasingly enhancing the function of service industries. The younger generation of Bangkok is becoming more educated, and changing their lifestyles including jobs, consumption, family image, and housing patterns. Housing development patterns changed drastically after the Asian Economic Crisis from 1997 to 1999. Suburban housing developments became less active, while inner city housing developments became more popular along with mass transit lines such as the sky-train and subways.

This study aims to clarify (1) residents' attributes of the recent most popular private housing types such as detached/twin houses, townhouses, and condominium; (2) important factors for selecting present housing and factors affecting selection behavior; and (3) the changing pattern of residence, the so-called "housing chain" in the BMR. The data for the research was collected from a household activity survey and questionnaires were completed by selected households in typical housing projects in the BMR.

We clarify two types of housing chains. One is the conventional family-based housing chain from rental apartment or parents' house to ownership of a condominium, townhouse, and detached/twin house. The selection of a townhouse or detached/twin house depends on residents' affordability. The other is based on a new living style, wherein the condominium is the final housing goal in the housing chain for those who have a new family image such as DINKS, or those who prefer the single life

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or are LGBT. This implies that housing policy should set a new policy target to supply small condominiums for single people or couples, not only housing for families.

Keywords: Housing chain, Private housing, new middle class, Bangkok.

UNDERSTANDING THE TERRITORIALITY IN MARGINALIZED NEIGHBORHOODS FROM OCCUPANTS' POINT OF VIEW SPECIAL REFERENCE TO SAMMANTHRANAPURA, MATTAKKULIYA

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ABSTRACT

The way territoriality is used and communicated can be varied from each other's such as one person to other person, one culture to other culture. In an urban setting territoriality always plays a vital role to demarcate and communicate the appropriations. In rural areas, individual territoriality is the most prominent feature that people use to communicate their ownership. However when urban marginalized neighbourhoods are considered this prominence changes from individual territoriality to group territoriality. This is because territoriality is not just a strategy for marginalized people to show the ownership.

This research has explored how marginalized people generate territorial boundaries within their well-connected social neighbourhoods and why it is that much important to them, from occupants' point of view. Both personal observations and individual questionnaires are used methodologically to gather relevant data to understand occupant's perception about territoriality. Except those primary data collection tools, activity maps and interviews also have been done. Finally, at the end, all the data collected under the three tendencies (classification, communication and control) were analyzed together.

Research data and observations will support government agencies and architects who involve in designing new settlements for low income marginalized groups. If the designer is clever enough to add those values in to the new housing settlement as appropriate, it will be a successive design. So, this research will help to understand territoriality in their neighborhoods.

Key words: Marginalized neighborhood, Territoriality, Human behaviours, Occupants' perception, clustering

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COMPARATIVE ANALYSIS BETWEEN URBAN KITCHEN MARKET AND SUPER-SHOPS - FOCUS ON PROPER RETURN ON INVESTMENT (ROI) IN SENSE OF SPATIAL UTILIZATION IN THE CONTEXT OF DHAKA, BANGLADESH

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ABSTRACT

Kitchen market that means traditional retail market has always been an integral component of everyday lifestyle for the people of Dhaka city, Bangladesh. Its importance is profusely intensified in urban areas. In topmost cases, the supplies of these markets are not manufactured in the urban areas. So the kitchen market performs as a connecting platform of several functions. In a broader sense, it remains directly connected to the overall annual economic growth of a nation. Through ages, the necessity of the kitchen market is perpetual whereas its envelope characteristics i.e. shape, size, pattern, spatial organization is changing. Experiencing several metamorphic phases, presently it is configured in the form of super-shops. Along with the present trend of modern lifestyle, the number of super-shops is on the rise. At present the urban population is densifying. Simultaneously the number of super-shops is swallowing to meet the demand. But land is a precious limited resource in any urban area. Now the question arises whether the portion of land or space used by a community for super-shops functions or kitchen markets is meeting the proper return on investment (ROI). We need to know that which financial category of population is served by the existing traditional kitchen markets and the super-shops. The main objective of the research aims at finding out the spatial utilization of a traditional kitchen market and modern super-shops. Furthermore a comparative overview between these two would be presented. The end result of this research may lead us to know whether which one between these two types gives the more ROI and may prevail in the future. A quantitative research method of data analysis is used for the research.

Keywords: Kitchen-Market, Super-Shop, retail market, Spatial Utilization, Return on Investment (ROI).

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EXPLORING THE ELEMENTS OF URBAN METARMOPHOSIS THAT SUSTAIN THE PLACE INTEGRITY OF HISTORIC URBAN CENTRES: THE CASE STUDY OF SLAVE ISLAND, COLOMBO

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ABSTRACT

Cities around the world have experienced unprecedented changes in their economy, environment and society due to rapid globalization and urbanization. Contemporary colonial cities of South Asian countries are dynamic, rapidly growing and continuously changing. Thus, urban transformations and mutations are not a new phenomenon, but rather a continuous process.

A historic city and its heritage enable people to better understand previous generations and the history of where they came from, and offer place integrity and unity in the city. The study scoped within the discussion of urban metamorphosis in relation to morphological elements in Slave Island. Slave Island is a Colonial city with vast collection of old buildings, yet serves as a home to all aspects of social and cultural urban life. It is an example for "Utilitarian architecture" where it comprises different kind of structures, designed and built by architects and non-architects in public and private spaces. This bustle commercial hub has a dominant character of urban transformation where it sustains the historic authenticity while responding to urbanization. In such cases population of communities endures place integrity in the heart of old city.

The objective of this study is to examine the engagement of social activities in development which incited place integrity. Further it aims to study the factors which preserved within the historical setting in relation to the elements of urban metamorphosis. The urban mutations of the existing physical structures have interconnections with social, economic, cultural and other aspects. Continuous urban growth, diversified activities, and social perception will always mutate the cities.

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Certain parameters have taken to measure Place integrity and identified the sense of place to analysis the sustained historic authenticity of this situation. Further the research has identified socio-cultural relationship of transforming urban setting.

Keywords: Urban metamorphosis, place integrity, historical setting, urbanization, historic authenticity

SOCIAL NETWORKS AND SPATIAL CHARACTER A STUDY OF SOCIO-SPATIAL TRANSFORMATIONS OF OPEN SPACES IN TRADITIONAL NEIGHBOURHOODS OF INDIAN CITIES

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ABSTRACT

The present paper is part of an ongoing Doctoral Research which engages in the documentation and evaluation of the mutual relationship between the tangible aspects of traditional Indian cities and the socio-spatial aspects of living processes therein. It explores the physical transformations in terms of enclosures, edges, movement systems, visual qualities, other physical and spatial aspects of an urban space affecting the social interactions within the city, with its perceptual aspects of urban spaces within the proposed research domain and examines the quality of human behaviour. Eventually, focuses on intervention strategies of regeneration of open spaces in the core by striking a balance between the acts of preservation of the image and a development agenda which augments living conditions that generate a cohesive and integrated humane community. (Human-centric, heritage sensitive).

In the course of development of the paper shall discuss how socio-spatial interactions have influenced the formation of traditional Indian cities over the history? It will look into crucial periods of urban development history, changes in social behaviour in the city and situate the study in the context of existing socio-spatial networks. It will specifically examine the role of collective spaces in the traditional old cores, which includes spaces in and around, city level artefacts, everyday open spaces - their relationship with habitants and activities in them. This will be done with examples from Indian Cities with a commentary on how such spaces have evolved with time at varied urban scales (urban area, urban block, unit level) illustrating how these enclosures and edges conditions are considered to be the major influencing factors, with which the socio-spatial aspects potentially interact. (Palaiologou & Vaughan, 2012).

Cases from India will be presented to show: evolved spatial patterns, typologies and forces that shape open spaces and built form, transforming public-private interfaces and changing neighbourhood profiles leading to deserted communities in the present-day context in core cities. Finally,

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leading to, a quest to *present* the city as a living organism, will examine design and planning frameworks and guidelines to evolve 'humane urban space.'

Keywords: the socio-spatial aspects, physical transformations, urban space, social interactions sensitive & heritage, collective spaces, old cores, the city as a living organism, humane urban spaces.

URBAN SUSTAINABILITY - STREET CHARACTER, INFRASTRUCTURE & IDENTITY

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ABSTRACT

The radical transformation of the natural environment that began towards the end of the eighteenth century affected humanity, where no humane tradition or even plain self-respect acted as a brake to all out spoil, cities grew into non cities and so we have not seen our cities as they are. Urban patterns are the identification of the uniqueness of an urban city. Cities growing up with a past pace and as you see urban scenario is also changing with a great development, urban fronts are adding up to urban scenarios as you see development happening in both ways on a city level and on urban level. In cities even small town and streets are adapting few more techniques to catch up with the growing development. Street functioning and market places are also turning up to be development areas and development fronts. As this scenario is changing on urban front, small cities and villages are also adapting to the fast pace development. Our City planning manifesto including political agendas always talk about new developments & growth, but sustainability always remains a missing link. Development alone can never be a right approach for a developing nation if sustainability is not being considered an integral part of its planned/ proposed development agendas. **The true success of any developed country lies in striking a chord between development and environment; in achieving sustainable development.** This stays true for all developed countries across the world, which are at present going through a modern-era revolution i.e. **Urban Sustainability.** In India, green and sustainability terminologies had been introduced recently, yet it is popular among only a few stakeholders of the society rather than being treated as a mass movement. Keeping in mind the current and future expected population growth of our country, thinking about 'Development' alone will not be sufficient for the overall sustainable growth of our country. Development and Urban environment are in fact two sides of the same coin. Hence a balance between the two entities has to be ensured at all times for sustainable growth.

Keywords: Urban patterns, Planning manifesto, urban sustainability, growth, street, Character, Identity, Infrastructure, Green Parameters

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RESILIENT CITIES FOR THE FUTURE : A CASE OF CHENNAI

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ABSTRACT

Fast pace of urbanisation and population growth is an imminent global challenge. The World Urbanisation Prospects of the United Nations suggest that more than 75% of the global population will concentrate in cities by the year 2050. The pressure of this population rise, on our cities and the concerned natural systems are bound to increase in the near future. Floods, cyclones, earthquakes, wildfires and heat waves made the year 2015 a devastating one for millions around the world, with 150 major natural disasters being recorded. Asia bore the brunt of these disasters with massive earthquakes in Nepal, floods in Chennai, heat waves hitting South India and Typhoon Komen inundating the Indian subcontinent, to cite a few examples. The changes in climate and the failures of physical systems make our cities vulnerable to disasters of various kinds leading to a physical collapse of that city. This research paper, deals with the concept of disaster resilience in this context and how this can be applied at the city, neighbourhood as well as the individual level. The intent of this paper is to develop a framework of strategies for an emergency response programme, taking a case of the Indian city of Chennai. The initial approach surveys in detail the way the city functions w.r.t the natural systems and looks into the city's growth through the ages.

The paper proposes an initial theory around the creation of an ideal emergency response model consisting of physical and technological networks that will come into play once a risk situation arises within a city. This model was first done at a generic level where it can be applied on to any city of any context. The major outcome of the research is the development of this

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unique model so as to place it in the city of Chennai considering its intricate labyrinth and functions.

Keywords: Resilience, Disasters, Emergency Response, physical systems, climate change

SUSTAINABLE CITIES: AN ICT MODEL FOR INCLUSIVE DEVELOPMENT

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ABSTRACT

Last few decades have seen unprecedented increase in urbanization resulting in mega cities all over the world. People move towards cities expecting better living conditions and opportunities that are generally not available in rural areas. This kind of unplanned migration creates many problems placing heavy demands on the limited resources available in the urban areas. In order to overcome these problems and improving the quality of life of their citizens, many governments have launched the ambitious smart city initiatives for leveraging the recent developments of Information and Communication Technology (ICT) improving the existing services and developing new services for providing better quality of life for the citizens. ICT can be used for managing resources effectively and delivering services effectively and efficiently improving the sustainability of these cities. Though use of ICT can bring many positive outcomes, there are many failures reported in many sectors and countries. Hence the type and level ICT usage must be carefully planned, if successes are to be reaped. In this paper the author presents an integrated model for leveraging ICT for enhancing the quality of existing services as well as the planned future services in developing sustainable smart cities.

Keywords: Inclusive development, smart city, ICT, Internet of Things, cloud computing, big data analytics

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DISTRICT COOLING SYSTEMS FOR MEGA PROJECTS IN SRI LANKA

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ABSTRACT

In marching towards sustainable development after 30 years of civil war, Sri Lanka is currently undergoing a boom time with regard to its construction industry. A number of mega projects are ongoing in the capital city of the country. Thus, managing the high operational costs of these upcoming mega facilities will become a challenging task in near future. Air conditioning is identified as a prominent building facility in terms of high operational costs. The aim of the research is to study the effect of District Cooling Systems (DCS) on the reduction of energy demand arising from the operation of mega facilities and, thus, subsequently reducing the operational costs.

A qualitative approach was selected as the research methodology to achieve the research objectives. An expert survey was carried out to identify the dominant enablers of DCS implementation in the country. The expert survey included professionals from multi-disciplinary backgrounds such as investors, HVAC contractors, DCS engineers and facility managers. Furthermore, an in-depth case study was carried out with the intention of validating the potential energy saving with the proposed DCS approach. Six existing large-scale buildings which are located close to each other were selected for the case study.

The results showed that the implementation of DCS in Sri Lanka (as an energy conservational approach) has tremendous potential. They showed a 25% reduction in energy demand when maintaining a temperature of 17°C. Thus, DCS can be proposed as an effective approach to reducing the operational costs of mega facilities. Furthermore, the adoption of these advanced technologies in infrastructure developments will enhance the attraction of potential international investors to the country.

Keywords: District cooling systems, Energy management, Mega projects, Operational cost, Facilities management

DISTRICT COOLING POTENTIAL FOR MEGA DEVELOPMENTS IN SRI LANKA

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ABSTRACT

This paper presents the study related to existing buildings from a perspective of a district cooling system and its feasibility for the projected mega developments in the country. This study is focused to show the District Cooling System (DCS) conversion suitability for a cluster of existing buildings in the city of Colombo. Nine large scale buildings in Colombo having central air conditioning systems and having different cooling load patterns are selected for the study. The estimated cooling demand profile shows that the maximum cooling demand of the system is around 6,000 TR.

Five suitable chiller options are considered for the cooling production based on the total capacity of the district cooling system and profile of the overall cooling demand. The maximum and minimum electrical energy savings that can be achieved by switching to the DCS from the existing individual systems are 6.42 and 5.67 million kWh per year. This energy savings is expected to result in a reduction in coal usage (assuming 60% of electricity generating by coal and oil, and rest by hydro) by about 1420 and 1240 tons per year respectively and reduction in CO₂ emission of about 4,990 and 4,365 tons per year respectively. Discounted Cash Flow Analysis indicates that the best option has a NPV of LKR 396 million, IRR of 13.5% and benefit to cost ratio of 1.35. The sensitivity analysis of the best option reveals that even with the worst combined effect of the various parameters, the DCS is viable as it has a NPV of LKR 87 million, IRR of 11.8% and benefit to cost ratio of 1.07.

Consequently, DCS is viable to implement in Colombo under the conditions and assumptions employed. It could be concluded that DCS could be a viable option for the forthcoming Colombo Port City Project and Megapolis Development Projects since they can be implemented smoothly by planning the piping distribution network into the master plans of the projects.

Keywords: Central chiller plant, district cooling, cooling load profile, energy savings, discounted cash flow analysis, sensitivity analysis.

IMPACT OF ROADSIDE LANDSCAPE TO DRIVING BEHAVIOR; A STUDY WITH REFERENCE TO SOUTHERN HIGHWAY

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ABSTRACT

The highways, road networks, and other transportation links in cities hold an important role in connecting a network of cities but, at the same time, it had created more issues towards quality of the habitation when consider current cities.

Lack of Safety on Roads becomes a major issue in the developed and developing world due to over population of humans as well as vehicles, which lead to many fatal incidents than any other course. There are many factors which affects accidents on roads and among those factors, the 'Driving behavior' plays a crucial role in Road Safety.

Driving is an action of humans, which allows him/her motion through space from place to place. The road landscape creates the character and the spatial quality, of the space that the driver moves through. The rate of information gathered from the surrounding context is vital to decide the driving safe. The accuracy of the information for a safe driving action depends on the visual perception of the driver.

'Southern Expressway', which was introduced recently, allowed people to move quickly from Western to Southern destinations of Sri Lanka and time to time accidents were also recorded. So, the spatial qualities of the existing road landscape might have impacted on the accidents happened on Southern Highway from its initiation, which was the hypothesis of the research.

The study focused on identifying the spatial characteristics of Southern Highway by Data collection and Data analysis. Data is collected by two means, then analyzed based on accidents recorded and "Black-Spots" were identified, live recording of the expressway was analyzed to understand the spatial characteristics in the identified 'Black-spots'. In conclusion, the study focuses on to analyze the significant spatial characteristics of Road Landscape in Southern highway, and reveal that there is a direct influence from the spatial characteristics in identified

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accident Black-spots. The study concludes to analyze only three spatial characteristics, due to the scope and time limitations and there is an opportunity to further studies in many other spatial characteristics in road landscape.

Keywords: Road safety, Road landscape, Driving behavior, spatial characteristics.

A STUDY ON THE IMPACT OF CULTURAL TOURISM ON URBAN LANDSCAPE WITH REFERENCE TO THE CITY OF KANDY

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ABSTRACT

Cultural tourism is a vast industry that thrives in culturally significant cities in the world. It mainly focuses on the cultural and heritage value of a particular place which has the capacity to attract tourists. The cultural cities have changed their forms and patterns of living in a variety of ways for the purpose of fulfilling the requirements of these tourists.

Kandy is one such popular cultural city and recognized as a world heritage city by the UNESCO in 1988. The adaptations of the inner city of Kandy for the purpose of cultural tourism industry have altered the pattern of the society as well as the built landscape. For this study, the urban landscape is understood as a combination of physical and social elements of the urban environment. The impacts from these adaptations have changed the mosaic of the urban landscape drastically.

Of several factors which are affecting such changes of the urban landscape due to the cultural tourism industry, four factors; environment, services, events and society were identified as relevant to Kandy through a pilot study. The main study is focused on the impacts of those factors on urban landscape in Kandy with reference to the cultural tourism industry. The data and information were collected through interviews with different resource persons involved in the cultural tourism industry as well as the photographs of the city of Kandy. The analysis proves that the **environment** and **events** in the field of cultural tourism have a positive impact on the urban landscape in Kandy, whilst in terms of **services** and **society** reflect a negative impact on the urban landscape of Kandy.

A proper balancing of these factors is required for the sustainable continuance of the cultural tourism industry in Kandy. The negatively impacted factors must be identified properly to give the necessary solutions to minimize the negativity and positive aspects must be strengthened.

Keywords: Cultural Tourism, Impact, Tourists, Urban Landscape, City of Kandy

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THE APPRECIATION OF THE SENSE OF SPACE THROUGH THE ACOUSTIC LANDSCAPE OF URBAN PARKS: CASE STUDY OF URBAN PARKS COLOMBO

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ABSTRACT

The main goal of this study is to analyze the human sense of space of an urban park through the **acoustic landscape** of it. The research will be done in sample four sites in and around Colombo Sri Lanka; viharamahadevi park, diyathayana, independence square premises and the study was done maintaining the equality of the case studies by observing in the same time during congregative Sundays. And the **acoustic landscape** will be appreciated through several methods of study. the analyze will be based on the acoustic characterization of the park's interior noise levels of selected functioning and isolated spaces, and by two separate socio-acoustic surveys to the visitors and selected sample of people to check their perception on acoustic quality, of the above mentioned urban parks. The measurement of acoustic characterization is done by recording the **sounds** and plotting in to graphs where decibels and frequency compared. And a social survey is done by giving a questioner to the random users of the parks. so that the data will be analysed on charts and graphs. The second phase of the study is done by giving the above recorded **sounds** to the selected group of people and through a questioner the idea on the **sounds** will be collected and graphed. The study and the summery prove that the urban parks in Sri Lanka contain lots of unwanted, unpleasant and unexpected **sounds** that the people does not expect or prefer other than the human favorable and natural acoustic **sounds**. So that, the noises affect the concentration and disturb the perception.

Keywords: Acoustic landscape, Sounds, Sense, urban parks, perception, concentration

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THE LANDSCAPE AND THE TOURIST ATTRACTION: A STUDY WITH REFERENCE TO NUWARA-ELIYA, SRI LANKA

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ABSTRACT

This research investigates the link between landscape and tourist attraction in Sri Lankan context. Tourism is the third largest foreign exchange earner of the country and the landscape is the main tourist attraction. But there is no proper identification on the significant factors which attract tourists to those landscapes.

A well adopted tourism landscape of Nuwara-Eliya city was selected as the case study. Three most attractive locations are Nuwara-Eliya; Lake Gregory premises, Moon Plains and Mackwood.

The literature review identified six "landscape aspects" and nine "landscape components" which attract tourists to landscapes. Those aspects were "experiential", "ideological", "imaginary", "out of ordinary", "unspoilt", and "scenic" and the components were "flora & fauna", "settlements", "enclosure", "memories", "land use", "sound", "sight", "land form" and "air/climate". Thus, the study investigates which landscape aspect attracts the tourists into a landscape and which landscape component becomes most significant and why it becomes that much significant for visitors. Mixed method of qualitative and quantitative surveys with in-situ observations, questionnaire based interviews and photographic analysis was used for data collection with thirty randomly selected tourists as the sample.

This study reveals that landscape aspect which attract tourists differ with most significant landscape component of the space. One landscape component could play different roles in different landscapes. Tourist attraction to a landscape is proportional to the endurance of most significant landscape component. Further, it was found that the visual perception is the ultimate satisfaction of tourists. The outcome of the study could be used as a design tool in the landscape architectural design developments to sustain the tourism landscapes.

Key words: Landscape, tourist attraction, landscape aspect, landscape component, visual perception.

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STUDY ON EFFECTIVENESS OF STRATEGIES TO REESTABLISH LANDSCAPE CONNECTIVITY OF SOUTHERN EXPRESSWAY

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ABSTRACT

Construction of highway is the most emerging development tendency in Sri Lanka. With these development activities there are a lot of environmental and social issues started. Landscape fragmentation is one of the main issues that tremendous effect to the environment by the construction of expressways. Sri Lankan expressway system getting effort to treat fragmented landscape by using highway crossing structures. This paper designates, a post construction landscape study on the involvement of the landscape connectivity structures to restore connectivity; considering the ecological and visual comprise. Research was carried out in two ways to find the functional and structural landscape connectivity. GIS land use map analysis, GIS cost analysis and highway crossing structure analysis done with the selected two plots to identify structural connectivity within southern expressway. Also questionnaire survey and animal accident data use as measures for functional connectivity. An Overall analysis of the above mentioned connectivity measures used to determine the degree of involvement of highway crossing structures in order to re-establish landscape connectivity.

The findings of the research express the main idea, that the landscape crossing structures used within the southern expressway (E01) partially contribute as expected, to restore the landscape connectivity within the context that fragmented by the construction of southern expressway. The involvement of the landscape crossing structures contributes to re-establish connectivity, but it is not enough to restore the disturbance performed by the expressway. Connectivity measures used within the study can use as a tool for re-evaluate future involvement of highway connecting structures. The study recommend that Monitoring the all stages (preconstruction, construction and post construction) of the project and preliminary design, with the involvement of the professional team, including ecologist and landscape architect helps to overcome the

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complication regarding the re-establishment of landscape connectivity ;
using highway crossing structures.

Key Words: Landscape connectivity, Highway crossing structure, GIS
mapping, Cost analysis

INFLUENCE OF GENDER ON PERCEPTION OF LANDSCAPE: A STUDY OF VIHARAMAHADIVI PARK IN COLOMBO

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ABSTRACT

This study investigates the influence of gender on perception of landscape, with reference to Viharamahadevi Park in Colombo. The existing literature suggests that there is a difference in perception of landscapes in reference to the user. In Asian countries such as Sri Lanka, a clear difference in perception of landscapes could be expected due to strong but varying socio cultural influences on different genders. Perception theories were identified through a literature survey. The emphasis was paid to the visual perception theories linked to experiencing landscapes.

The presence of different visual landscape characters at Viharamahadevi Park lead to the selection of it as the case study. A questioner was used to collect data from general public who patronized the park regularly, and the second year undergraduate students following the degree of Landscape Architecture at University of Moratuwa.

The analysis of data indicates that there is a no clear difference of preference in landscapes between the female and male gender with the public users. The male gender of public who patronize the park has intention to interact with it, such as spend their time with nature or for relaxation. However the majority of the females of public use the park unintentionally due to social requirements. There is a significant difference in order of perception according to the gender among the second year undergraduate students.

Landscape students have comparatively good sense on landscape than the general public. The knowledge supports them to have a clear visual perception, which coupled with gender orientations make a strong difference with male and female students. But due to the lack of information and the insufficient clear sense, general users do not emphasize a clear gender differences in regard to landscape perception in local context.

Key words – Landscape, Visual Perception, Gender.

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A STUDY OF THE RELATIONSHIP BETWEEN ECOLOGICAL NETWORK PATCH METRICS AND LANDSCAPE CONNECTIVITY; WITH REFERENCE TO CASE OF COLOMBO WETLANDS

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ABSTRACT

Natural Landscape fragmentation and habitat loss are emerging issues in Sri Lanka, which is due to rapid urban development and inadequate concern of managing Landscape connectivity. Urban Wetlands are the most vulnerable ecosystem effects from the fragmentation. Therefore, management of landscape connectivity with proper analysis and understanding has become a most important measure for urban wetland habitats.

This study aimed to introduce spatial planning strategy to identify and locate landscape developments appropriately in order to restore landscape connectivity. Therefore, the study focuses on understanding the relationship between habitat patch metrics and landscape connectivity with reference to Colombo wetlands. GIS technology was used to measure the wetland patch metrics; Patch area, Total edge, Perimeter-area ratio, Core area index and Inter-patch distances. Further, GIS enabled least-cost path tool was used to measure the Landscape connectivity and calculate the number of species flow paths per wetland patch.

According to the research findings; increasing the patch area, maintaining a mean perimeter-area ratio and core area index also reducing the inter-patch distances could enhance the landscape connectivity. Further, this study introduces three patch typologies; 'active patches', 'open patches' and 'closed patches' that severs to landscape connectivity differently. At the end, the study proposes a strategy for Landscape architects to select most suitable locations to implement ecological based landscape developments with adjacent to the existing urban habitat in order to enhance habitat patch metrics and to restore the landscape connectivity.

Key words- Landscape fragmentation, Ecological networks, Patch metrics, Landscape connectivity

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